

MESSAGE FROM THE PRESIDENT



Greetings!

As the first president of William V. Tubman University (WVSTU) I welcome all of you as you peruse the pages of this catalog. As we have established ourselves a comprehensive national university we are proud of the strides we have made toward becoming a quality 21st century university. We strive to make our motto, "transformation for worthy service" evident in our teaching, scholarship, and service. Our emphasis on excellence and accountability permeates every aspect of our institution.

The creation of this institution in Southeastern Liberia is a testimony to the priority given to education as a means not only of providing enlightenment but reducing poverty in this nation.

-Dr. Elizabeth Davis-Russell



VISION

WVSTU aspires to be a center of quality and excellence.

MISSION

The mission of WVSTU is to provide quality educational experiences that transform the lives of individuals for worthy service.



CORE VALUES

We are a caring, accessible community characterized by excellence, integrity, civility and ethics;

We are learner centered and are intellectually engaged;

We have a three-fold focus: local, national and international with an emphasis on the celebration of diversity and the promotion of equal opportunity;

We maintain the highest academic standards and comport ourselves with professionalism;

We value civic virtue, dependability, and trustworthiness;

We value innovation, adaptability and creativity.



WILLIAM V. S. TUBMAN UNIVERSITY

William V. S. Tubman University is a "new-old" institution of higher learning. It is "old" in that it is an institution of higher learning formerly known as "William V.S. Tubman College of Technology", TC, for short.

Because of the absence of a viable higher education institution in the southeast of Liberia, several political leaders and prominent citizens advocated for the establishment of a college in the region. The people of Maryland County donated the land in commemoration of the 75th birthday of President William V. S. Tubman, a son of Maryland County. Construction began under the administration of Liberia's President William R. Tolbert, who also appointed its first president. TC began in August 1978, with an enrollment of 87 students. TC thrived in producing 50% -60% of Liberia's technocrats in the fields of architectural, civil, electrical, electronic, and mechanical engineering. Enrollment increased to 221 and the College of Technology produced a number of graduates with Associate degrees in these fields. By 1990, the National Commission on Higher Education (NCHE) in Liberia accredited TC to offer a 5-year Bachelor of Science degree in the aforesaid fields in engineering. Education at TC came to an abrupt halt upon national civil conflicts, however. The campus, its infrastructural support, buildings, libraries, etc. were severely looted, damaged, and left bereft of the promising glory of producing Liberia's technocrats.

In 2006 - 2007, the Ministry of Education (MOE) and the NCHE, again prodded by legislators and prominent citizens moved to action. They created an Interim Management team and funded their assessment. The team reported that a successful revival of TC was possible. MOE and NCHE funded an engineering assessment that later led to the establishment of a permanent team in 2008. The Visitor to the College, Liberia's President Ellen Johnson Sirleaf, in 2007, appointed Dr. Elizabeth Davis-Russell as President, thereby ascribing her place in history as the first female president of the institution.

Dr. Davis-Russell immediately assessed the viability of the College within the southeast region of post-conflict Liberia. She raised the bar by envisioning an institution having five colleges to provide much needed education, services, contribution to the region, the nation of Liberia, and to the world at large. She envisioned the new William V.S. Tubman University (TU). Tubman University came into being by an Act of the Liberian Legislature, transforming the William V.S. Tubman College of Technology into the "new" William V.S. Tubman University on September 14th, 2009.

Today, WVS Tubman University comprises 6 colleges: (1) the College of Agriculture and Food Science; (2) the College of Arts and Sciences, (3) the College of Education with emphasis on early childhood, primary, secondary education, and guidance counseling; (4) the College of Health Sciences which emphasizes are nursing and public health; (5) the College of Engineering and Technology, which offers degree courses in

civil, mechanical, electrical, cyber security and software engineering, as well as renewable energy; and (4) the College of Management and Administration with focus on accounting, business management, economics, financial management, and administration.

OFFICE OF THE VICE PRESIDENT FOR ACADEMIC AFFAIRS

The Office of the Vice President for Academic Affairs is responsible for upholding the academic integrity of William VS Tubman University by ensuring excellence in service and in delivering quality, relevant, meaningful, geared toward national development, and globally competitive education. It is responsible for guiding the academic direction and the academic development of the University in the fulfillment of its mission and vision. It looks into the emergence of five values essential to the academic process: *honesty, trust, fairness, respect, and responsibility*.

As forefront in the setting of excellent and supportive learning environment, it is responsible for the acquisition and development of resources for academic concerns and for establishing competent faculty force by recommending instructors and professors to the President not only for employment but for continuation or termination of service, promotion and tenure.

The Office of the Vice President for Academic Affairs establishes policies and procedures across all curricular programs and in all professional disciplines. It supervises the academic colleges in the University: the College of Agriculture and Food Science, the College of Arts and Sciences, the College of Education, the College of Engineering and Technology, the College of Health Sciences, and the College of Management and Administration,

The Office of the Vice President for Academic Affairs also supervises Library and Learning Resource Center, the Office of the Associate Vice President for Academic Affairs that oversees Research, Faculty Development, the Center for Excellence in Teaching and Learning, Continuing Education Programs, and Community Outreach.

The Office of the Vice President for Academic Affairs ensures that the academic divisions make the whole academic process not only transformative and value-oriented but efficient, effective, innovative, and student-centered.

OFFICE OF ACADEMIC SUPPORT SERVICES

ACADEMIC COMPUTING SERVICES

The Campus Information Management System (CIMS) is the electronic repository of all data pertaining to the Division of Academic Affairs. The Coordinator of Academic Computing Services assists each College and each unit within the Office of Academic Support Services to efficiently collect and analyze data, generates the reports needed for university-wide decision-making, and ensures an effective electronic registration process.

OFFICE OF ADMISSIONS

William V. S. Tubman University welcomes high school graduates who have passed the WAEC examination. The University offers opportunities for admission in the following ways:

First Time Applicants to the University

Prospective students who have never been admitted to a university are considered for admission as freshmen.

High school graduates seeking admission to WVSTU are required to submit the following requirements:

- A completed Application Form
- WAEC Certificate
- High School Diploma or High School Transcript of Records
- Two Letters of Recommendation (One from the school last attended)
- Personal Essay about academic and community work, challenges met and how they were overcome, and if admitted the student's expectations to contribute to life at Tubman University
- Three Passport Photos
- A recent Medical Certificate from a recognized medical institution
- Birth Certificate or notification of birth for Liberian citizens
- Naturalization Document or Resident Permit for International Citizens

Students earning Division I or Division II passing scores on the West African Examination Council (WAEC) are eligible for admission and do not have to sit the placement examination.

Each successful applicant receives a Letter of Acceptance to enroll at the University. Admitted students must enroll within the two consecutive semesters immediately following the date of the letter of acceptance or restart the application process.

Application Forms are available at the:

- Office of Admissions, Tubman Town, Harper City, Maryland County
- WILLIAM V.S. TUBMAN UNIVERSITY Monrovia Office,
25th Street, Sinkor, Monrovia
Website: www.tubmanu.edu.lr

The complete application is to be submitted directly to the Office of Admissions by:

- March 1 for Semester I
- September 19 for Semester II

Documents submitted on the website facilitate the review process, but originals must also be submitted to the Office of Admissions for verification.

Placement Examination

Placement Examination is offered twice each year: the first Saturday in April and the first Saturday in October. It is a diagnostic tool for determining an applicant's preparedness for college. High School graduates with a Division III passing scores on the WAEC are required to sit the Placement Examination in English and Mathematics.

- Admission to the University requires a passing score of 70 percent of the possible total score or better in both English and Mathematics.
- Prospective students scoring between 50 to 69 percent may decide to participate in both English and Mathematics may decide to participate in the Access to College.

Access to College

The Access to College is a two-semester preparation program promoting academic, personal and social preparedness for success in college through intensive development of foundation skills.

Transfer Students

Students who have completed at least one academic year at a university, but have not yet earned more than 72 credit hours and are eligible to return to that university, but wish to continue their studies at William V. S. Tubman University may apply to be admitted as a transfer student.

Applications are to be submitted to the Office of Admission not later than:

- June 15 for Semester I
- October 15 for Semester II

The requirements are:

- Completed Application Form;
- A letter stating the reason for the request and how the applicant will contribute to the life of the University;
- Two Letters of Recommendations (one from the Dean/Department Chair at the current university);
- Official Transcripts of Records – showing a minimum cumulative grade point average (GPA) of 2.5, and sent directly from the university;
- Three Passport Size Photos;
- A recent medical certificate from a recognized health institution;
- An interview with the Director of Admissions;
- An interview with the Chair of the Department and/or the Dean of the College to which the transfer is requested;

Students seeking to transfer to the University must be aware that their Transcripts of Records will be reviewed to determine which courses will be accepted as well as the number of credits that will be applied toward the desired program.

Students seeking to transfer to the University are required to enroll in courses for at least two (2) academic years before being eligible for graduation.

Readmission

Students who have missed two consecutive semesters are required to seek readmission.

Applications are to be submitted no later than:

- June 15 for Semester I
- October 15 for Semester II

The requirements are:

- Completed application form;
- A letter expressing an interest in returning to continue your studies at William V.S. Tubman University;
- A personal statement/resume detailing activities while away from the university including employment, taking classes at other institutions, etc;

- Two letters of recommendation, one from a university faculty member and one from an employer, community member, or other character reference;
- Official transcript from any schools attended while away from the university, and sent directly from that institution;
- Clearance from the Office of Finance;
- Payment of the USD \$20.00 readmission application fee.

Associate Degree Holders

Students who have completed an associate degree at an accredited institution may apply to a baccalaureate degree program. All General Education courses taken and passed with a 2.5 GPA will be accepted. Before graduation, students will have to complete the remaining General Education requirements.

Applications are to be submitted no later than:

- June 15 for Semester I
- October 15 for Semester II

The requirements are:

- Completed application form;
- Personal statement detailing reasons for selecting William V. S. Tubman University and expected contribution to university and community life;
- Official transcript from the institution where the degree was earned, and sent directly to the University;
- An interview with the Chair of the Department and/or Dean of the College to which admission is being requested.

Students seeking admission to complete a baccalaureate degree program must be aware that the transcripts will be reviewed to determine which courses will be accepted as well as the number of credits that will be applied toward the desired program.

Second Baccalaureate Degree

Students seeking a second bachelor's degree after having received a baccalaureate degree from another accredited institution must:

- Complete at least 30 units in residence at William V.S. Tubman University since completion of the first bachelor's degree;
- Complete any unmet William V.S. Tubman University General Education requirements as determined by a transcript review;
- Complete the Qualifying Examination requirement;

- Complete any prerequisites for courses in the major area of study BEFORE enrolling in courses in the major;
- Complete all units required in the major;
- Maintain a minimum grade-point average (GPA) of 2.0 in the major and 2.0 in all courses attempted at William V.S. Tubman University.

Applications are to be submitted no later than:

- June 15 for Semester I
- October 15 for Semester II

The requirements are:

- Completed application form;
- Personal statement detailing reasons for selecting William V. S. Tubman University and expected contribution to university and community life;
- Official transcript from the institution where the degree was earned, and sent directly to the University;
- An interview with the Chair of the Department and/or Dean of the College to which admission is being requested.

All students will participate in at least one practicum, internship, and/or experiential learning experience as determined by the specific college and major requirements. A field placement officer is assigned to each college and works in close collaboration with the deans and department chairs in identifying, securing, and supporting appropriate learning experiences.

OFFICE OF THE REGISTRAR

Registration, requests for transcripts, as well as the maintenance, analysis and distribution of student grades are all coordinated through the Office of the Registrar.

Registration Procedures

- Students who are returning pick up grade slips for the previous semester from the Office of the Registrar. Grade slips are available one week after final examination grades are submitted;
- Returning students will have met with an advisor during the pre-registration period in the previous semester to select courses;
- Newly admitted students get their student number;
- Newly admitted students meet with their advisors;
- All students log onto the student portal using student number and password to enroll in the selected courses;
- Advisors grant approval electronically and print control cards for students;
- Students take control card to the Finance Office for calculation of tuition and fees;

- Tuition and fees are paid. At least 50% of the total amount must be paid for the registration process to be completed;
- Payment receipt and control card are presented to the Registrar;
- The Registrar issues an official proof of registration;
- Students get signatures on the official proof of registration from each instructor on the first day of attending class.

Late Registration

Students may continue to register for courses one week AFTER the regular registration period, using the same procedures. Any student registering for courses during the late registration period is assessed an additional fee of USD \$20.00. Registration for the semester is closed at the end of the late registration period.

Add/Drop Period

Students may add a course to, and/or drop a course from their semester courses two weeks AFTER the registration period. The change must be approved by the department chair and/or Dean of the college. Changes must still keep the student in compliance with the number of credits required for full time status and, if applicable, restrictions associated with the GPA.

Official Withdrawal

Official withdrawal forms are available from the Office of the Registrar and are to be completed in consultation with the instructor, approved by the Dean of the College and then filed in the Office of the Registrar. The day the form is filed is the official date for the withdrawal, exclusive of a failing grade.

Students who voluntarily withdraw from a course BEFORE the semester begins will be eligible for 100% refund of the tuition costs and any fees associated with the course. Students who voluntarily withdraw AFTER the semester begins may be eligible for a prorated refund:

- | | |
|-----------------------------------|------------|
| • Second week of classes | 80% refund |
| • Third week of classes | 60% refund |
| • Fourth week of classes | 40% refund |
| • Fifth week of classes | 20% refund |
| • Sixth week of classes and after | 0% refund |

Change of Grade

Final course grades may be changed to reflect the following:

- An erroneous entry;
- Completion of course with an I or AB grade from the two consecutive semester immediately prior to the date of the request for a change of grade;
- A positive decision from the grade appeal process.

In the first two items the student is required to first meet with the instructor, then, if necessary, with the department chair and/or dean of the college. If the decision is to change the grade that was submitted to the registrar, the instructor will complete a change of grade form. The change of grade form, with the dean's signature will be sent directly from the dean's office to the registrar. Change of grade forms will be processed in the two weeks immediately following the submission of grades and after the registration period has ended. Change of grade forms will not be processed during registration.

Grade Appeal Process

All instructors state grading policies on the course syllabus. Any student, after receiving the final grade, who believes the stated grading policy was not followed, may appeal to:

- The instructor to discuss the perceived discrepancy;
- The department chair/Dean of the college within 15 days after the final grade is received, if the matter is not resolved through discussion with the instructor.

If the department chair/dean of the college finds that the student has reasonable cause for appeal, a request for the appointment of a Grade Appeal Committee will be submitted to the Vice President for Academic Affairs.

The three- member Grade Appeal Committee, made up of one representative each from the faculty, Division of Student Affairs, and the student body will:

- Provide a written 72 hour notice of the date, time, and location of the hearing;
- Inform the instructor, in writing, of the specific complaints and provide documented evidence for the complaint;
- Inform both the instructor and the student that each can present evidence at the hearing;
- Conduct the hearing, and
- Present to both parties, the Committee's written final decision.

Requests for Transcripts of Records

Students requiring an official transcript must complete and sign the Request for Transcript form. The completed Request for Transcript form along with the USD \$20.00 fee is to be submitted to the Office of the Registrar. Official transcripts will be processed within three weeks of receiving the request. All official transcripts will be sent directly from the Office of the Registrar to the institutions identified.

OFFICE OF STUDENT DEVELOPMENT AND LEARNING SUPPORT SERVICES

Student Development and Learning Support Services provide academic support to students who need additional assistance in their learning, understanding of college courses, and managing the academic environment. These supports include tutoring, critical thinking and reading workshops, supplemental instruction, and seminars on time management, note taking and study skills. Students on academic probation are required to consult with the staff for the development of individualized support plans.

OFFICE OF FINANCIAL AID AND SCHOLARSHIPS

All students are encouraged to apply for financial assistance to meet the costs of attending the university. The two categories of financial aid are Need-Based Financial Aid and Merit Scholarships.

Need-Based Financial Aid

Students seeking admission to the university are required to complete the request for financial aid on the application form. The need for financial aid is determined by subtracting the resources available to a student from the total cost of attending the university. Once admitted into the university students are required to register for at least 12 credit hours per semester, maintain a GPA of at least 2.0, and not be on academic or disciplinary probation.

This form of aid includes:

- Textbook grants
- Tuition Assistance
- Work study opportunities

Applications for scholarships and financial aid are due:

- Newly admitted students
 - March 15 for Semester I
 - September 15 for Semester II

- Returning students
 - Three weeks BEFORE the registration period begins.

Designated and Merit-Based Scholarships

Scholarships are available, without a determination of need, to students who meet criteria stipulated by donors. Earning a scholarship may require maintaining a set grade point average (GPA) usually 3.0 or better, pursuing a specific course of study, and/or having residence in a certain geographic location. A complete listing of these scholarships is available from the Office of Financial Aid.

For more information scholarship and financial aid, please contact:
The Office of Financial Aid
Telephone: 0886709972

LIBRARY

The library offers a wide range of services to students, faculty, and staff at the university and limited services to members of the larger community, with appropriate identification. Hours of operation and procedures for accessing its services are announced each semester.

ACADEMIC POLICIES

Student Status

A full time student is one who registers for 12 or more credit hours. A part time student is one who registers for less than 12 credit hours per semester. The exception to this rule is for a graduating senior who may need less than 12 credit hours to graduate.

Class Standing

An undergraduate student is designated as a freshman, a sophomore, a junior, or a senior. The designation of a student's class standing is determined by the number of credit hours completed. The divisions are as follows:

CREDITS	CLASS STANDING
0-36	Freshman
37-72	Sophomore
73-108	Junior
109 -136	Senior

Grading System

Each course taken at William V. S. Tubman University is assigned a credit value in semester hours. A semester hour/unit is defined as fifty (50) contact minutes and where applicable three hours per week of practical or laboratory work throughout the semester. A semester is fifteen (15) weeks. The William V.S. Tubman University Grading System uses the letter grade with equivalent credit points for the evaluation of academic performance. The numerical value of each letter grade with credit points is as follows:

NUMERICAL VALUE	LETTER GRADE	INDEX NUMBER
90-100	A-Excellent	4.0
80-89	B-Good	3.0
70-79	C-Average	2.0
60-69	D-Poor	1.0
Below 60	F-Failure	0.0

Grades below C and Academic Implications

Grades of D, I, F, AB, DR, or NG are considered deficiencies in a student's academic status at the university.

- A grade of D is unsatisfactory. A student must re-enroll in the course within the next two consecutive semesters and earn a grade of C or better to earn the course credits in the areas listed below. A course in which a grade of D was earned can only be repeated ONCE. The grade earned when the course is repeated replaces the first grade earned, even if the second grade is lower.
 - A student cannot graduate with a D in:
 - English 101 or 102
 - A major or minor area of concentration
 - More than two (2) courses
- A grade of I indicates a student may have completed a substantial part of the course with satisfactory performance but has not been able to complete the course. The student has provided documented evidence for the inability to complete the course. The grade of I may be converted to a letter grade when the course requirements are satisfactorily met, within the next two consecutive semesters.
- A grade of F represents failure. A student who has failed a course cannot have that grade changed by retaking the final examination or completing additional assignments. A student who fails a course must re-enroll in the course and earn a grade of C or better to earn the course credits.
- A grade of AB indicates that a student did not take the final examination. Documented evidence has to be provided for the inability to take the final examination. A grade of AB may be converted to a letter grade when the course requirements are satisfactorily met, within the next two consecutive semesters.
- A grade of DR indicates that a student has exceeded the three (3) excused absences allowed. To earn course credits, the student must re-enroll in the course and obtain a grade of C or better.
- A grade of NG indicates a student registered for the course but failed to officially withdraw or attend classes. To earn course credits, the student must re-enroll in the course and obtain a grade of C or better.

- A grade of W indicates a student filed the official withdrawal forms in the Office of the Registrar after consultation with the instructor and received approval from the department chair and/or dean of the college. The day the form is filed is the official date for the withdrawal.

Grade Point Average (GPA)

The GPA is a measure of how well a student is doing in her/his academic studies. The GPA is measured in two (2) forms:

- Semester GPA is a measure of the performance in one semester.
- Cumulative GPA is a history of academic performance for the entire time a student is enrolled at the University. The cumulative GPA is an average of all the semesters' GPA.

The GPA is calculated by multiplying the credit hours per course by the grade earned and dividing the total points earned during the semester by the total credit hours. The GPA is reported as a number with three (3) decimal places.

Example:

COURSE	CREDIT HOURS	GRADE	INDEX NUMBER	POINTS
ENG 101	3	A	4.0	12
MATH 101	3	B	3.0	9
BIO 101	4	C	2.0	8
PED 101	1	C	2.0	2
TOTAL	11			31

**The semester Grade Point Average (GPA) = $31/11 = 2.818$*

Implications of a “high” GPA and a “low” GPA

High GPA

Students with “high” GPAs earn a grade of B or better in each course taken in the semester. In addition to the high GPA, students must have registered for at least 12 credit hours for the semester. Each semester these students are eligible to be recognized in three (3) categories:

- Student earning a GPA between 3.00 and 3.49 are recognized on the Honor Roll;

- Students earning a GPA between 3.50 and 3.99 are recognized on the Dean's List;
- Students earning a GPA of 4.0 are recognized on the President's list

The Office of the Registrar generates the listing of students in each category based on the submitted grades reflected on the semester reports. A student cannot be added to any of these categories after the list is published, even if a change of grade form later submitted results in the student gaining the required grade point average when the initial grade is changed.

Low GPA

Students whose GPA's are below 2.00 have low GPAs and face:

Academic Probation

A student is placed on academic probation whenever his/her semester grade point average (GPA) drops below 2.00. A student placed on academic probation is:

- Limited to 12 credit hours in the semester immediately following the semester with the GPA below 2.0;
- Restricted from holding office as a student leader;
- Barred from participating in official University athletic events; and
- Ineligible for University sponsored scholarships or financial aid.

Academic Suspension

A student whose GPA drops below 2.00 in two consecutive semesters is automatically suspended from the University for one full semester.

Academic Expulsion

A student who is suspended twice for poor academic performance is automatically expelled from the University. Academic suspension may be appealed.

Course Load

The course load refers to the number of credit hours a student registers for in a semester.

- Students who are on probation or readmitted to the University are limited to 12 credit hours in the semester immediately following the decisions;
- All other students are may register for up to 20 credit hours each semester.

Graduation – Special Honors

Upon graduation, a student who has earned a grade of B or better in all his courses is awarded Special Honors as follows:

- CUM LAUDE
A graduate who obtains a cumulative grade point average between 3.250 and 3.499;
- MAGNA CUM LAUDE
A graduate who obtains a cumulative grade point average between 3.500 and 3.749 ;
- SUMMA CUM LAUDE
A graduate who obtains a cumulative grade point average between 3.750 and 4.000.

Graduation Requirements

Students completing degree programs at William V.S. Tubman University are required to meet the following:

- A. A student must have completed the required work for the curricular program he/she is enrolled in with the minimum cumulative grade point average (GPA) established by the college for the program or a minimum overall GPA of 2.0 if the college has not specified a higher GPA;
- B. A student must have abided with the code of ethics of the students as specified in the Student Handbook;
- C. A student must have complied with the admission, registration, and all other academic requirements specified in the University and Student Handbook;
- D. A student must have adhered to the specific requirements of the college he/she belongs;
- E. A student must have completed the general education program of 52 credit hours;
- F. A student must have completed the minimum credit hours of 125 to 136 credit hours where 42 credit hours of which must be upper division course work;
- G. A student must have passed the comprehensive examination/project design/feasibility study/or research design required by the college;
- H. A student must have completed the Certificate Course in Entrepreneurial Education.

Students Not Meeting the College Required GPA

A Student who earned a GPA of 2.0 but failed to meet the GPA requirement for a specific degree in a college means that he cannot obtain the degree but may graduate at the University with the degree of *Bachelor in General Studies*.

Students Completing Some Deficiencies

The following students may join the Commencement Exercises subject to the recommendation of the Dean and Approval of the Vice President for Academic Affairs:

- A. A student who has completed all the academic requirements but still completing clinical/internship requirements;
- B. A student who has been making satisfactory progress in her/his program of studies in a college, meeting all other criteria for graduation but may need to complete not more than 2 courses (maximum of 6 credit hours) to meet the requirements of 136 credit hours;
- C. A student who may have earned a grade of D in her/his major subject or in English or Mathematics in not more than 2 courses;

Commencement and Issuance of Diploma

- A. Attendance at the Commencement Exercises is recommended. A student who wishes to attend the rite must indicate this on the application for graduation which should be filled not later than 60 days prior to the Commencement Exercises;
- B. A student completing some deficiencies mentioned above will not be issued his/her diploma or degree until the deficiencies are completed and requirements are complied with;
- C. Diplomas and Transcript of Records (TOR) will be available upon request at the University Registrar's Office. An exit clearance is required.

Academic Advising

Upon admission to the University, each student is assigned to an advisor. Advisors are faculty members of the college in which the student is enrolled. The relationship between advisor and student is sustained over the time the student is enrolled at William V.S. Tubman University through:

- Academic consultation
- Program planning
- Mentoring
- Referrals, as needed, to academic supports
- Letters of recommendation
- Guidance regarding post-baccalaureate planning

Academic Integrity

The quality of education at the William V. S. Tubman University is reflected in the credits and degrees its students earn. The protection of these high standards is crucial since the validity and equity of the institution's grades and degrees depend upon it. The penalty for any students found guilty of infraction on a regulation for academic integrity shall range from warning, course failure, possible suspension, or both; and or expulsion, unless evidence is provided to convince an appeal committee that substantial mitigating circumstances existed in that student's offense.

The following regulations are designed to assist students in developing appropriate standards and attitudes with respect to academic integrity.

- *Plagiarism and Cheating*
No student shall receive, attempt to receive, knowingly give or attempt to give unauthorized assistance in the preparation of any work required to be submitted for credit as part of a course (including examination, laboratory reports, essays, themes, term papers, etc.). When direct quotations are used, they should be indicated; when the language, ideas, theories, data, figures, graphs, programs, electronic based information or illustrations of someone other than the students are incorporated into a paper or used in projects, they should be duly acknowledged.
- *Unauthorized Access to Official Materials*
No student shall take or attempt to take, steal, or in an unauthorized manner otherwise procure, gain access to, alter or destroy material pertaining to the conduct of a class (including tests, examinations, grade change forms, grade rolls, roll books, laboratory equipment, grade records in written or computerized form, etc.).

- *Misrepresentation, Falsification of Institution Records or Academic Work*
No student shall knowingly provide false information in completing school forms or applications, grade sheets, financial forms, time sheets, use false or counterfeit transcripts, etc.) or in any work submitted for credit as part of a course.
- *Malicious Removal, Retention, or Destruction of Library Materials*
No student shall misplace, take, or destroy, or attempt to misplace, take, or destroy any item or part of an item belonging to or in protection of the university library with the intention of bringing about undue disadvantage in the classroom work or other Tubman University students.
- *Malicious Intentional Misuse of Computer Facilities, Laboratory Equipment and/or Other Services*
The malicious or intentional misuse of computer facilities, laboratory equipment and services is prohibited. Violations of Liberian and local laws (including copyright violations, unauthorized access to systems, alteration/damage/destruction/or attempted alteration/damage/destruction, or use for profit, etc.) or department's rule for computer usage (including damage or destruction of system and or its performance, unauthorized copying of electronic information, use of threatening or obscene language, etc.) are prohibited/
- *Misuse of Student Identification Cards*
Student Identification Card is the property of Tubman University. Each student is required to carry and or display his or her current identification card issued by the University while on University campus. Lending, selling, refusing to display upon request by an authorized University personnel, or otherwise transferring a student identification card is prohibited, as in the use of an identification card by anyone other than its original holder. A teaching faculty member may ask students to present their ID Cards during tests or examinations.
- *Circulation of Scandalous Leaflets or Other Publications*
Circulation of leaflets or other publications on the University Campus in which scandalous and defamatory attack are made against University Administration, other University Employees, other Students and Government Officials is strictly prohibited.

REQUIREMENTS FOR BACCALAUREATE DEGREES

A baccalaureate degree is granted to a student who successfully completes a minimum of 136 credit hours which include 52 credits of General Education and a specified number of credits in the major. The following areas constitute General Education

Basic Communication, Writing and Oral Presentation

Learning Outcomes:

Students are able to:

- produce coherent texts within common college-level written form
- demonstrate the ability to revise and improve such texts
- research a topic, develop an argument, and organize supporting details
- develop proficiency in oral discourse; and evaluate an oral presentation according to established criteria

Mathematics

Learning Outcomes

Students are able to:

- demonstrate the ability to interpret and draw inferences from mathematical models such as formulae, graphs, tables, and schematics;
- demonstrate ability to represent mathematical information symbolically, visually, numerically, and verbally;
- employ quantitative methods such as arithmetic, algebra, geometry, or statistics to solve problems;
- make estimate and check mathematical results for reasonableness; and
- demonstrate ability to recognize the limits of mathematical and statistical methods

Natural Sciences

Learning Outcome

Students are able to:

- demonstrate ability to understand the methods that scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis; and application of scientific data, concepts, and models in one of the natural sciences.

Social Sciences

Learning Outcome

Students are able to:

- demonstrate understanding of the methods social scientists use to explore social phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical and interpretive analysis; and knowledge of major concepts, models and issues of at least one discipline in the social sciences;
- demonstrate knowledge of the history, political, economic, social, and cultural diversity and unity in Liberian society;
- demonstrate knowledge of common institutions in Liberian society and their effect to different groups and Liberia's evolving relationship with the rest of Africa;
- demonstrate knowledge of either a broad outline of African history; or the distinctive features of the history, institutions, economy, society, culture, etc., of one African civilization.
- demonstrate knowledge of the development of the distinctive features of the history, institutions, economy, society, and culture; and
- relate the development of Western civilization to that of other regions of the world.
- demonstrate knowledge of the development of the distinctive features of the history, institutions, economy, society and culture; and
- relate the development of Western Civilization to that of the regions of the world.

Information Management

Learning Outcomes

Students are able to:

- perform the basic operations of personal computer use;
- understand and use basic research techniques; and
- locate, evaluate, and synthesize information from a variety of sources.

Foreign/Indigenous Language

Learning Outcome

Students are able to:

- demonstrate basic proficiency in the understanding and use of a foreign language; and

- demonstrate knowledge of the distinctive features of culture(s) associated with the language they are studying.

Humanities

Learning Outcomes

Students are able to:

- demonstrate knowledge of the conventions and methods of at least one of the humanities in addition to those encompassed by other knowledge areas required by the General Education program.

Arts

Learning Outcome

Students are able to:

- demonstrate understanding of at least one principal form of artistic expression and the creative process inherent therein.

Critical Thinking

Learning Outcome

Students are able to:

- demonstrate ability to identify, analyze, and evaluate arguments as they occur in their own or others' work; and
- develop well-reasoned arguments.

Environmental Education

Learning Outcome

Students are able to:

- demonstrate strong awareness of environmental issues, and
- demonstrate ability to protect the environment

Physical Fitness

Learning Outcome

Students are able to:

- demonstrate knowledge and understanding, activity skills, and desirable attitudes that will eventually contribute to well-being.

N.B. Some learning outcomes are adaptations of SUNY Cortland's General Education Learning Outcomes.

Requirements for Majors and Minors

In addition to completing 52 credits in General Education, each student is required to satisfactorily complete a specified number of credits in her/his major. The requirements are specified in the programs of each college.

THE COLLEGES

COLLEGE OF AGRICULTURE AND FOOD SCIENCE



The College of Agriculture and Food Science is designed to foster the development of agriculture and food sciences in Liberia and in the world community by training students in the food and agricultural sciences. It provides the foundation of a dream for tomorrow. It is where one begins to cultivate love and passion for agriculture and environment that lead into life-giving profession. Its programs reflect today's technological advancements and possibilities. Its faculty is devoted to teaching, research, and extension. It is geared to the exploration of new possibilities and developments, and the dissemination of new technologies to the students and the community.

The College of Agriculture is the first and the only college that offers a four-year agriculture degree in Southeast, Liberia. As the premier agricultural school in the Southeast, where inhabitants' major livelihood is subsistence farming, the College's focus and priority would be the transformation and development of agriculture as a business and industry. The graduates become the new breed of farmers who could not only farm, but could introduce to their communities new technologies that could result in increased production of traditional food crops and livestock and sustained environmental preservation.

Vision

College of Agriculture and Food Science aspires to be the center of advanced agriculture and food production.

Mission

College of Agriculture and Food Science aims to provide opportunity for development and advancement of agriculture. It aims to provide venues for the application of scientific, technological, and business knowledge embracing food, animal production, distribution, and consumption. It aims to transform future leaders in the agriculture and food science through innovative learning approaches as it caters to the needs of the students.

Program Description:

The degree of Bachelor of Science in Agriculture introduces to the students the various disciplines and fields in agriculture. It provides rich experiential learning and unique opportunity for an individual to develop professional, leadership, and communication skills that would eventually lead him/her to a productive career.

The program includes study of the traditional agriculture production such as: crop science, soil science, animal science, rubber science, and agricultural engineering. The inception of food sciences and nutrition addressed the urgency of giving priority to the preparation and preservation of traditional food crops and animals. The inclusion of agricultural education and extension not only addresses the major bottleneck in the national agricultural extension service, but prepares teachers to teach agriculture in secondary schools.

Agricultural marketing and business programs expose the students to the importance of agriculture as a way of life and as a profession essential to national growth and development. The aesthetic nature of agriculture, with emphasis on the environment, buttresses the importance of horticulture and landscaping thereby preparing the students for a career in the industry.

The agricultural farm is the arena where the students embark on a hands-on approach to learning, getting their hands soiled right from the very start of their curriculum years. The students learn the principles of good science, and apply them both in the laboratory and in the field. They are provided the opportunity to work with and care for animals and to engage in the management and cultivation of traditional food crops, and also to understand the marketing of agricultural commodities. The agricultural farm is the major economic base that provides resources to support the college and the university. Students must feel that learning is not all work, but also fun!

Program Objectives:

The program aims to:

1. Expose students to the technical and practical application of agricultural science; and
2. Prepare and train students to be engaged in agriculture as an industry and business

Program Learning Outcomes:

Students are able to:

1. Demonstrate knowledge and ability to apply the skills acquired by participating in the development of agricultural ventures at the college;
2. Apply their technical knowledge and skills by developing a relationship with the community by providing technical assistance to their neighbors; and
3. Engage in research and on-farm trials that will lead to the development and promotion of new crops.

Curriculum Requirements:

• General Education	52 Credit Hours
• College Specific Required Courses	21 Credit Hours
• Professional Courses	57 Credit Hours
• Elective Courses	6 Credit Hours
Total	136 Credit Hours

Curricular Programs of the College of Agriculture

GENERAL EDUCATION

Freshman – Semester 1

COURSE CODE	COURSE TITLE	CREDIT HOURS
ENG 101	English Grammar and Phonetics	3
MATH 101	College Algebra	3
BIO 101	General Biology	4
CSE 101	Introduction to Computers	3
PED 101	Physical Fitness and Wellness I	1
PSY 101	Introduction to Psychology	3
TOTAL		17

Freshman – Semester II

ENG 102	Academic Reading and Writing	3
MATH 102	Analytical Geometry and Trigonometry	3
CHEM 101	Principles of Chemistry	4
PHI 101/ SSC 101/ SOC 101	Introduction to Philosophy Introduction to Liberian Society Introduction to Sociology	3
CSE 102	Computer Literacy	3
PED 102	Physical Fitness and Wellness 2	1
TOTAL		17

Sophomore – Semester I

ENG 201	Technical Communication and Public Speaking	3
EVS 201	Introduction to Environmental Science	3
FRE/GLE/CHI	French/Grebo/Chinese	3
HIST 101/102	Liberian History/World History	3
TOTAL		12

Sophomore – Semester II

ENG 204	Introduction to Literature	3
FRE/GLE/CHI 102	Intermediate French/Advanced Grebo/Advanced Chinese	3
TOTAL CREDIT HOURS		6
GRAND TOTAL		52

Courses that Cut across all Departments

CHEM 201	Organic Chemistry	4
CHEM 202	Inorganic Chemistry	4
AGR 305	Plant Science	3
AGR 206	Agricultural Statistics	3
AGR 323	Introduction to Soil Science	3
AGR 207	Agricultural Economics	3
AGR 308	Agriculture and Climate Change	3
AGR 304	Extension Education	3
AGR 305	Plant Science	3
AGR 351	Intro to Forestry	3
AGR 341	Introduction to Animal Science	3
AGR 306	Genetics	3
AGR 204	Agricultural Marketing	3
EED 301	Entrepreneurship and Micro-Enterprise	3
AGR 352	Post-Harvest Management and Technology	3
AGR 423	Basic Horticulture	3
AGR 426	Senior Research Development Project	4
AGR 425	Internship	3
TOTAL		55

Concentration/Major***APPLIED AGRICULTURE***

AGR 309	Lowland/ Upland Rice production & Mgt.	3
AGR 420	Vegetable Production & Management	3
AGR 307	Rubber Production & Management	3
AGR 421	Oil palm Production & Management	3
AGR 434	Cassava Production, Mgt. & Processing	3
AGR 423	Animal Production & management	3
TOTAL		18

ANIMAL SCIENCE

AGR 317	Animal Physiology	3
AGR 318	Animal Science (Cattle & Small Ruminants)	3
AGR 417	Animal Science (Fish)	3
AGR 419	Animal Science (Poultry)	3
AGR 418	Animal Science (Swine)	3
AGR 416	Feeds and Feeding	3
AGR 468	Animal Health and Disease Control	3
TOTAL		21

CROP SCIENCE (AGRONOMY)

AGR 413	Plant Nutrition	3
AGR 452	Plant Pathology and Weed Sciences	3
AGR 453	Plant Entomology and Pest Management	3
AGR 454	Tropical Food Crops	3
AGR 455	Tropical Tree Crops	3
AGR 312	Plant Physiology	3
AGR 305	Plant Science	3
TOTAL		21

DEPARTMENT OF SOIL SCIENCE

AGR 461	Soil Management and Fertilization	3
AGR 462	Soil and Water Conservation	3
AGR 463	Soil Chemistry	3
AGR 464	Comparative Soil Ecosystem Analysis	3
AGR 465	Soil and Climate Change	3
AGR 466	Soil Survey	3
TOTAL		21

Bachelor of Science in Agriculture – Animal Science

Freshman Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	English Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY 101	Intro to Psychology	3	CSE 102	Computer Literacy	3
CSE 101	Introduction to Computers	3	PHI 102	Intro to Philosophy	3
AGR 121	Practicum I	1	HIST 101	Liberian History	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
			AGR 122	Practicum II	1
Total		18	Total		21

Sophomore Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 103/ AGR 205	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
SSC 201	Introduction to Liberian Society, Issues and Problems	3	FRE/ GRE/ CHI102	Advanced French/ Grebo /Chinese	3
FRE/ GLE/ CHI101	French/ Grebo/ Chinese	3	PHY 201	Physics	4
CHEM 201	Organic Chemistry)	4	CHEM 202	Inorganic Chemistry	4
EVS 201	Introduction to Environmental Science	3	AGR 204	Agricultural Marketing	3
AGR 201	Agricultural Economics	3	AGR 206	Agricultural Statistics & Experimental Design	3
AGR 221	Practicum III	1	AGR222	Practicum IV	1
Total		20	Total		21

Junior Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
AGR 323	Introduction to Soil Science	3	AGR 304	Extension Education	3
AGR 341	Introduction to Animal Science	3	AGR 306	Genetics	3
AGR 305	Plant Science	3	AGR 308	Agriculture & Climate	3
AGR 351	Introduction to Forestry	3	AGR 352	Post-harvest Management &	3
EED 301	Entrepreneur & Micro Enterprise		AGR 318	Animal Science (Cattle and Small ruminant)	3
AGR 317	Animal Physiology	3	AGR 468	Animal Health & Disease Control	3
AGR 321	Seminar I	1	AGR 322	Seminar II	1
Total		16	Total		19

Senior Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
AGR 423	Basic Horticulture	3	AGR 426	Senior Research Project	4
AGR 425	Internship	3	AGR 418	Animal Science (Swine)	3
AGR 417	Animal Science (Fish)	3	AGR 416	Feeds and Feeding	3
AGR 419	Animal Science (Poultry)	3			
AGR421	Seminar III	1			
Total		13	Total		10

TOTAL CREDITS 135

Bachelor of Science in Agriculture – Crop Science

Freshman Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	English Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY 101	Intro to Psychology	3	CSE 102	Computer Literacy	3
CSE 101	Introduction to Computers	3	PHI 102	Intro to Philosophy	3
AGR 121	Practicum I	1	HIST 101	Liberian History	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
			AGR 122	Practicum II	1
Total		18	Total		21

Sophomore Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 103/ AGR 205	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
SSC 201	Introduction to Liberian Society, Issues and Problems	3	FRE/ GRE/ CHI102	Advanced French/ Grebo /Chinese	3
FRE/ GLE/ CHI101	French/ Grebo/ Chinese	3	PHY 201	Physics	4
CHEM 201	Organic Chemistry)	4	CHEM 202	Inorganic Chemistry	4
EVS 201	Introduction to Environmental Science	3	AGR 204	Agricultural Marketing	3
AGR 201	Agricultural Economics	3	AGR 206	Agricultural Statistics & Experimental Design	3
AGR 221	Practicum III	1	AGR222	Practicum IV	1
Total		20	Total		21

Junior Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
AGR 323	Introduction to Soil Science	3	AGR 308	Agriculture & Climate Change	3
AGR 341	Introduction to Animal Science	3	AGR 304	Extension Education	3
AGR 351	Introduction to Forestry	3	AGR 306	Genetics	3
EED 301	Entrepreneur & Micro Enterprise	3	AGR 352	Post-harvest Management & Technology	3
AGR 305	Plant Science	3	AGR 312	Plant Physiology	3
AGR 321	Seminar I	1	AGR 322	Seminar II	1
Total		16	Total		16

Senior Year

First			Second		
Code	Course Title	Credit	Code	Course Title	Credit
AGR 423	Basic Horticulture	3	AGR 426	Senior Research	4
AGR 425	Internship	3	AGR 452	Plant Pathology & Weed Science	3
AGR 413	Plant Nutrition	3	AGR 454	Tropical Food Crops	3
AGR 453	Plant Entomology & Pest Management	3			
AGR 455	Tropical Tree Crops	3			
AGR 421	Seminar III	1			
Total		16	Total		10

TOTAL CREDITS 135

Bachelor of Science in Agriculture – Soil Science

Freshman Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	English Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY 101	Intro to Psychology	3	CSE 102	Computer Literacy	3
CSE 101	Introduction to Computers	3	PHI 102	Intro to Philosophy	3
AGR 121	Practicum I	1	HIST 101	Liberian History	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
			AGR 122	Practicum II	1
Total		18	Total		21

Sophomore Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 103/ AGR 205	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
SSC 201	Introduction to Liberian Society, Issues and Problems	3	FRE/ GRE/ CHI102	Advanced French/ Grebo /Chinese	3
FRE/ GLE/ CHI101	French/ Grebo/ Chinese	3	PHY 201	Physics	4
CHEM 201	Organic Chemistry)	4	CHEM 202	Inorganic Chemistry	4
EVS 201	Introduction to Environmental Science	3	AGR 204	Agricultural Marketing	3
AGR 201	Agricultural Economics	3	AGR 206	Agricultural Statistics & Experimental Design	3
AGR 221	Practicum III	1	AGR222	Practicum IV	1
Total		20	Total		21

Junior Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
Code	Course Title	Credit	Code	Course Title	Credit
AGR 323	Introduction to Soil Science	3	AGR 308	Agriculture & Climate Change	3
AGR 341	Introduction to Animal Science	3	AGR 304	Extension Education	3
AGR 351	Introduction to Forestry	3	AGR 306	Genetics	3
EED 301	Entrepreneur & Micro Enterprise	3	AGR 352	Post-harvest Management & Technology	3
AGR 321	Seminar I	1	AGR 322	Seminar II	1
AGR 305	Plant Science	3			
Total		16	Total		13

Senior Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
AGR 423	Basic Horticulture	3	AGR 426	Senior Research	4
AGR 425	Internship	3	AGR 462	Soil & Water Conservation	3
AGR 461	Soil Management & Fertilization	3	AGR 464	Comparative Soil Ecosystem Analysis	3
AGR 463	Soil Chemistry	3	AGR 466	Soil Survey	3
AGR 465	Soil & Climate change	3			
AGR 421	Seminar III	1			
Total		16	Total		13

TOTAL CREDITS 135

Bachelor of Science in Applied Agriculture

Freshman Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	English Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY 101	Intro to Psychology	3	CSE 102	Computer Literacy	3
CSE 101	Introduction to Computers	3	PHI 102	Intro to Philosophy	3
AGR 121	Practicum I	1	HIST 101	Liberian History	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
			AGR 122	Practicum II	1
Total		18	Total		21

Sophomore Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 103/ AGR 205	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
SSC 201	Introduction to Liberian Society, Issues and Problems	3	FRE/ GRE/ CHI102	Advanced French/ Grebo /Chinese	3
FRE/ GLE/ CHI101	French/ Grebo/ Chinese	3	PHY 201	Physics	4
CHEM 201	Organic Chemistry)	4	CHEM 202	Inorganic Chemistry	4
EVS 201	Introduction to Environmental Science	3	AGR 204	Agricultural Marketing	3
AGR 201	Agricultural Economics	3	AGR 206	Agricultural Statistics & Experimental Design	3
AGR 221	Practicum III	1	AGR222	Practicum IV	1
Total		20	Total		21

Junior Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
AGR 323	Introduction to Soil Science	3	AGR 308	Agriculture & Climate Change	3
AGR 341	Introduction Animal Science	3	AGR 304	Extension Education	3
AGR 351	Introduction to Forestry	3	AGR 306	Genetics	3
EED 301	Entrepreneur & Micro Enterprise	3	AGR 352	Post-harvest Management & Technology	3
AGR 305	Plant Science	3	AAE		3
AGR 321	Seminar I	1	AGR 322	Seminar II	1
Total		16	Total		13

Senior Year

First			Second		
Code	Course Title	Credit	Code	Course Title	Credit
AGR 423	Basic Horticulture	3	AGR 426	Senior Research	4
AGR 425	Internship	3	AGR	AAE	3
AGR	AAE	3	AGR	Animal Health & Diseases Control	3
AGR 421	Seminar III	1	AGR	AAE	3
AGR	AAE	3	AGR	AAE	3
Total		13	Total		16

TOTAL CREDITS 135

Course Descriptions

CHEM 201

Organic Chemistry

3 Credit Hours

Pre-Requisite: CHEM 101

This course is divided into four units. The first covers bonding in organic molecules, their functional groups, classification and nomenclature. Unit 2 introduces students to the basic properties, methods of preparation of the group of compounds called the alkanes. Unit 3 explores the chemistry of alkenes while Unit 4 examines the importance of the alkynes with emphasis on their preparations and properties. The aim is to provide a general overview and description of the general properties, the underlying principles of the preparation and observed trends in the properties of organic compounds.

CHEM 202

Inorganic Chemistry

3 Credit Hours

Pre-Requisite: CHEM 101

The course deals with descriptive chemistry. Students learn inorganic reactions; chemical bonding; condensed phases; introduction to chemical equilibria; phase equilibria solutions and colligative properties; and metal complexes.

AGR 121- 122

Practicum I-II

1 Credit Hour each

The course is designed for a hands-on practical experience that enhances the students' capacity and capability to appreciate the various disciplines in the field of agriculture.

AGR 201

Agricultural Economics

3 Credit Hours

This course focuses on the overall performance of the economy and the way various sectors of the economy relate to each other. It analyzes those major issues relating to unemployment, gross domestic and national products, inflation, economic growth and development etc.

AGR 203

Rural Sociology

3 Credit Hours

This course includes study of basic sociological concepts applied to rural societal institutions and rural communities; causes and consequences of rural social change. It is the scientific study of social arrangements and behavior amongst people distanced from points of concentrated population or economic activity. The emphasis is on country and regional issues, and its' impact on agricultural production and economics.

AGR 204***Agricultural Marketing******3 Credit Hours******Pre-Requisite: AGR 201***

The course is designed to cover aspects of Agricultural Marketing. Students will be exposed to background definitions of trade and marketing to enhance the understanding and scope of initiating and administering agricultural marketing programs as these relates to the livelihood of farmers. The course will further cover the historical background of Agricultural Marketing, the various approaches to, and facilitation of Agricultural Marketing; the institutional applications and the factors that influence Agricultural Marketing.

AGR 205***Methods of Agricultural Research******3 Credit Hours***

This course presents and explains the importance of conducting research in the light of current research issues in agriculture; identifies and use appropriate research and statistical methods and research designs that shall guide the collection and observation of data; analyze data using appropriate tools; prepare/write research proposals, scientific or technical reports in agriculture; and present the same following an appropriate format for presentation in scientific meetings.

AGR 206***Agricultural Statistics and Experimental Design******3 Credit Hours***

This course is the application of statistical information as it relates to the interpretation of economic, marketing, and agricultural research data. It introduces students to the principles of designing experiments as well as the various applied experimental designs used in agriculture. Students are exposed to methods of data collection, analysis, and provide statistical interpretation of the results.

AGR 221-222-***Practicum III-IV******1 Credit Hour each***

The course is designed for a hands-on practical experience that enhances the students' capacity and capability to appreciate the various disciplines in the field of agriculture.

AGR 301***Entrepreneurial & Micro Enterprise******3 Credit Hours***

This course is designed for exposure and training in business ideas generation and entrepreneurship. Fundamentals that deal with functions of entrepreneurial awareness, business start up process, and the requisite principles involved in sustaining an enterprise system and functions of business planning are presented.

AGR 304***Extension Education*****3 Credit Hours**

The course discusses the history and philosophy of agricultural extension and extension education. The major areas of emphasis include the historical development of agricultural education, the concepts and approaches and methods of extension communication in agriculture and national extension service review.

AGR 305***Plant Science*****3 Credit Hours**

This is a course that deals with the fundamental structure, metabolism, taxonomy, growth and development, reproduction and ecology of plants. It also deals with the manipulation, dynamics, biotechnology and the development of new characteristics in plants.

AGR 306***Agricultural Genetics*****3 Credit Hours*****Pre-Requisite: BIO101***

The course is designed to discuss and teach the concepts, principles, and techniques of agricultural genetics. It discusses the mechanisms of heredity and variation, cytogenetic, mutation, nature of genes, population genetics and evolutionary genetics as well as biometrical procedures. Students are made to understand the basic principles underlying heredity and variation; the nature, expression, and regulation of genes in the individual; the mechanisms of genetic transmissions; the source of variation in individuals and population; and the behavior of genes in populations.

AGR 307***Rubber Production and Management*****3 Credit Hours**

The course focuses on the morphology and anatomy of rubber tree, tree improvement, and selection of planting materials, pre-planting operations, nursery establishment, and agro-climatic requirements. It also emphasizes in fertilizer recommendation, crop management, pests and disease control, beekeeping, tapping, physiology of flow and yield stimulation, modern techniques of tapping, and primary processing of the crop and rubber wood processing.

AGR 308***Agriculture and Climate Change*****3 Credit Hours**

The course focuses on the direct impact of climate change on the development of sustainable agricultural farming. West Africa is one of the areas of primary study.

AGR 309***Lowland/Upland Rice Production and Management******3 Credit Hours***

The course focuses on the fundamental cultivation practices of rice production and management from seed selection to postharvest technology. The stages of growth pattern and processes of management of rice under lowland and upland conditions are also studied.

AGR 312***Plant Physiology******3 Credit Hours***

The course provides knowledge of plant cells and tissues. It deals with the plant's digestive system, circulatory system, respiratory and urinary systems and its role in excretion of toxins, nervous system and endocrine and lymphatic system.

AGR 317***Animal Physiology******3 Credit Hours***

The course provides knowledge of animal cells and tissues. It deals with the animals' digestive system, circulatory system, respiratory and urinary systems and its role in excretion of toxins, nervous system and endocrine and lymphatic system. It also deals with rumination and milk production, muscles and fat formation, hair, wool and fibers formation, physiology and metabolism physiology of reproduction and other vital functions

AGR 318***Cattle and Small Ruminants******3 Credit Hours***

The course is designed to study the history of domestication of cattle and small ruminants. It deals with their taxonomy, genetics and breeding, digestion, feeding, housing, management, behavior, meat and milk and their production, and by products marketing. It also provides knowledge in herd health and diseases prevention and control, with special reference to the cattle in Liberia.

AGR 321-322***Seminar II-III******1 Credit Hour each***

This is an opportunity for Participatory Technology/Project Development and Hands-on experience in and out campus exposing students to appropriate discovery-based learning exercises for sustained production.

AGR 323***Introduction to Soil Science******3 Credit Hours******Pre-Requisites: Chemistry 102, and AGR101***

The course covers fundamentals of geology, the earth's crust and soil formation as influenced by the processes of weathering, with special emphasis on the soil as an important natural resource for food production. Students in this class are further exposed to learn about the simple soil profile with the view of understanding and identifying the main properties of soils. A fundamental soil survey and classification procedures for sustained land use and the major soil classification categories are learnt. Hands-on practical to enhance a proper understanding of the theories is required.

AGR 341***Introduction to Animal Science******3 Credit Hours***

The course is an introduction to different breeds and different species of livestock and farm animals and poultry. It studies the role of the advanced genetics and genetic engineering in production of improved and productive breeds. It investigates the breeding system used in the local, regional, national and international as a way to improve the local system to increase the productivity of the animals and poultry which includes study of artificial insemination and embryo transfer.

AGR 351***Introduction to Forestry******3 Credit Hours***

The course introduces the science and practices of managing the natural resources that occur on and in association with forest lands for human benefits. These involve managing trees, wildlife, water system and aquatic life. It also involves the principle of conservation of the forest biodiversity which have diverse benefits in many ways.

AGR 352***Post Harvest Management & Technology******3 Credit Hours******Pre-Requisite: BIO 101, and Crop Science; Crop Protection***

This course deals with the handling and storage of agricultural crops and the science and technology to improve preservation. It discusses appropriate technology to understand the underlying processes contributing to food deterioration and spoilage, and to device appropriate measures and methods of preservation in order to ensure availability, acceptability, and safety of foods.

AGR 413***Plant Nutrition******3 Credit Hours******Pre-Requisite: Chemistry 102***

This course focuses on the chemical elements and compounds that are necessary for plant growth, and also of their external supply and internal metabolism. The course deals on the important elements required by plants; how those elements become available in the soil; and how plants take those elements up from the soil.

AGR 416***Feeds and Feeding******3 Credit Hours***

The course focuses on the different types of feeds for animals. It emphasizes on the composition of feeds and the various nutrients. It also deals with the analysis and percentage of each class of nutrient.

AGR 417***Animal Science (Fish)******3 Credit Hours***

This deals with history of fishing and fisheries, taxonomy, genetics and breeding, digestion, feeding, aquarium and fisheries, management, behavior, fish meat and its production, and by products. It also deals with marketing, health and diseases prevention and control, with special reference to fish and fisheries in Liberia.

AGR 418***Animal Science (Swine)******3 Credit Hours***

This course deals with history of domesticating swine/hog. It deals with the taxonomy, genetics and breeding, digestion, feeding, housing, management, behavior, meat production. It also deals with by products marketing, herd health and diseases prevention and control with special reference to swine in Liberia.

AGR 419***Animal Science (Poultry)******3 Credit Hours***

This deals with history of domesticating poultry animals. It deals with the taxonomy, genetics and breeding, digestion, feeding, housing, management, behavior, meat and egg production. It also deals with the by product marketing, herd health and diseases prevention and control, with special reference to poultry in Liberia

AGR 421***Seminar III******1 Credit Hour***

This course provides opportunity for Participatory Technology/Project Development and Hands-on experience in and out campus exposing students to appropriate discovery-based learning exercises for sustained production.

AGR 423***Basic Horticulture******3 Credit Hours***

This course deals with the preparation, management, and treatment principles required to develop horticultural plants. It is an in-depth study of land preparation and development; and the type of intensive skills and techniques needed to produce desirable plants. Students are provided the opportunity to develop the requisite knowledge to undertake horticultural practices.

AGR 425***Internship******3 Credit Hours***

This course is intended for a semester on- the- job training in an agricultural field or institution off site.

AGR 426***Senior Research Project******4 Credit Hours***

This course deals with organization and techniques for the oral presentation of research information. This requires individual investigation in specific areas of entomology, plant pathology or plant physiology.

AGR 428***Animal Production and Management******3 Credits***

This is designed to study the role of livestock in the national economy. It includes study of livestock breeds and distribution in West Africa; livestock management systems including feeding, housing, rearing etc; introduction to animal breeding, element of climate and effect of climate on animal production, and introduction to animal health and diseases. The course also deals with livestock products and by-products; record keeping on livestock farms; common animal husbandry terminologies; livestock species and breeds, common livestock parasites; and livestock products and by products.

AGR 434***Cassava Production Management and Processing******3 Credit Hours***

The course aims to enhance the improved cultural practices and management of cassava cultivation. It deals with the different pests and diseases of cassava and their control; proper postharvest technology, handling, primary processing, and storage.

AGR 452***Plant Pathology & Weed Science******3 Credit Hours******Pre-requisite: Biology 101, Chemistry 102***

This is the study of the causes and methods of prevention and treatment of diseases in plants. It deals with principles of weed science with emphasis on characteristics of

invasive plants; methods of integrated weed management; current issues impacting weed management; and identification of local weeds.

AGR 453

Plant Entomology & Pest Management

3 Credit Hours

Pre-requisites: BIO 102

This course is designed to examine factors affecting biology and ecology. It deals with population evaluations, and control of insect, disease, and weed pests with an emphasis on integrating management practices. It includes identification and life cycles of insects of economic significance, their relationship to humans and agriculture including biological interactions and controls

AGR 454

Tropical Food Crops

3 Credit Hours

Pre-requisite: AGR 453

This course examines in detail selected tropical food, fiber and feed crops and the environmental and cropping/farming systems contexts in which they are produced. The course also considers strategies for crop and production system improvement, tropical farming systems, tropical climate, and tropical soils.

AGR 455

Tropical Tree Crops

3 Credit Hours

Pre-Requisite: AGR 301 and AGR 412

The foci of the study are on plants that are grown, managed, harvested and sold for cash rather than for sustenance. They are grown for grains, fruits, flowers, foliage, stems, roots, latex or any plant organ which may be consumed or utilized directly or processed into finished products. It deals with crops grown in the tropics.

AGR 461

Soil Management & Fertilization

3 Credit Hours

Pre-Requisites: AGR 323 and Botany/Plant Nutrition.

This course teaches the elements of effective soil management for economical food production with strong emphasis on environmental concerns. The course covers the soil macro- and micro- elements required in plant nutrition including the basic soil-plant relationships. Students are exposed to simple soil fertility evaluations including the fundamentals of fertilizer applications and the economic use of chemical fertilizers with effective soil and water management practices. Hands-on practical to enhance a proper understanding of the theories is required.

AGR 462***Soil & Water Conservations******Pre-Requisites: Physics 101 and Fundamentals of Agricultural Engineering***

This course is designed to expose students to the basic principles of Soil and Water Management including the general concepts of soils-water-environment complex and the various soil types. This covers a broad overview of soil water and soil water retention with a broad introduction to Hydrologic cycle and soil water movements and management. Students are taught the fundamentals of Irrigation and Drainage practices for increased food production. Experimental and Practical classes including field trips are organized for students to learn by doing.

AGR 463***Soil Chemistry******3 Credit Hours******Pre-Requisites: AGR 323 & CHEM 102***

Students are instructed on an in-depth review of the soil properties with particular emphasis on the chemical properties of soils and soil water relations. The colloidal nature of soils and their tendency for cation and anion exchange are taught, including the importance of the soil cation and salinity as well as the solvency of soil water and water relations with regards to the movement of soil nutrients and their subsequent absorption by plant roots. The course also covers exchange capacity for plant nutrient uptake and details of soil alkalinity and acidity.

AGR 464***Comparative Soil Ecosystem Analysis******3 Credit Hours******Pre-Requisites: AGR 463***

The course covers the broad relationship between the soil environment and the soil living organisms with their beneficial effects on agriculture. It also deals with the factors that promote the growth, and control the size of soil communities including the interactions of the various species within the soil ecosystem as influenced by the energy flow as well as the biotic and abiotic factors that make up the ecosystem – especially focusing on how these affect agricultural production. Students are provided the opportunity to study selected ecosystems around their immediate surroundings and communities in order to observe the changes in the ecosystems.

AGR 465***Soil & Climate Change******3 Credit Hours******Pre-Requisites: AGR 463***

This course is designed for a broad introduction to the importance of climate and its effects on the lives of people with particular emphasis on the types of agricultural activities engaged in. Students are exposed to the factors that contribute to the differences in climatic patterns in Liberia, in West Africa

AGR 466***Soil Survey******3 Credit Hours******Pre-Requisite: Math 102 & Physics***

The course introduces students to the principles of soil survey, classification, and land use based on their morphology, genesis and properties. It includes the study of land resources data and information; their interpretation and application for land use, design and planning and environmental assessment. It deals with the basic field note keeping, use of steel tapes, automatic levels, total stations, and survey tools. It provides the opportunity for the students to be trained in the procedures for differential and profile leveling; angle measurement and traversing. It also provides opportunities to determine direction, elevations, and earthwork volumes and to practice map reading and building layout as it relates to the development of land for agricultural purposes. Hands-on experience on the use of GPS for surveying is required.

AGR 468***Animal Health & Disease Control******3 Credit Hours***

This course is a study of the sanitary conditions of housing equipment and utensils, disinfectants and decontaminants, disinfection of air and water and all equipment. It includes the study of the most common diseases of small and large domestic animals such as pigs and poultry. The course also deals with the prevention, symptoms, handling and control of animal diseases.

COLLEGE OF ARTS AND SCIENCES

The College of Arts and Sciences is the University's welcoming and service college to the various colleges in the University. It offers the 52 credit hours of general education that each student must complete before they can proceed to their professional courses. It also offers several four-year-degree programs in the arts and sciences to include: *Bachelor of Science in Environmental Studies, Bachelor of Science in Biology, Bachelor of Arts in Psychology, Bachelor of Arts in English, and Bachelor of Arts in Performing Arts*

Vision

The College aspires to be the center of excellence in teaching, advising, research, and community service.

Mission

It aims to expose students to quality experiential and service learning in order to transform them not only to have worthy and meaningful lives but to become productive and efficient leaders of the society.

General Education

It is mandatory for every student to successfully complete the required 52 general education credits of the university.

Table of Approved General Education Courses

FRESHMAN SEMESTER 1			FRESHMAN SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENGL 101	Grammar and Phonetics	3	ENGL 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry & Trigonometry	3
BIO 101	General Biology	4	CHEM 101 or PHY 101	Principles of Chemistry Introduction to Physics	4
PSY 101	Introduction to Psychology	3	PHIL 101 SSC 101 SOCI101	Introduction to Philosophy or Liberian Society, Issues and Problems Introduction to Sociology	3
CSE 101	Introduction to Computers	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
TOTAL		17			17

SOPHOMORE SEMESTER 1			SOPHOMORE SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENGL 201	Technical Communication and Public Speaking	3	ENGL 204	Introduction to Literature	3
EVS 201	Intro to Environmental Science	3	FRE 102 GLE 102 CHN102	Intermediate French Advanced Glebo Advanced Chinese	3
FRE 101 GLE 101 CHN101	Introduction to French Introduction to Glebo Introduction to Chinese	3	HIST101 HIST102	Liberian History and Society or World History	3
TOTAL		12			6
GRAND TOTAL					52

**Qualifying exam must be passed for student to pursue junior year courses*

ENGL 101

Grammar and Phonetics:

3 Credit Hours

This course has two parts: The first examines various grammatical structures and their usage in the English language. The second introduces students to the principles of phonetics description and taxonomy, employing practical exercises to explore the scope of phonetics & phonology, phoneme theory, classification and description of sounds, phonological processes, among others. The aim is expose students to different phrase, clause, sentence types and their syntactic functions.

MATH101

College Algebra

3 Credit Hours

This course is designed to help students develop the skills necessary for higher mathematics courses. Topics include: Real Number System, Polynomials, Laws of Exponents, Radicals, Linear Equations, Inequalities, Quadratic Equations, Functions, Linear Equations, Matrices, Determinants, Sequences and Series. A review of the operations of Polynomial, Fractions and Radicals and Special Products and Factoring is also included. The aim is twofold: to foster appreciation of the logical structure of mathematics and to help students think critically and analytically about mathematics.

BIO 101

General Biology

4 Credit Hours

Biology 101 explores the fundamental characteristics of living matter from the molecular level to the ecological community. It focuses on atomic and cellular structure of biologically important atoms and molecules, prokaryotic, and eukaryotic cells, metabolism of living systems, genetic inheritance and the molecules involved in the

process of the transmission of genetic information, the diversity of all living organisms, and their taxonomic classifications.

CHEM 101

Principles of Chemistry

4 Credit Hours

This is an introductory course designed for all students across colleges. Topics include: measurement, matter and energy, problem solving, atomic structure, writing and naming chemical formulas, chemical reaction and equations. The laboratory component seeks to reinforce the basic principles discussed in the lectures.

PHY 101

Introduction to Physics

3 Credit Hours

Physics I is a first-year physics course introducing students to classical mechanics. Topics include: space and time; straight-line kinematics; motion in a plane; forces and equilibrium; experimental basis of Newton's laws; particle dynamics; universal gravitation; collisions and conservation laws; work and potential energy; vibrational motion; conservative forces; inertial forces and non-inertial frames; central force motions; rigid bodies and rotational dynamics.

HIST 101

Liberian History and Geography

3 Credit Hours

This course is designed to give first year students an in-depth look at the major themes and events in Liberian history and historiography. It examines the time period from the early population migration during the 15th century through the colonial and independence eras until the end of the cold War and the beginning of the Civil War in 1990. The course focuses on inter-sectoral cooperation, conflict resolution within the written record over time as well as Liberia's place within regional and world history. It presents a survey of Liberian history past to present. It traces the development and growth of Liberia's political system, major institutions, and its role in African and world affairs. It also explores the social, cultural, religious and major events that shaped how the people live today. Students are provided the opportunity to learn to critically discuss the relevance of these issues.

SSC101

Liberian Society, Issues and Problems

3 Credit Hours

This course examines the history of Liberia's political system, county structure, and current issues and trends that are evolving in the Liberian society. It also explores questions about marriage, the family, employment, leadership, war and justice. Students will learn to critically evaluate the relevance of these issues to their individual situations.

SOC 101***Introduction to Sociology******3 Credit Hours***

This course engages students into in-depth discussions on major social theories that are employed in social research, counseling, and other modes of human and social services. In this light, students encounter issues and problems that are multifarious within the Liberian context. Topics covered include issues and problems that are economic, cultural, political, ecological, anthropological, psychological, legal and ethical in scope.

PHIL 101***Introduction to Philosophy******3Credit Hours***

This course introduces students to philosophy, its major themes and some key individuals in ancient, medieval, modern, and contemporary philosophy. Topics include the nature of knowledge, (epistemology), the nature of the things (metaphysics), the nature of right and wrong (ethics), the mind/body problem, free will, atheism and the existence of God. The aim is to help students develop and use their reflective and critical abilities to ask and answer important questions.

PSY 101***Introduction to Psychology******3 Credit Hours***

This course is a general survey of the history, principles, and methods employed in the study of human behavior, including mental processes. The aim is to examine the role and significance of the scientific method in the study of human behavior.

PED 101***Physical Fitness and Wellness I******1 Credit Hour***

This course explores issues concerning the mental, social, physical and moral development of students. It covers fundamental activities in team sports (soccer, volleyball, basketball and athletics). The aim is to promote physical fitness, wellness and self-testing activities.

CSE 101***Introduction to Computers******3 Credit Hours***

This is a first course in computer. It is an overview of computer hardware, software, systems and applications. It also explores terminology and other major concepts in computer. The aim is to introduce students to computers and computer science.

SEMESTER II-FRESHMAN

ENG 102

Academic Reading and Writing.

3 Credit Hours

Pre-Requisite: ENG 101

This course covers the theory of reading and writing as important skills in academic learning. It exposes students to the different types of reading and writing theories (descriptive, expository, argumentative, etc.). In addition, it explores proofreading techniques, vocabulary development, styles and registers appropriate for different forms of academic writings including jotting, note-taking, report, memo, book reviews, laboratory experiments report, etc. The aim is to show that reading, writing and learning are interconnected and inseparable.

MATH102

Analytical Geometry & Trigonometry

3 Credit Hours

Pre-Requisite: Math 101

This course examines how mathematics is applied in the real world. It also gives students a background in mathematics and other physical sciences. It covers trigonometric and circular functions, logarithms, identities, equations, and solution of right triangles. The aim is to create in the students an appreciation of the logical structure of mathematics.

PED 102

Physical Fitness and Wellness II

1 Credit Hour

Pre-Requisite: PED 101

This course is an intensive and practical continuation of PED 101. It focuses on physical fitness, wellness and self-testing activities. The aim is to promote wellness and team sports (soccer, volleyball, basketball and athletics) as important human values and enterprises.

HIST 102

World History and Western Civilization

3 Credit Hours

This course is designed to give first year students an in-depth look at the major themes and events in World History. It covers important events, including the development of Western, African, and classical Chinese and Indian civilizations while focusing on the role of religion, technology, and global ideologies of the last three thousand years of human history.

CSE 102

Computer Literacy

3 Credit Hours

Pre-Requisite: CSE101

This advanced course introduces students to Word, Excel, PowerPoint, Access, Publisher and World Wide Web. It also provides an overview of Microsoft Office and its

significance to modern technology. The aim is to help students develop skills in using the internet and creating different documents in Microsoft Office.

SEMESTER I- SOPHOMORE

ENG 201

Technical Communication and Public Speaking

3 Credit Hours

Pre-Requisite: ENG 101

This course makes use of lectures and workshops to help students develop written and oral communication skills for preparing and presenting technical and other specialized reports. It covers basic composition skills, communication graphics, résumé preparation as well as for preparing and critiquing reports, business correspondence, research strategies and methodologies, research proposals, collaborative work and oral presentations.

EVS 201

Introduction to Environmental Science.

3 Credit Hours

Pre-Requisite: CHEM 101 or BIO 101

This is a course that provides overview of the world to foster environmental awareness of population, resources and environmental degradation. Topics of environmental health with sources, routes, media, and health outcomes associated with biological, chemical and physical agents in the environment are discussed. It includes study of the effects of agents on disease, water quality, air quality, food safety, and land resources, current legal frameworks, and policies associated with environmental issues. The course enhances students' responsibility as agents of change.

FREN 101

Introduction to French

3 Credit Hours

This course introduces students to the fundamentals of the French language. It is designed for beginners, especially those lacking familiarity with the French language. The pedagogy gives special attention to speaking, reading, writing, grammar and comprehension. The aim is to help students gain basic familiarity and proficiency in the French language.

GLE 101

Introduction to Glebo

3 Credit Hours

Glebo 101 introduces students to basic structures of the Glebo language. The aim is to help students develop interest and appreciation of the Glebo language and culture. It helps in achieving written and oral proficiency in Glebo.

CHN 101***Introduction to Chinese******3 Credit Hours***

Chinese 101 is a course of elementary Mandarin for non-native Chinese speakers. It aims at developing elementary communicative skills and knowledge of Mandarin and Chinese culture. The course emphasizes Chinese phonological system, the basic conversational topics, vocabulary and grammar. It also teaches the reading and writing of Chinese characters. In the end, students will acquire basic proficiency based on the American Council on Teaching Foreign Languages (ACTFL) proficiency guidelines.

SEMESTER II – SOPHOMORE***Course Code: ENG 204******Course Title: Introduction to Literature******Pre-Requisite : ENGL 101******3 Credit Hours***

The course is divided into two: Part One covers the fundamentals of literature and literary genres. The focus is on defining literary terms, types/genres, the use of language and the devices of language, plot, setting, narrative techniques, character and characterization. Part Two examines each of the genres, poetry, prose and drama. In general, the course studies at least one classic from Shakespeare. The course also focuses on each genre of Literature by examining relevant African and non-African works of art.

FREN 102***Intermediate French******3 Credit Hours******Pre-Requisite: FRE 101***

This course is a continuation and expansion of some of the key grammatical structures, vocabulary, and expressions from French 101. It is designed to improve students' French language proficiency in speaking, reading, and writing with emphasis on oral proficiency. The aim is to advance greater familiarity and knowledge of the French language.

GLE 102***Advanced Glebo******3 Credit Hours******Pre-Requisite: GLE 101***

This is a continuation of Glebo 101. The aim is to help students acquire greater flexibility not only in speaking but also in appreciating the cultural nuances of the Glebo language.

CHN 102***Advanced Chinese******Pre-Requisite: CHN 101******3 Credit Hours***

CHN 102 is a continuation of CHN 101. The four skills of listening, speaking, reading, and writing in Standard Mandarin Chinese are further developed. Students are expected

to gain these four skills, attaining approximately the Intermediate-Low level on the ACTFL-ETS proficiency scale.

Bachelor of Arts in Psychology

This degree is designed to adequately prepare students for graduate work in psychology and other advanced liberal arts and social sciences degrees. It provides a pathway for students wanting to become school counsellors, mental health specialists, and prepares them for professional schools like law, international/foreign service, advanced nursing and public health, medicine/dentistry, and divinity. As such, psychology graduates will develop the ability to conduct, interpret and apply psychological research. Moreover, the courses selected will accord them a comparative advantage to compete nationally and globally. This will enhance not only the students' capacity to engage in the global academic community of science, widen their options for employment or admission to graduate and professional schools but, comprehensively, empower them to make a contribution toward the fulfillment of the purpose for which psychology as a discipline came into being. That purpose was and remains the enhancement of human welfare plus transformative participation in national development. Business, industry and government want a stress-free environment. And so, they often rely on psychology graduates to help make that happen. Similarly, a vast segment of modern criminology relies heavily upon psychology in areas like forensics, physiognomy/identity, cognition, perception, and information processing. Business, education, and nursing students will find a psychology minor to be useful to their future careers

Learning Objectives:

The program aims to:

- Develop students' knowledge and skills in the social sciences
- Develop professional capacity in the health, educational, business and governmental sectors, and
- Be distinguished nationally and internationally through teaching and research activities

Learning Outcomes

Upon completion of the program, the graduate is expected to

- Demonstrate ability to apply critical thinking and problem-solving skills to address local and international challenges in mental health, school counselling, community psychology and other orbits of psychology, to the extent possible/required to include quantitative and qualitative reasoning and research skills, including accessing information from a variety of sources and media;
- Demonstrate ability to read, analyze, organize, and synthesize data interpretations connected to theoretical paradigms in all the major facets of psychology;

- Demonstrate ability to appreciate and thoroughly understand all the major perspectives, theoretical foundations, innovations, paradigms, paradigm shifts, and theorists associated with the discipline of psychology;
- Appreciate the scientific knowledge and skills in psychology that are requisites for enhancing active participation and social transformation;
- Communicate psychology reports professionally;
- Demonstrate his/her knowledge and training for careers and further academic development in psychology or related areas.

Program Objectives:

The Program in Psychology strongly endeavors to:

- Prepare students to earn a BSc in Psychology;
- Prepare graduates for professional careers or further education in graduate psychology studies;
- Ensure graduates' proficiency and competence in the discipline of psychology;
- Produce graduates who will pursue professional development;
- Emphasize leadership, critical thinking and problem-solving skills, and technologically innovative methods to facilitate the learning process, while impelling the students to engage in personal and professional development for lifelong learning.

Core Competencies:

Upon completion of the Program, the graduates will attain the:

- Competency in knowledge and skills required for psychology and other social sciences related education careers;
- Ability to become aware of different perspectives emanating from culturally diverse populations and the ability to effectively communicate with such diverse audiences;
- Competency in the use and application of advanced analytical tools in psychology via technology.
- Basic understanding of psychological principles, and

- Application of critical thinking and problem solving in order to enhance their understanding of all the fundamentals and depth principles of psychology;

Career Options for Graduates

Upon completion of the program, graduates will have the option to become Human Resource Coordinator, School Counsellor, Foreign Service Officer, Mental Health Specialist, Legislative Assistant, Political Consultant, Community Service/Development Advocate, and Marketing/Advertising Executive/Consultant.

Entry Requirements

After completing the General Education requirements at William V.S. Tubman University, students applying for admission into the Psychology Program must meet the minimum admission requirement of 3.00 Grade Point Average.

Duration of Study

The curriculum is structured for a four-year period with emphasis on class lectures, labs/practicum, and internships. During the first two years of study, students will be diligently guided and advised by a special academic team of the Psychology Program.

Basic Criteria for the Psychology Major

The Psychology Major will consist of 48 credit units taken within the discipline following the completion of the general education requirements (56 credit units). Because of the interdisciplinary nature of the field and the need to develop a background in basic science and relevant social sciences, such as sociology, the health and biological sciences, anthropology and education, the total number of courses required for the degree is 125.

The number of courses required would allow majors to take a broad selection of psychology courses and electives as well as to develop the area of concentration in one of 3 units. Students would be encouraged to participate in its research activities, including laboratory courses and independent study experiences. Three lab/applied experiences are required.

Students planning to major in psychology are advised to secure a background in the basic sciences and relevant social sciences, preferably before their junior year.

Areas of Concentration

Areas are drawn from both required and elective courses to provide a framework for a specific sub-discipline. To complete an area of concentration, majors should be sure to take all of the courses listed for the particular area. It is recommended that courses from other fields be interspersed with psychology courses early, preferably in the sophomore year.

Concentrations

1. Industrial/ Organizational Psychology
 - Social Psychology
 - Community Psychology
 - Industrial/Organizational Psychology
 - Tests and Measurements
 - Relevant Management College Courses
2. Community Psychology and Advocacy
 - Social Psychology
 - Community Psychology
 - Psychology of Peace and Violence
 - Relevant Anthropology and Sociology Courses
 - Political Psychology
 - International/Ecological Psychology
3. Individual/ Clinical Psychology
 - Developmental Psychology
 - Theories of Personality
 - Abnormal Psychology
 - Clinical Psychology
 - Psychology of Addiction
 - Relevant Counselling and Guidance Courses

Bachelor of Arts in Psychology

Freshman Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	English Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY 101	Intro to Psychology	3	PHI 102	Intro to Philosophy	3
CSE 101	Introduction to Computers	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
Total		17	Total		17

Sophomore Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 103/ AGR 205	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
SOC 101	Introduction Sociology	3	FRE/ GRE/ CHI102	Advanced French/ Grebo /Chinese	3
FRE/ GLE/ CHI101	French/ Grebo/ Chinese	3	PSY 102	Developmental Psychology	3
HIST 102	World History	3	PSY 104	Statistics with Laboratory	3
EVS 201	Introduction to Environmental Science	3	PSY 106	Psychology of Peace and Violence	3
PSY 103	Psychology of Human Diversity	3	PSY 108	Research Methodology and Critical Issues in Psychology	3
Total		18	Total		21

Third Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
PSY 205	Psychology of Religion and Spirituality	3	PSY 306	Biological Basis of Psychology	3
PSY 305	Learning, Motivation, and Cognition	3	PSY 308	Psychology of Language	3
PSY 307	Sensation and Perception	3	PSY 309	Psychology of Language Lab	1
PSY 311	Introduction to Industrial/Organizational Psychology	3	PSY 310	Theories of Personality within Collectivist Cultural Context	3
PSY 313	Community Psychology and Advocacy within the Liberian and African Context	4	PSY 312	Social Psychology and Its Application to Contemporary Social Problems	3
PSY 315	Introduction to Clinical Psychology	3	PSY 314	Abnormal Psychology	3
Total		19	Total		16

Fourth Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
PSY 415	Environmental Psychology	3	PSY 316	Cognitive and Emotional Aspects of Child Development	3
PSY 417	Neuropsychology	3	PSY 416	Health Psychology	3
PSY 419	Psychology of Gender	3	PSY 418	Psychology of Human Sexuality	3
PSY 421	Tests and Measurements	3	PSY 420	Political Psychology	3
PSY 423	History and Systems of Psychology	3	PSY 422	Psychology of Addiction	3
Total		15	Total		15

Course Descriptions

PSY 102

Developmental Psychology

3 Credit Hours

Pre-Requisite: PSY 101

This course is designed to provide students with an in-depth understanding of developmental psychology as a field of scientific inquiry that focuses on physical, emotional and social, and cognitive development. Over the semester students will be introduced to contemporary & classic thinkers within each of the major subdivision of developmental psychology like Sigmund Freud, Erik Erikson, John B Watson, Albert Bandura, Jean Piaget, Lev Vygotsky, Lawrence Kohlberg, Jim Fowler, Jean Rousseau, John Locke, and others. The theories will be examined & learners will be asked to think critically about the concepts being presented. Special emphasis will be placed on learning the basic principles & techniques of the scientific method. Students will demonstrate their understanding of these theories & principles through writing assignments, participation in class discussions & test responses.

PSY 103

The Psychology of Human Diversity (Understanding Difference and Reversing Prejudice, Stereotyping, & Marginalization):

3 Credit Hours

Pre-Requisites: PSY 101 & PSY 102

This course will cover historical and contemporary scientific approaches to understanding prejudice across different cultures, ethnicities, and other group identities (e.g. religious prejudice, gender bias, etc.) within the cultural contexts of Liberia and the continent of Africa. Topics will include intergroup relations, the origins, manifestations, and justification of biased behavior and prejudice, the impact of prejudice on victims and the types and effectiveness of prejudice reduction strategies. The role psychology has played in understanding the experience of diverse groups will be described. The historical contexts of inter-group conflict within Liberia will be examined from a psychological perspective. This course will employ strategies to enhance the self-awareness of participants so that they may explore their own attitudes and biases and increase acceptance of diversity.

PSY 104

Statistics and Statistics Lab

3 Credit Hours

Pre-Requisites: Computer I & II and PSY 101

The tools of evaluating data from psychological studies and learning to conduct statistical tests on one's own data will be taught. Students will gain familiarity with data description, significance tests, confidence intervals, linear regression, analysis of variance, and related topics. Students will learn to analyze psychological data with both handheld calculators and computer software, and learn to interpret the results from randomized experiments and correlational studies.

PSY 106***Psychology of Peace and Violence*****3 Credit Hours*****Pre-Requisite: PSY 101***

This course will explore the psychology of violence from experiences in families and intimate partners to community violence sustained in war and genocide. The cognitive and emotional psychological processes that are involved and group relations and conflicts will be examined. Direct forms of interpersonal and intergroup group violence will be explored as will structural inequities and oppression that create the conditions for violence. One goal of the class is to use this knowledge to prevent and resolve violent conflicts and establish strategies for cooperation and peaceful resolution. Peace- Making strategies, aimed at resolving conflict and Peace Building aimed at reducing structural and systemic violence will be examined.

PSY 108***Research Methodology and Critical Issues in Psychology*****3 Credit Hours*****Pre-Requisite: PSY 101***

This course provides an analysis of the principles underlying the discipline of psychology and facilitates insights into alternatives to western psychological perspectives, such as those derived from sub-Saharan Africa. Research methodologies and strategies are examined and compared in order to prevent the unqualified adoption of mainstream principles and methodologies. An overview will be presented of the scientific process and research design from the development of a hypothesis, the design of a study, to the statistical analysis of data, and the interpretation of results. Research ethics and the history of exploitative research methods are presented along with methods that seek to empower and involve research participants, such as Action Research and Community Psychology methods. The application and development of psychological knowledge in developing nations and the need to strive for a balance or integration between purely western psychology and indigenous psychology will be a key factor of the class.

PSY 205***Psychology of Religion and Spirituality*****3 Credit Hours*****Pre-Requisite: PSY 101***

This course enables an in-depth discussion of the major issues, theories and approaches to the psychology of religion through critical analysis of major texts within a variety of religious traditions. In so doing, it provides some explication of religion as a powerful medium that impacts individuals, cultures, and traditions. Students are expected to extrapolate from Otto's *The Idea of the Holy*, Geertz's *Interpretation of Culture*, Freud's *Civilization and Its Discontent*, and Gilligan's *In a Different Voice*

PSY 305***Learning, Motivation and Cognition******3 Credit Hours******Pre-Requisites: PSY 101 & PSY 206***

This study critically examines the literature on learning as a relatively permanent change in behavior predicated on experience. It looks at major theories of learning, such as *Observational Learning*, *Classical Conditioning*, and *Social Learning*. The course then progresses into the mode of understanding motivation as an inferred process within a person that causes movement either toward a goal or away from an unpleasant situation. The discussion also entails *intrinsic and Extrinsic Motivations*, and how Maslow's *Pyramid of Needs* is also central to motivation. Lastly, the course encompasses the mental processes in the cognitive architecture that entail attention, memory, language processing, reasoning and problem solving, cognitive development, and social cognition. Also, very critical to this learning trajectory, is Fetsinger's *Cognitive Dissonance* theory.

PSY 306***Biological Basis of Psychology******3 Credit Hours******Pre-Requisites: BIO 101, BIO 102 and PSY 101***

Fundamentally, this course looks at the biology of learning and the development and plasticity of the brain. In so doing, it examines the relationships between the brain and behavior. It explores the biological basis of behavior, learning, memory, language, and thinking, as well as disorders that arise from nervous system malfunctioning, mood disorders and schizophrenia.

PSY 307***Sensation and Perception******3 Credit Hours******Pre-Requisite: PSY 101***

This course is about Sensation and Perception and how these two are the complimentary portals between the external world and internal mental life. The course will explore the relationship between the roles and how we interpret our world. It will also describe various theories related to these two concepts and explain the important role they play in the field of psychology.

PSY 308***Psychology of Language******3 Credit Hours******Pre-Requisite: FRE or GLE or CHI and PSY 101***

This course draws the student's attention in understanding the production, perception, and acquisition of language at the level of sound (phonology), words (morphology and lexicon), and grammar (syntax).

PSY 309***Psychology of Language Laboratory******1 Credit Hour – 3 Contact Hours******Pre-Requisites: FRE or GLE or CHI and PSY 101***

This lab covers phonology and speech perception, morphology, lexical change and access, syntax and sentence processing, language acquisition, neuro-linguistics, genetics, and evolution of language.

PSY 310***Theories of Personality within Collectivist Cultural Context******3 Credit Hours******Pre-Requisite: Junior Standing***

This course critically examines major theories of personality as well as some research characteristics of each theoretical foundation. Theories will be critically evaluated and applied to case studies. Major African cultural contexts will be examined. Various topics include the nature of the unconscious, the role of the self, gender differences, the context of power, the nature of anxiety, and significance of love. Insights will be extrapolated from the paradigms of Karen Horney, Raymond Cattell, Hans Eysenck, Gordon Allport, John Watson, Albert Bandura, Sigmund Freud, Carl Jung, Carl Rogers, Abraham Maslow, Fritz Pearl, Albert Ellis, Aaron Beck, Frantz Fanon, and others.

PSY 311***Introduction to Industrial/Organizational Psychology******3 Credit Hours******Pre-Requisite: Junior Standing***

This is an introduction to psychological science as applied to the study of organizations and people at work. The course explores emotional intelligence and its usefulness in organizational human resources. Also examined, are three broad areas of individual and organizational functioning: personnel decision-making (such as job analysis and employee selection); personal work experiences (such as job attitudes and motivation); and work group/organizational issues (such as leadership and group/team dynamics). For each topic, the course examines how psychological research can be conducted and applied to understand and improve worker experiences and organizational functioning.

PSY 312***Social Psychology and Its Application to Contemporary Social Problems******3 Credit Hours******Pre-Requisite: PSY 101***

This course offers a broad introduction to social psychology. It is an overview of the interesting dynamics of how people's thoughts, feelings and actions are affected by others. Issues discussed include prejudice, conformity, interpersonal attraction and violence. The focus is on the scientific study of human social influence and interaction. Topics to be explored are the social self-concept, social judgment, attitudes, persuasion, conformity, aggression, helping behavior, prejudice, and interpersonal relationships.

PSY 313***Community Psychology and Advocacy within the Liberian and African Context******3 Credit Hours******Pre-Requisite; Junior Standing***

This is an in-depth study that critically examines the interplay of social and community forces and their impact on community development. Central to this study, are understanding the root causes of historical oppression, particularly, the marginalization and continuous dehumanization of many Liberian and other African women, the perplexity of the oppressed, the proclivity of corrupt elements of society, and the dexterity and courage of major community/feminist leaders who have put in place analytical tools or treatment modalities via the Ministries of Health and Gender in order to transcend these social problems and attain and sustain genuine liberation for all. Insights from the works of Karen Horney, Carol Gilligan, Toni Morrison, Alice Walker, Ellen Johnson Sirleaf, Elizabeth Davis Russell, Georg Hegel, Edward Wilmot Blyden, Frantz Fanon, and others will be employed.

PSY 314***Abnormal Psychology******3 Credit Hours******Pre-Requisite; Junior Standing***

This course is a critical examination of psychological disorders in history and in recent times. Clinical assessment, research, and diagnostic methods are discussed. The major categories of psychopathology in the DSM are reviewed including, but not limited to anxiety disorders, dissociative disorders, mood disorders, personality disorders, and schizophrenia. Special emphasis is placed on causes, diagnostic features, and current methods of treatment and prevention. Complexities of the diagnostic process will be highlighted. And psychological theories of etiology and treatment will be considered along with relevant research literature.

PSY 315***Introduction to Clinical Psychology******3 Credit Hours******Pre-Requisite: Junior Standing***

This course introduces the student to basic clinical approaches. In so doing, it focuses on clinical interviewing, intellectual and personality assessment, and the diagnosis and classification of psychopathology and theories. In this process, empirical and theoretical foundations of therapeutic interventions are examined. In this 3 hour lecture and 1 hour lab, major counseling and psychotherapeutic paradigms, such as Psychodynamic, Gestalt, Existential-Humanist (Person-Centered), Cognitive-behavioral, Rational Emotive, and Family and Couple will be explored.

PSY 316***Cognitive and Emotional Aspects of Child Development*****3 Credit Hours*****Pre-Requisite: PSY 101***

This course examines the development of emotional, conversational, physical, motor and social skills from infancy to adolescence. Included is research into child development concepts, such as nature versus nurture and plasticity. The course also touches on how children make and form friendships and other relationships and how social groups influence child development and how early influences affect later choices. Students examine the symptoms and causes of behavioral and emotional problems in young children. Learners will explore exceptional child psychology and review examples of children who demonstrate unusual or abnormal emotional, intellectual, educational or physical development.

PSY 415***Environmental Psychology*****3 Credit Hours*****Pre-Requisite: Senior Standing***

Environmental psychology came into existence because of a strong desire to understand the relationship between humanity and the ecosphere. As such, this course entails historical and theoretical overviews as well as contemporary analyses concerning people's engagements with the environment from the fields of anthropology, sociology, geography, urban planning, architecture, and psychology. Primarily, the course seeks to enhance consciousness and heighten humanity's sense of ecological responsibility and shape our environmental relationships in the larger historical, social, economic, and cultural context.

PSY 416***Health Psychology*****3 Credit Hours*****Pre-Requisite: Senior Standing***

This course examines the direct correlation between personality/behavior and health. It critically looks at stress, personality, and lifestyles as disease causes. It provides some tools to the learner as she or he seeks to modify high risk behavior, and subsequently cope with serious illness. The course spans across disciplines like biology, psychology, and sociology. In health psychology, the focus is to familiarize the learner as potential patient to the following; reality of illness perception and prevention, treatment and medical decision, medical education, intervention, outreach, stress and coping, and ultimately help her or him attain a good understanding of health behaviors.

PSY 417***Neuropsychology*****3 Credit Hours*****Pre-Requisite: Senior Standing***

This course will introduce several neurological disorders and employ them in our attempt to understand neural systems, subservient cognitive functions such as attention, language, and memory, and to gain insights on neural organization of these cognitive systems.

Intriguing and puzzling phenomena that follow disorders of the brain challenge us to understand how the brain is organized to allow for complex cognitive abilities specific to humans.

PSY 418

Psychology of Human Sexuality

3 Credit Hours

Pre-Requisite: Senior Standing

This is a comprehensive examination of psychological research and theories regarding human sexuality. This process encompasses the integration of psychology with sociological/cultural, biological, legal, and philosophical and spiritual perspectives. Additionally, the course enables students to understand the requisite criteria for the development of a healthy sexual lifestyle, such as values, awareness, and the ability to make responsible decisions about sexual behavior.

PSY 419

Psychology of Gender

3 Credit Hours

Pre-Requisite: Senior Standing

This course will enable a very vital analysis of psychological research on gender within the Liberian context. It will explore the root causes of gender asymmetry with respect to marginalization and dehumanization in Liberia. It will critically look at biological, psychological, and cultural determinants in sex differences in behavior. A major emphasis will entail sex differences and similarities in cognition, attitudes, personality, and sexual behavior and the causes of these differences and similarities. Major theoretical foundations emanating from the Feminist, Existential-Humanist, and other psychological paradigms will be employed in order to facilitate mental health and happiness and obliterate violence against women.

PSY 420

Political Psychology

3 Credit Hours

Pre-Requisite: Senior Standing

This is an interdisciplinary course that focuses on the interplay between personality and politics. It seeks to understand how politics, politicians, and political behavior are influenced by cognition, perception, motivation, information processing, learning strategies, socialization, and attitude formation. Political psychological theories and approaches are appropriated in order to understand ethnic conflicts, racist behavior, religious extremism/fundamentalism, group think/dynamics, war and genocide, peace strategy, and the call for global economic and social justice.

PSY 421***Tests and Measurements******3 Credit Hours******Pre-Requisite: Senior Standing***

This course is an introductory level examination of the principles of psychological measurement and evaluation. It entails the basic principles, research, and theories on testing and measurement. Also, it includes historical background, functions and uses of tests, norms, reliability, validity, and a brief survey of aptitude, intelligence, achievement, and personality tests. In so doing, it acquaints students with the theories and principles of psychological testing and measurement and some standardized tests of intelligence, personality, achievement, interest, neuropsychology and other areas. It emphasizes the principles by which tests are constructed and validated. Ultimately, it examines controversies regarding the valid, appropriate, and fair use of psychological tests.

PSY 422***Psychology of Addiction******3 Credit Hours******Pre-Requisite: Senior Standing***

The course helps learners in their quest to better appropriate knowledge pertaining to drug related health effects, health promotion, and disease prevention. In this thrust, it looks at the social and psychological effects of drug use and abuse, and drug control policies. This focus entails a vast area of therapeutic drugs, tobacco, caffeine, and alcohol, and illicit drugs like amphetamines, marijuana, and hallucinogens with additional focus on drugs liable for addiction and the progression from occasional use to addiction. It also emphasizes the direct correlation between alcohol and aging and the influence of the social environment on addiction. It critically looks at neurophysiological and behavioral manifestations of chronic alcoholism. And in so doing, it covers treatment efficacy and the basics of drug pharmacology including pharmacokinetics and pharmacodynamics. Special attention will be given to toxicology and addiction physiology. It covers specific youth populations and threats to children and adults posed by common therapeutic drugs like aspirin and prescription drugs and prevention and treatment strategies. Students will engage in self-assessment of personal drug use and potential health trajectories.

PSY 423***History and Systems of Psychology******3 Credit Hours******Pre-Requisite: Senior Standing***

This course is a comprehensive study of the history and various systems of psychology. It entails the historical roots of psychology from antiquity to the present. It examines both physiological/scientific and philosophical antecedents of modern psychology. The discussion entails major schools of thought in psychology like structuralism, functionalism, behaviorism, Gestalt, and psychoanalysis. Existential-humanist, feminist, and other critical theories of psychology are discussed in their historical and philosophical contexts. The course seeks to acquaint students with knowledge on how the intellectual and social forces throughout history have shaped the discipline of psychology.

ELECTIVES

PSY 212

Psychological Culture of Expressive Arts in Africa

3 Credit Hours

The purpose of this course is to explore the history of cultural expressive arts of African cultures and the psychological reasoning behind these arts: drama, dance, drum and art. The course will assess and interpret the relationship between the arts and the people and the various uses of the expressive arts in Africa over the years. Students will explore the uniqueness in varying cultures' expressive arts from African literary works and images and they will be analyzed for their representation of historical, economic and cultural factors.

PSY 317

Psychology of Oppression

3 Credit Hours

Paulo Freire writes, "The oppressed, instead of striving for liberation, tend themselves to become oppressors." This course will examine the psychology of the oppressor, reasons for oppression, and the passing down of oppression. Freire's *Pedagogy of the Oppressed* will be the primary text. However, other literary works on oppression such as Freud's *Civilization and Its Discontent*, and Fanon's *Black Skin, White Mask* will also be explored.

PSY 411

Lifespan Development

3 Credit Hours

Pre-Requisite: Senior Standing

Lifespan Development is an integrative introduction into the theories, concepts and applied issues related to the study of the human lifespan. The course provides a balanced examination of the developmental processes that underlie child, adolescent and adult development. Special emphasis is placed on an examination of how biological precursors, as well as social and cultural experiences can shape an individual's development throughout the lifespan.

PSY 412

Psychology of Adjustment

3 Credit Hours

Pre-Requisite: Senior Standing

This course introduces learners to the challenges of neuroses and psychoses. It is geared toward according students a better understanding of the processes employed in coping with the stresses of daily living. It looks at the effects of maladjustment and the way forward in attaining a healthy personality.

PSY 413***Sports Psychology*****3 Credit Hours*****Pre-Requisite: Senior Standing***

This course critically examines the relationship between psychology, social relationships, and sports. The concepts of group dynamics, motivation, social support, coaching relationships, and the wider social context's relationship to the individual and sports will be explored. The course will utilize both theoretical and research findings to suggest practical applications in sports performance.

PSY 426***Experimental Psychology*****3 Credit Hours*****Pre-Requisite: Senior Standing***

This course introduces the student to various research methods in psychology. It encompasses the formulation of research hypothesis, statistical analysis, and the preparation of research reports. It then goes on to cover the history of experimental psychology and experimental design.

PSY 427***Psychology of the Criminal Mind*****3 Credit Hours*****Pre-Requisite: Senior Standing***

This course will examine the many psychological aspects of criminal behavior including personality of criminals and the psychological processes affecting behavior. The course will address the nature of forensic psychology, ethical issues, criminal causality, psychological profile of a career criminal, offender responsibility and discrimination issues. Special emphasis will be placed on common crimes within the Liberian, African, and global contexts.

PSY 414***Introduction to the Psychology of Globalization*****3 Credit Hours*****Pre-Requisite: Senior Standing***

This course covers the history, current status and future direction of cultural psychology theory and practice in the context of globalization. It also entails a critique of the Western bias of the field of psychology and of the effects of its application to the African context.

Bachelor of Science in Environmental Science

Program Description:

The foundation of this program is twofold: first, healthy living and working environments are critical to the Government of Liberia's Poverty Reduction Strategy (PRS) for national well-being. Secondly, conservation of the environment is fundamental to sustainable national development and necessary for the achievement of the seventh Millennium Development Goal (MDG). However, efficient management of the natural resource base and the environment requires appreciation of their value and attainment of the pertinent knowledge and skills. Thus, the primary intent of the Environmental Science Curriculum is to produce a program that will enable students to think critically, understand complex environmental issues, and facilitate environmental literacy on the campus and in the community. Integrating knowledge and skills from several disciplines and a diverse faculty, the program comprises courses in the humanities, natural and social sciences, environmental science core, and environmental science skills.

An Environmental Science degree will heighten students' chances for employment or educational opportunities as well as their ability to meaningfully contribute to national development. It will help build the human and institutional capacity in environmental and occupational health as well as environmental conservation in Liberia. Although a number of public agencies and private organizations in the country are mandated to manage the natural resource base or conduct environmental monitoring, most are limited, they are either limited in the quantity and quality of staff, technical resources (National Environmental and Occupational Health Policy, 2010) or trained human resources (Liberia's National Biodiversity Strategy and Action Plan, 2005) available to implement environmental health policies or manage the natural resource base. This deficit has stimulated an insatiable demand for manpower with environmental science knowledge and skills.

Given the compelling need to remedy the dearth of environmental scientists in the country, this curriculum provides the framework for an Environmental Science Program at the William V.S. Tubman University. Once approved, the requisite curricular elements including course syllabi, laboratory protocols, and instructional materials will be developed for its implementation.

Program Objectives

Upon completion of the program, the graduates will be in the position to:

- Appreciate environmental health and sustainability by integrating knowledge from the natural and social sciences;
- Critically explore the impact of human activity on the environment to control or mitigate their effects;
- Apply critical thinking and problem-solving skills to address environmental problems;

- Appreciate the environment to promote participation and social considerations in future environmental decisions;
- Communicate scientific reports professionally;
- Acquire knowledge and training for careers and further academic development in environmental science or related areas.

Program Learning Outcomes

Upon completion of the Environmental Science program, the graduate will be able to:

- Apply ecological, chemical, waste management, processes of environmental components (air, water, soil), health and social concepts to environmental issues;
- Explain the complexities of the natural components of the environment;
- Discuss renewable resources;
- Discuss the formation and implementation of major environmental laws and regulations;
- Conduct risk assessment to determine environmental impacts;
- Evaluate economic and social concepts that promote sustainable natural resource base and environmental health;
- Analyze data using appropriate statistical methods
- Demonstrate basic map reading, computer applications, and use spatial analysis software such as GIS, Google Earth and Google Maps in fieldwork;
- Communicate reports effectively through written and oral presentations to diverse audiences.

Strategic Action Plan

The implementation of the Environmental Science Program will be guided by the following actions:

- Developing a curriculum that considers the strengths of the faculty and other resources to meet the expectations of graduate programs and potential employers;
- Promoting expansion into graduate programs such as environmental science-related professional or Master's program;
- Encouraging diversity in recruitment of faculty across related disciplines in the College of Arts and Sciences
- Exploring collaboration with other ENVS programs nationally and internationally through faculty and student exchange and shared resources;
- Promoting the program nationally and internationally through presence at local, national, and international conferences and symposia;
- Organizing an on-campus speaker series by inviting leaders in the ENVS to speak to students, faculty, staff, and the community;
- Initiating recruitment of student body through formal recruiting activities (e.g. organized by the admission office, etc.)
- Seeking external assessment of the program from peer institutions to make suggested improvements in accordance with the vision and mission statements;
- Identifying and encouraging participation and leadership roles in active

community service and service learning projects and formal programs for students, staff and faculty in ENVS;

- Encouraging faculty and staff development within the ENVS program and related disciplines;
- Assisting associated departments in CAS to develop partnerships with international universities or other agencies for curriculum and collaborative research effort;
- Establishing formal assistance process for employment placement for graduating seniors.

Core Competencies

Upon completion of the Program, the graduate will attain the:

- Scientific understanding of the complexities of the environment;
- Ability to effectively communicate with diverse audiences;
- Competency in the use and application of Geographic Information Systems (GIS);
- Basic understanding of environmental policy,
- Ability to contribute to multidisciplinary teams; and
- Competency in knowledge and skills required for environmental science careers.

Career Opportunities for Graduates

Upon completion of the program, graduates will be encouraged to seek career opportunities with public and private entities in Liberia:

Career Opportunities include:

Program managers, environmental and occupational health officers, technicians (county and district levels), fishery observers, fishery observer-managers, wildlife managers, biosafety officers, biodiversity officers, or ES teachers, etc.

Public and Private Entities:

- Government agencies (e.g., EPA-L, FDA, Commerce, Health, Agriculture, Transport, Lands and Mines Ministries; MCC, LWSC, etc.)
- Environmental consulting firms and non-governmental organizations (Green Peace, WWF, IUCN, SCNL, CI, FFI, etc.)
- Environmental research laboratories

Entry Requirements

Students admitted into the Environmental Science Program must meet the minimum admission requirements of the William V.S. Tubman University.

Duration of Study

The curriculum is organized with emphasis on classroom instruction and practical. A synopsis of the academic timetable for completing the degree in four year is provided below. During the first two years of study, students will receive general advising from the Environmental Sciences Academic Program. They will take and complete courses in general education, natural sciences, and humanities.

Bachelor of Science in Environmental Science

Freshman Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading AND Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY 101	Introduction to Psychology	3	PHIL 101	Introduction to Philosophy	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	TOTAL	17		TOTAL	17

Sophomore Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
EVS 201	Introduction to Environmental Science	3	FRE 102 GLE 102 CHN102	Intermediate French Advanced Glebo Advanced Chinese	3
HIST 102	World History and Western Civilization	3	EVS 202	Ecology and Biodiversity	3
FRE 101 GLE 101 CHN 101	Introduction to French or Introduction to Glebo Introduction to Chinese	3	EVS 204	Environmental Chemistry and Hazardous Materials	4
PHY 101	Introduction to Physics	4	EVS 206	Environmental Physics	3
			EVS 208	Statistics for Environmental Science	3
	TOTAL	19			16

Junior Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
EVS 301	Watershed, Wetlands and Uses	3	EVS 302	Atmosphere, Ocean, and Climate Change	3
EVS 303	Remote Sensing and GIS	3	EVS 304	Natural Science Management	3
EVS 305	Environmental Health and Toxicology	3	EVS 306	Waste Management	3
EVS 307	Population, Agriculture and Environment	3	EVS 308	Environmental Pollution	3
EVS 309	Environmental Microbiology	3	EVS 310 EVS 318	Marine Biology Forest Ecology and Conservation	3
EVS 311	Junior Seminar I	2	EVS 312	Junior Seminar II	2
	TOTAL	17		TOTAL	17

Senior Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
EVS 401	Fish and Wildlife Management	3	EVS 402	Hazards and Disaster Management	3
EVS 403	Energy and Environment	3	EVS 404	Environmental Impact Assessment	3
EVS 405	Analytical Techniques and Instruction	3	EVS 406	Conservation Biology	3
EVS 407	Global Climate Change	3	EVS 408	Environmental Laws and Policy	3
EVS 409 EVS 411	Field Methods in Ecology Environmental Policy Formulation	3	EVS 420	Project /Internship	2
EVS 419	Research Methodology	1			
	TOTAL	16			14

Course Descriptions

EVS 202

Ecology and Diversity

3 Credit Hours

The course introduces the concepts, principles, and scopes of ecology and biodiversity. The main goal is to impart an understanding and appreciation of the vast diversity of living things, their special adaptations to their environment, and their evolutionary and ecological relationships. Topics include importance and scope of ecology, habitat and ecological niche; population ecology, community and ecosystem dynamics, animal association, etc.

EVS 204

Environmental Chemistry and Hazardous Materials

3 Credit Hours

Pre-Requisite: CHEM 101

The course explores the chemistry of environment, the chemistry underlying environmental problems, and solutions to environmental problems. Its main goal is to identify basic environmental contaminants and describes methods for their measurements. Emphasis is placed on thermodynamics and kinetics of reaction cycles; sources sinks and transport of chemical species; and quantification of chemical species. Samples are collected from the chemistry of natural and contaminated air, water, and soil. Topics include concept and scope of environmental chemistry, general principles of analytical chemistry, chemistry of pollutants, chemistry of solid waste management, chemistry of soil pollution, chemistry of water pollution; ozone, green gases and effects, global warming, solubility of gases in water, soil chemistry, and techniques in environmental chemistry. This course includes hazardous materials in the environment/

EVS 206

Environmental Physics

3 Credit Hours

Pre-Requisite: PHY 101

The course introduces the physics behind contemporary environmental problems. Its main goal is to provide the basis of understanding the phenomena of global warming and other environmental issues. This includes the threat of global climate change due to increased greenhouse gases in the earth's atmosphere. It examines the ozone depletion problem, alternative energy sources, such as solar and wind power, and environmental issues associated with nuclear power. Topics will include electricity, magnetism, energy and power, properties of light and sound, fossil fuel on environment, radioactivity, and global climate change.

EVS 208***Statistics for Environmental Science******3 Credit Hours******Pre-Requisite: MATH 102***

This course deals with the fundamental of probability of statistics. Students are introduced to the concepts and methods of statistics, including variability, randomness, and probability. They learn how to collect, analyze, interpret, and present data. Topics include data presentation (pie chart, bar chart, histogram, and frequency distribution); measures of central tendency (mean, mode, median); measures of dispersion (variance, standard deviation, coefficient of variation, mean deviation, range, quartile deviation, moments); relationship between variables (correlation analysis, regression analysis); and probability (addition of probabilities, conditional probabilities).

EVS 301***Watershed and Wetlands Uses******3 Credit Hours***

This course is an introduction to hydrological processes in watersheds and wetlands. The main goal is to understand the principles and concepts of hydrology and water quality and to apply this knowledge to the characterization, management, and regulation of watershed and wetlands. It covers the water cycle and freshwater flow, pollution effects, and government's involvement in wetland creation, management, and enhancement and restoration programs. Topics include watershed hydrological cycle, surface-ground water interaction; hydrological controls on nutrient and biogeochemical fluxes in watersheds and wetlands; classification of wetlands, benefits, and ecology of wetland and evaluation of the effects of land use and climate change on hydrological processes.

EVS 302***Atmosphere, Ocean and Environmental Change******3 Credit Hours***

The course explores the physical processes that control earth's atmosphere, ocean, and climate. The aim is to understand the nature of the earth's oceans and atmosphere and describe the processes that lead to changes in weather patterns and global climate. Topics include fluid dynamics, physical and chemical properties of sea water; ocean currents systems, major water masses of the world's oceans; biological productivity in the oceans; waves in atmospheric and oceanic systems; atmospheric boundary layer; structure and chemical composition of the atmosphere, greenhouse gases and global warming precipitation processes; insulation and heat budget, general circulation of the atmosphere and ocean; coupled ocean-atmosphere system, and El Niño Southern Oscillation (ENSO).

EVS 303***Introduction to Remote Sensing and (GIS)******3 Credit Hours***

This two-part course introduces the concept of remote sensing and geographic information system (GIS). This aims to present and assess the fundamental concepts of GIS and remote sensing technologies and their potential application to the environment.

Topics include: introduction to GIS and remote sensing. ArcGIS, history of remote sensing systems, environmental applications, overview of current remote sensing systems, development of GIS layers and attributes, text and table linking to GIS layers, multispectral remote sensing applications, image interpretation, area and regional analysis with GIS, case studies of environmental sustainable application, and remote sensor system selection criteria and applications. Students are exposed to Google Earth and other common open sources GIS tools and their application in environmental assessment and management.

EVS 304

Sustainable Natural Resource Management

3 Credit Hours

Pre-Requisites: EVS 301 and 307

The course provides a basic introduction to the field of natural resource management which considers the interdependence of the earth's natural systems, and how people use natural resources. The goal is to examine the impact of development on the environment considering issues such as environmental pollution, deforestation, and resource depletion. It differentiates between renewable resources such as soil, forests, water, and wildlife, and nonrenewable resources such as oil, metals and minerals and explore sustainable strategies for land use, resource management, and community development. It distinguishes the concepts of conservation and preservation, integrate concepts dealing with natural (e.g., ecology) and social (e.g., economics, politics, and planning) processes to understand sustainable natural resource management. Topics include: concepts of natural resource management, characteristics and management of common pool resources, management of environmental resources: soil resources, forest resources, wildlife resources, and water resources.

EVS 305

Environmental Health and Toxicology

3 Credit Hours

The course examines the environment as a determinant of disease in humans. The primary focus is on identifying the biological mechanisms and effects of chemical, biological, and physical agents on human health. It emphasizes understanding the principles of toxicology as they apply to understanding toxicant-human interactions. It provides an understanding of environmental and health changes derived from mutagenic pollutants and environmental carcinogens. Topics cover the uses, sources of exposure, metabolism, toxicity and biochemical effects of environmental metals, pesticides and related materials, and action of toxicants on plants and mammalian organisms.

EVS 306

Waste Management and the Environment

3 Credit Hours

Pre-Requisites: EVS 305, 307, and 309

The course provides students an understanding of the concepts of solid and hazardous wastes. The goal is to give a comprehensive understanding of waste management from an environmental health perspective. Topics include introduction to waste and waste

management; waste regulations; wastes classification; fate of wastes and landfill types; hazardous and non-hazardous landfills; hazardous waste generation, transport, treatment, storage, and disposal; universal waste and waste minimization; other types of waste treatment; solid, hazardous, radioactive, municipal and domestic wastes management; hazardous waste regulation in Liberia.

EVS 307

Population, Agriculture and Environment

3 Credit Hours

The course introduces principles of human population and provides knowledge of the interacting segments in agro-ecosystem and principles to reduce the inputs of agrochemical and other fossil energy input while conserving soil, water and biological resources for food, forage crops, and livestock production. Topics include population ecology, human population dynamics, theories of population growth, impacts of population growth, population-environmental issue, areas, and conservation, theory of demographic transition, strategies for sustainability, national population policy, role of land in food production, soil resources, fertilizer nutrients, biodiversity and biological resources, environmental problems faced by agriculture, pest and pest management, genetic engineering and biotechnology.

EVS 308

Environmental Pollution and Prevention

3 Credit Hours

Pre-Requisites: EVS 305 and 307

This course introduces students to the concepts of industrial and biological pollution with emphasis on water, atmosphere, and soil pollution. The goal is to present the fundamental concepts that deal with the nature of environmental pollution and environmental stressors and pollution, their sources in the natural and workplace environments, modes of transport and transformation; ecological effects such as acid rain, greenhouse effect and gases, destruction of rain forests, damage to the ozone layer, and existing methods for environmental disease prevention, remediation and legislation for pollution control. Topics includes types of pollution and pollutants, origin, transport, distribution and transportation of pollutants, effects of pollutants, global pollution problems with water, air, and soil, legislation, and pollution control.

EVS 309

Environmental Microbiology

3 Credit Hours

The course provides a basic understanding of the concepts of environmental microbiology. The goal is to understand the biological and ecological bases of microbial processes and methods relating to microbe-environment interactions. It covers functional diversity of microorganisms in the environment in relation to human and ecosystem health, microbial interactions with pollutants in the environment and the fate of microbial pathogens in the environment. Topics include basic structure and function of microbe and survival mechanisms, detection of microorganisms and their activities in microbial metabolic and genetic diversity, methods in microbial ecology, microbial ecosystems and

biogeochemical cycles, bioremediation, water quality, landfill waste management, industrial microbiology and biotechnology and implications for drug production and GMO in agriculture and medicine.

EVS 310

Marine Biology

3 Credit Hours

This course examines the biology of diverse organism (e. g. microbes, algae, and animal life forms) and the biotic factors (e. g. competition, predation, and symbiosis) and abiotic factors (e. g. salinity, nutrients, water current tides) that influence their distribution and abundance. Topics include primary and secondary production, rocky intertidal biodiversity, estuaries, sub-tidal communities, coral reefs, pelagic and deep sea communities, impacts of humans on the ocean, and conservation.

EVS 311 and 312

Junior Seminar I and II

3 Credit Hours- each

The courses enable students to review articles in scientific journals and present research, reports. The goals are for the students to know how to research articles for a topic, prepare and present a research paper, and be an active listener to technical reports given by others. It emphasizes on the discussion of concepts and current topics with presentation of papers by students on special issues in environmental science.

EVS 313

Fund of Environmental and Occupational Health Epidemiology

3 Credit Hours

The course gives the student an overview of biostatistics which relate to occupational field investigations, including rates, ratios and proportions, charts, tables, and graphs; the 2X2 table; measures of central tendency and significance testing. Basic principles of epidemiology necessary to understand scientific literature, monitor data in industry, and/or to conduct scientific investigations or surveillance activities are taught. The major types of epidemiologic study (cohort, case referent and cross-sectional) are described. Students learn how to calculate rate ratios, odds ratio and attributable risk. Epidemiologic principles of reliability, validity, bias, screening, and surveillance are discussed. Topics include overview of the epidemiologic approach to studying disease; the natural history of disease; measures of disease occurrence, association and risk; epidemiologic study designs; disease surveillance; population screening; interpreting epidemiologic associations; causal inference using epidemiologic information; and application of these basic concepts in the context of selected major diseases and risk factors of particular relevance to environmental health.

EVS 315***Principles of Environmental and Occupational Health Epidemiology******3 Credit Hours***

This is a course that provides a study of harmful chemical, biological and physical agents found in the workplace. It emphasizes analytical methods, monitoring and surveillance techniques and covers basic concepts in threshold limits, dose response, and general recognition and control of occupational hazards, sample collection and evaluation methods as well as sampling statistics, calibration, and equipment use. It also deals with appropriate design of health assessment and safety measures and controlling work-related risks. Topics include overview of occupational hygiene and safety; standard and regulation; workplace safety and health; identification and analysis of hazards; accident investigation, analysis, and cost; injury and illness record-keeping; personal protective equipment; fire safety and extinguisher; fall protection; respiratory protection; and emergency response system.

EVS 316***Introduction to Industrial Hygiene******3 Credit Hours***

This course provides an introduction to harmful chemical, biological and physical agents found in the workplace. It will discuss basic concepts of industrial hygiene; recognition of hazards; evaluation of hazards; control of hazards; and occupational health and safety regulations. Topics include overview of industrial hygiene; anatomy and physiology (lungs, skin, ears, and eyes); industrial toxicology; gases, vapors, and solvents; particulates; radiation; IH equipment; noise and hearing; thermal stress; ventilation principles, measurement and control of hazards; and national occupational and safety regulations (Liberia Labor Law).

EVS 318***Forest Ecology and Conservation******3 Credit Hours***

The course is about the ecological principles that govern forests and the applications of those principles to the management and conservation of forests. It examines the ecology of tree individuals and populations (autecology) and then the ecology of entire forests (community and ecosystem ecology). It applies some of the concepts to forest management and biodiversity conservation and explores aspects of the ecology, use, and preservation of forests in Liberia. Topics will include: ecology of tree species and populations; physical ecological factors; plant response to abiotic factors; Species in the environmental complex; plant communities and ecosystems; forest carbon and nutrient balance; plant communities over space; succession and community dynamics; plant communities over long times; conservation of biological diversity; forest silviculture and management; ecology and conservation of Liberia forest.

EVS 320***Introduction to Environmental and Occupational Disease******3 Credit Hours***

This course introduces the student to the diagnosis, treatment and prevention of environmental and occupational disease. It covers the effects of exposure to solvents, radon, lead and other metals, asbestos and other pneumoconiotic dusts, outdoor air pollution, indoor air quality, and noise as well as cancer, respiratory disease, and reproductive health. It deals with the pathogenicity, epidemiology and diagnosis of occupational diseases as they relate to chemical, biological, radiological hazards, dermatoses, airway diseases, plant and wood hazards, chemical carcinogens, and pesticides. Topics include overview of environmental agents (microbial, chemical, and physical agents); exposure to environmental agents; environmental pathogens: diseases, mechanisms of transmission, defenses and control measures; dose response; dermal toxicology; physiology and toxicology of the nervous, renal, and reproductive systems; pulmonary physiology and toxicology; food safety; liver physiology and toxicology; and risk assessment.

EVS 322***Vectors Control and Pesticides Use******3 Credit Hours******Pre-Requisites: EVS 305, 313, 315 (Elective / EOH Track)***

This course introduces zoonotic diseases (Ebola, rabies, anthrax, BSE, brucellosis, Lassa fever, African sleeping sickness, etc.) caused or transmitted by one or more animals and vector-borne diseases (typhus, yellow fever, malaria, bubonic plague, dengue, elephantiasis, onchocerciasis, etc.) transmitted by vectors between pathogenic organisms and their human victim. It covers the impact of mammalian and arthropod vectors of historical and emerging diseases. It examines the identification, surveillance and methods of control of vectors with emphasis on pesticide use, regulation and safety measures. Topics include nature of zoonotic and vector-borne diseases; characteristics of rodents of health importance; signs and extent of rodent infestation; characteristics of a community rodent control program; life cycle, anatomy, disease transmission, and control measures for vectors (mosquitoes and other flies, cockroaches, ticks, lice and fleas); principles of integrated pest management (IPM); application of IPM principles for surveillance, monitoring and control program for zoonotic or vector-borne disease; mode of action for pesticides in vector control; pesticides regulation; and biosafety measures for use of pesticides.

EVS 401***Fish and Wildlife Management******3 Credit Hours***

The course is a two-part course that introduces the approach to and process of fish and wildlife management; the interrelations of wildlife management and other forest resource uses; and management of fish and wildlife as renewable natural resources. It aims to provide students with the knowledge and appreciation of fish and wildlife and their management.

Topics include characteristics of fish and mammals; natural history of common fish and wildlife species of West Africa; fish and wildlife population dynamics; distribution; methods of studying fish and wildlife populations and characteristics; techniques used in managing fish and wildlife populations; wildlife and agricultural interactions; and public policy in the conservation and management of fish and wildlife populations.

EVS 402

Environmental Hazards and Disaster Management

3 Credit Hours

The course provides a foundation to understand the concept of risk and risk management. It aims to understand the nature, formation process, impact and management of disaster. It discusses the phases of emergency management—mitigation, preparedness, response and recovery. It finally exposes the student to the administrative processes involved in managing major environmental hazards and disasters. Topics include natural and anthropogenic hazards, hazards and climate change; risk modeling and assessment on extreme and catastrophic events; vulnerability, disaster management, and future of disaster management.

EVS 403

Energy and the Environment

3 Credit Hours

The course introduces principles that deal with a wide variety of alternative energy sources and the problems associated with them. The aim is for the student to understand the nature of renewable and non-renewable energy, their environmental impact, and management. Topics include: introduction to energy concepts and issues; renewable and non-renewable energy: origin, geographic distribution, transformation, waste production, environmental impacts and control; energy in developing and developed societies; energy use in the transportation sector; industrial and residential energy use; alternative energy sources and technologies; energy management and optimization; and energy policy.

EVS 404

Environmental Impact Assessment

3 Credit Hours

The course deals with the formal process used to predict the environmental consequences (positive or negative) of a plan, policy, program, or project prior to the decision to proceed with the proposed action. Its main aim is to understand the principles, process, and necessary techniques for environmental impact assessment, mitigation and monitoring. It facilitates the understanding and implementation of the National Environmental Policy Act (NEPA), required for most projects. Topics includes overview of EIA and related law necessary for EIA; EIA process: term of reference (TOR) and initial environmental evaluation (IEE); tools to assess environmental impact; EIA for air and noise; EIA for soil and land use; EIA for water quality; EIA for forest and wildlife; EIA for aquatic ecology and coastal habitat; EIA for human use; mitigation and monitoring process for EIA. This information will be applied in reviewing an existing Environmental Impact Statement (EIS).

EVS 405***Principles of Analytical Techniques and Instrumentation******3 Credit Hours***

The course introduces the basic concepts of the analytical techniques and instruments utilized in environmental chemical analysis. The goal is for the student to understand the principles of chemical analysis and demonstrate proficiency in the variety of analytical techniques and instruments applied. It involves following protocol, calculating working solution volumes and concentrations, executing computerized spreadsheets; and reporting analytical results. Topics include overview of analytical techniques and instrumentation; sample collection, handling and preservation of samples; instruments and methods of analysis, selection of appropriate methodology; and standard methods of reporting results.

EVS 406***Conservation Biology******3 Credit Hours***

The course deals with the scientific study of the phenomena that affect the maintenance, loss, and restoration of biological diversity. The main goal is to examine in detail the theory and practical aspects of biological conservation with particular emphasis on Liberia. Topics include: nature and function of biological diversity; changes in species distribution; speciation; overexploitation, habitat destruction and extinction; species invasions; species saturation and change in species diversity; minimum viable population and extinction debt; translocation and managed relocation; conservation ethics and values; bio-geographical classification of West Africa, biodiversity status in Liberia, strategies for biodiversity management in Liberia, threats of biodiversity in Liberia; endangered and endemic species of Liberia; key stone species, Red Data Book, and hot spots of biodiversity in Liberia; and Liberia's biodiversity strategy and action plan.

EVS 407***Global Climate Change******3 Credit Hours***

The course introduces the foundation of global climate change. Its main goal is to explain and quantify the impacts of climate change on human health and the natural world. It evaluates means by which impacts of climate change can be reduced; and evaluate technological options for reducing emissions. Topics include the principles of global climate change; detection and attribution of climate change; development and impact of climate change on Earth; forcing mechanisms of climate change; evidence of climate change; social changes and adaptations to climate change; and mitigation strategies.

EVS 408***Introduction to Environmental Law and Policy for Sustainability******3 Credit Hours***

The course introduces the principles of environmental law and policies for sustainable environment. The aim is to examine the regulations and policies that are fundamental to

environmental protection. However, it studies not from the perspective of lawyers, but of people who are responsible for overseeing compliance with national and international environmental regulations. It will discuss Liberia's national environmental policy (NEP), Liberia's National Biodiversity Strategy and Action Plan (NBSAP); Liberia's Water Supply and Sanitation Policy (WSSP) and associated regulations; and international environmental treaties on the environment. Topics include concepts of law, policy, treatise, and act; overview of legislative framework of environmental protection in Liberia; environmental policies and laws of Liberia; and major international conventions and conferences on environmental protection.

EVS 409

Field Methods in Ecology

3 Credit Hours

This course introduces general methods and skills of conducting ecological research with a variety of study systems and species. It provides skills in developing ecological questions; formulating testable hypotheses; designing experiments; collecting and analyzing data; and presenting results in both oral and written formats. It covers species interaction and adaptation to their environment; processes (e.g. disturbance, climate change) that determine community composition (e.g. species diversity) and rates of ecosystem processes (e.g. leaf litter decomposition). Students will be introduced to various species types (e.g. microbes, plants, insects, vertebrates) and ecosystem types (e.g. meadows, forests, streams) and the different methods used in their study. Topics include elements of ecology, habitat identification and mapping, animal and plant sampling methods, abiotic sampling methods, and conservation methods.

EVS 410

Air Quality and Noise Pollution

3 Credit Hours

The course introduces the student to sources of air pollution, basic meteorological processes, and noise pollution. Topics include introduction to air pollution; physical and chemical characteristics of gaseous and particulate air pollutants; classification, pathways and atmospheric reactions of air pollutants; air quality standards (national and international); impacts of air pollutants on living and non-living environments; atmospheric chemical reactions; dispersion of air pollutants; monitoring/control techniques and strategies for air pollutants; social, economic, political, moral and legal aspects of air pollution control; carbon foot-printing; effects of air pollutants; noise pollution; and air pollution instrumentation.

EVS 411

Environmental Policy Formulation

3 Credit Hours

This course provides an overview of the development, structure, function, and implementation of environmental policy at local, national, and global levels. It stresses aspects such as stakeholder identification, recognition of various sources and types of information, various approaches and processes for making joint decisions, and for resolving issues in contention, and interactions with the administrative and political

structures. Some tools specific to the environmental context are examined, such as forecasting, impact assessment, geographic information systems, and risk analysis. Topics include comparative policy-making process in developed and undeveloped countries, organizational structures, science of the agent, policy target, policy impacts of risk assessment, ways and means, sustainable environmental statutes, etc.

EVS 412

Environmental Monitoring

3 Credit Hours

The course provides an introduction to multi-media sampling techniques and analytical methods for evaluation of outdoor, indoor air, soil/surface, and water. It covers approaches for anticipating, recognizing, evaluating, and controlling hazards with the primary focus on recognition and evaluation of contaminants, including data interpretation for risk reduction and regulatory compliance. It also emphasizes environmental investigative techniques, instrument selection, and quality control, including documentation, calibration, and sample management. Topics include: Principles of monitoring; sensors and air quality; weather (temperature, rain, relative humidity, wind velocity and direction, evapotranspiration); water quality (pH, chlorophyll, turbidity, DO and BOD); bio-monitoring; etc.

EVS 413

Introduction to Environmental Health Policy Analysis

3 Credit Hours

This course provides an overview of the development, structure, function, and implementation of environmental health policy at local, national, and global scales. Case study examples provide an in-depth understanding of the development of environmental health policy. Topics include concepts of environmental health policy; policy making process; organizational structures; science of the agent; policy target; policy impacts of risk assessment; regulations, standards, enforcement and penalties.

EVS 415

Water quality and Food Safety

3 Credit Hours

The course provides an overview of the microbiology and surveillance of the major food and waterborne diseases. It describes how information from surveillance can be used to improve environmental health policy and practice for food and water safety. It focuses on the pathogens responsible for food- and water-transmitted diseases and discusses the pathogenesis, clinical manifestations, reservoirs, modes of transmission, and epidemiology of the diseases they cause. It also covers the transport, survival, and fate of pathogens in the environment, the concept of indicator organisms as surrogates for pathogens, the removal and inactivation of pathogens and indicators by water and wastewater treatment processes. Topics include microbial growth and control; food spoilage; food poisoning; fermentation; microbial quality and safety of foods; microbial quality of water and wastewater; culture media for water and wastewater; measuring microbial populations in water and wastewater; and identification and confirmation procedures for water pollution bacteria, viruses & parasites.

EVS 416***Introduction to Environmental and Occupational Health Law and Policy******3 Credit Hours***

This course introduces students to the concepts of environmental and occupational health policy. It describes the relationship among environmental health, policy and practice and demonstrates the application of this relationship. It examines national and international laws, policies, regulations and statutes upon which environmental and occupational health is based. Topics include overview of environmental and occupational health policy; major national environmental and occupational health statutes (e.g., National Environmental and Occupational Health Policy, National Water Supply and Sanitation Policy), air statutes, food safety statutes, pesticides and toxic substances statutes, solid and hazardous waste statutes, and national labor legislations (Liberia Labor Law)

EVS 417***Biosafety and Biosecurity******3 Credit Hours***

This course provides the student with a working knowledge of potential biological threat agents as well as an understanding of procedures and methods to safely and securely work with these agents in the laboratory. It provides a comprehensive understanding of the history, impact, issues, and future directions associated with biological threats to human, animal, and plant health. It also discusses the policy, safe work practices, and environmental health issues related to genetic engineering and biosecurity and convey critical information needed to perform research or diagnostics on regulated genetically or living modified organisms (GMO's or LMO's). It also addresses ethical questions about research on pathogens which could be used as bioweapons. Topics include biotechnology and society, bioethics, biosafety concepts and issues; biosafety in the laboratory; regulations, ecological and food safety; agriculture and pharmaceutical sector; biosecurity, bio-threat field response; Biosafety Policy of Liberia.

EVS 419***Research Methodology, Writing, and Presentation******3 Credit Hours***

The course introduces the research method and the process of writing a scientific report. Research methodology: topics include research planning, hypothesis framing, objectives of research methods, data collection, processing and analysis, and case study.

Scientific Writing Process: It guides the student in writing a scientific proposal, report, and thesis paper in Environmental Science. Topics include: preparation of title, abstract, introduction, materials and methods, results and discussion, acknowledgement, and references. It covers the designing of effective tables, graphs and illustrations; and presentation of final report.

EVS 420

Project/Internship

3 Credit Hours

This course covers the conduct of the research process and defense of thesis or presentation of internship report.

Bachelor of Science in Biology

Program Description

This curriculum is customized to thoroughly prepare students for medical school, teaching high school biology, or for further studies in the life sciences. As such, the courses selected introduce students to contemporary areas in biology and related areas to afford them a competitive academic edge nationally and globally. This will enhance not only students' readiness to engage in the global science community, increase their chances for employment or admission to graduate and professional schools but, more so, boost their contribution to national development.

Program Objectives

The Program in Biology endeavors to:

- Prepare graduates for professional careers or further education in graduate programs;
- Ensure graduates' proficiency and competence in the medical or life sciences;
- Produce graduates who will pursue professional development;
- Promote leadership, critical thinking skills, and information literacy, while facilitating students' personal and professional development for lifelong learning;

Learning Objectives:

The program aims to:

- Provide opportunity to enhance critical thinking and problem-solving skills to address local and global challenges in health and science education.
- Enhance ability to appreciate the scientific knowledge and skills to promote participation and social considerations in future scientific decisions;
- Enhance communicative proficiency in making scientific; and
- Provide opportunity for students to acquire knowledge and training for careers and further academic development in biology or related areas.

Learning Outcomes

At the end of the program the student are able to:

- Demonstrate competency in knowledge and skills required for medical and science education careers;
- Demonstrate ability to effectively communicate with diverse audiences;
- Demonstrate competency in the use and application of biological instruments;
- Demonstrate basic understanding of biological principles; and
- Demonstrate ability to apply critical and analytical thinking skills for problem-solving and understanding scientific principles.

Career Options for Graduates

Upon completion of the program, graduates will have the options to become: Biology teacher, Public Health officer, water plant technician, environmental protection officer, laboratory director, laboratory technician, environmental consultant, industrial hygienist, safety supervisor, and food safety specialist.

Entry Requirements

Students admitted into the Environmental Science Program must meet the minimum admission requirements of the William V.S. Tubman University.

Duration of Study

The curriculum is organized for a four-year period with emphasis on classroom instruction and practicum. The first two years of study will involve students receiving general advising from the Biology Academic Program. They will complete the general educational requirements as required by the University.

Bachelor of Science in Biology

Freshman Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading AND Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY 101	Introduction to Psychology	3	PHIL 101	Introduction to Philosophy	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	TOTAL	17		TOTAL	17

Sophomore Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
EVS 201	Introduction to Environmental Science	3	FRE 102 GLE 102 CHN102	Intermediate French Advanced Glebo Advanced Chinese	3
FRE 101 GLE 101 CHN 101	Introduction to French or Introduction to Glebo Introduction to Chinese	3	BIO 202	General Zoology	4
HIST 102	World History and Western Civilization	3	CHEM 202	Inorganic Chemistry	4
PHY101	General Physics	3	BIO 206	Bio-Statistics (for Bio Students)	3
CHEM 201	Organic Chemistry	4			
	TOTAL	19	TOTAL		17

Junior Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
BIO 301	Invertebrate Zoology	4	BIO 302	Animal Parasitology	4
BIO 303	Comparative Vertebrate Anatomy	4	BIO 304	Histology and Micro-techniques	4
BIO 305	General Microbiology	4	BIO 306	Cytology and Pathology	4
BIO 307	Entomology for (Bio Students)	4	BIO 308	Vertebrate Embryology	4
BIO 309	Seminar I	1			
	TOTAL	17		TOTAL	16

Senior Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
CHEM 401	Physical Chemistry	3	BIO 402	General Biochemistry	4
BIO 401	Ecology and Organisms	4	BIO 404	Immunology	3
BIO 403	Molecular Biology	3	BIO 406	Genetics and Genomics	4
BIO 405	Survey of Human Anatomy and Physiology	4	BIO 408	Research Project II	1
Bio 407	Research Project I	1			
	TOTAL	15		TOTAL	12

Course Descriptions**CHEM 201****Organic Chemistry****4 Credit Hours****Pre-Requisite: CHEM 101**

This course is divided into four units. The first covers bonding in organic molecules, their functional groups, classification and nomenclature. Unit 2 introduces students to the basic properties, methods of preparation of the group of compounds called the alkanes. Unit 3 explores the chemistry of alkenes while Unit 4 examines the importance of the alkynes with emphasis on their preparations and properties. The aim is to provide a general overview and description of the general properties, the underlying principles of the preparation and observed trends in the properties of organic compounds.

CHEM 202***Inorganic Chemistry******4 Credit Hours******Pre-Requisite: CHEM 101***

The course deals with descriptive chemistry. Students learn inorganic reactions; chemical bonding; condensed phases; introduction to chemical equilibria; phase equilibria solutions and colligative properties; and metal complexes.

BIO 202***General Zoology******4 Credit Hours******Pre-Requisite: BIO 101***

This is a study of the major phyla of the animal kingdom. Classification, morphology, distribution, life history, ecology, and economic importance of the invertebrate phyla of the animal kingdom are studied. Microscopic study and dissections of typical examples of the various phyla are stressed. It also outlines the classification and general characteristics of the vertebrates with special reference to the anatomy and physiology of the frog and its relationship to human biology. It involves dissections and microscopic study of the organ system. General principles of genetics and evolution are also studied.

BIO 206***Biostatistics for Bio Students******3 Credit Hours******Pre-Requisite: Math 102***

This is a foundational course in the fundamentals of probability and statistics. It gives them a pivotal orientation, as they get ready for higher order biology and chemistry courses. Students are introduced to the concepts and methods of statistics, including variability, randomness, and probability. They learn how to collect, analyze, interpret and present data to others. Topics include data presentation (pie chart, bar chart, histogram, and frequency distribution); measures of central tendency (mean, mode, median); measures of dispersion (variance, standard deviation, co-efficient of variation, mean deviation, range, quartile deviation, moments); relationship between variables (correlation analysis, regression analysis); and probability (addition of probabilities, conditional probabilities).

BIO 301***Invertebrate Zoology******4 Credit Hours******Pre-Requisite: BIO 101***

This is a comparative study of major invertebrate phyla with reference to representative types of Protozoa, Porifera, Coelenterata, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca and Echinodermata. Laboratory work includes dissection of the earthworm, snail, cockroach and crayfish, study of slides. Students should have a general knowledge of the more common invertebrate animals.

BIO 302***Animal Parasitology******4 Credit Hours******Pre-Requisite: Bio 301***

This course focuses on the study of the classification, structure, life history/ life cycle and identification of the most important parasites included under protozoa, Platyhelminthes and Nematoda. Laboratory work includes collection of parasites from various hosts and their detailed study.

BIO 303***Comparative Chordate Anatomy******4 Credit Hours******Pre-Requisite: BIO 202***

This course is a comparative study of chordates, ranging from the protochordates to the vertebrates. It will take a deep look at their history, classifications, and their characteristic features and how they all gradually evolved those characteristics. Laboratory work focuses on dissecting a member for each of the chordate grouping.

BIO 304***Histology and Micro-Technique******4 Credit Hours******Prerequisite: Bio 303***

This is an introductory course comprising two parts: Part I deals with biological microtechniques designed to cover microscopic methods which deals with procedures ranging from fixation to mounting as well as special methods such as maceration. Part II deals with the types of tissues, tissue extraction, preservation, tissue-processing and slide preparation. Microscopy and the different staining procedures and microphotography are also be introduced.

BIO 305***General Microbiology******4 Credit Hours***

This course is centered on micro-organisms and human health and related laboratory procedures. It also includes culture methods, principles of sterility, and aseptic techniques.

BIO 306***Cytology and Pathology******4 Credit Hours***

This course is an introduction to cyto-pathology. It aims to familiarize the students of cyto-technology; the basic tenets relative to proper use of the light microscope; the study of the cytologic specimen collection and cytopreparation; key elements related to safety; and the principles of laboratory management.

BIO 307***Entomology******4 Credit Hours*****Pre-Requisite: BIO 202**

This is an elective course that deals with the general morphology of insects, taxonomy of insects with special reference to West African fauna; insect physiology, digestion, excretion, reproduction, metamorphosis, respiration; a survey of destructive and useful insects, with specific reference to West Africa.

BIO 308***Vertebrate Embryology******4 Credit Hours*****Pre-Requisite: BIO 303**

This deals with the general study of the embryological development of vertebrate animals with special emphasis placed on frog, chick, and pig development. Topics include historical background of embryology, genetic background, reproductive organs and the sexual cycle, fertilization and the beginning of embryogenesis, gastrulation, organogenesis, growth and differentiation.

BIO 309***Junior Seminar******1 Credit Hour***

It covers reports and discussions on the current literature, philosophy, and history of biology, and correlation of the work offered in various courses. Emphasis is placed on the use of the library and evaluation of scientific papers.

CHEM 401***Introduction to Physical Chemistry******4 Credit Hours*****Pre-Requisite: Chem. 101 & Math 211**

This course is an introduction to quantum chemistry with applications to elementary spectroscopy) and kinetics.

BIO 401***Ecology and Organisms******4 Credit Hours***

This course deals with the study of the interactions between organisms and their environment. It provides a background in the fundamental principles of ecological science, including concepts of natural selection, population and community ecology, biodiversity, and sustainability. Students understand how scientific methods are used to obtain ecological knowledge. Topics include structure of ecology, water cycle, nutrient cycles, carbon cycle, global climate (greenhouse effect), landscape ecology, aquatic biomes, ecosystem and community ecology, population ecology, and organismal ecology.

BIO 402**General Biochemistry****4 Credit Hours****Pre-Requisite: Chem. 301, 302, 401**

This course analyzes the structure and metabolism of biologically important compounds. It aims to study in detail the structures, properties and functions of carbohydrates, and lipids. It includes topics such as carbohydrate metabolism, translation, transcription and replication.

BIO 403**Molecular Biology****3 Credit Hours**

This course covers a detailed analysis of the biochemical mechanisms that control maintenance, expression, and evolution of prokaryotic and eukaryotic genomes. The topics covered in lectures and readings include gene regulation, DNA replication, genetic recombination, and mRNA translation.

BIO 404**Immunology****4 Credit Hours****Pre-Requisite: BIO 305**

This course introduces the principles of immunology and the crucial role of the immune system against infection and cancer in the body. It discusses the development of the immune system, innate immunity, immunoglobulin structure and genetics, antigen-antibody reactions, the major histocompatibility complex reactions and antigen presentation, T cell receptors (genetics, structure, selection), T cell activation and effector functions, anergy and apoptosis, cytokines, phagocytic cell function, immune responses to infectious organisms and tumors, autoimmune diseases, autoimmunity, allergies, and immune deficiencies.

BIO 405**Survey of Human Anatomy & Physiology****4 Credit Hours****Pre-Requisite: BIO 303**

This course provides a comprehensive study of the anatomy and physiology of the human body. Topics include body organization; homeostasis; cytology; histology; and the integumentary, skeletal, muscular, nervous systems, and special senses. It demonstrates an in-depth understanding of principles of anatomy and physiology and their interrelationship. Laboratory works includes dissection of preserved specimens, microscopic study, physiological experiments, computer simulations, and multimedia presentations.

BIO 406***Genetics and Genomics******4 Credit Hours***

This course examines the basic principles of genetics at the level of molecules, cells, and multicellular organisms, including humans. It discusses recent advances in the field as well as the nature of the genes, chromosomal irregularities, polyploidy and mutations. Topics include Mendelian and non-Mendelian inheritance, structure and function of chromosomes and genomes, biological variation resulting from recombination, mutation, and selection, and population genetics.

BIO 407***Research Project I******1 Credit Hour******Pre-Requisite: Bio 309***

This course is a comprehensive study of how to compose a scientific paper. The methodology of writing research papers is emphasized.

BIO 408***Research Project II******1 Credit Hour******Pre-Requisite: BIO 407***

Students are given a scientific project covering various aspects of biology to undertake. A comprehensive scientific paper is prepared and presented by the students.

COLLEGE OF EDUCATION

The College of Education offers four programs leading to Bachelor of Science degrees and MOE teaching certification in Early Childhood Development; Primary Education; Secondary Education in the Sciences, Mathematics, English and Social Studies; and Guidance Counseling. All programs offer candidates the opportunity to experience course work in pedagogy and in the content areas.

Vision

The vision of the W.V.S. Tubman University College of Education (CE) is to prepare teachers with diverse theoretical and philosophical perspectives, awareness of cultural history and available cultural tools and imaginative engagement with knowledge of curriculum and instructional practices to realize their human potential as individuals, professional educators and as citizens of this nation of Liberia, the African continent and the world.

Mission

The mission of the College of Education is to develop professional educators intellectually competent, knowledgeable in content and pedagogy, with critical analytic and problem-solving abilities and compassionate, prepared to imaginatively and reflectively provide high quality instruction and create environments that are transformative for all children in schools in the Republic of Liberia. Teachers trained at Tubman University CE will:

- Embrace diverse perspectives and new ideas, with a socio-centric outlook, demonstrating capacities to think critically,
- Empower learners to high levels of academic achievement and with a sense of hope that they can become highly successful performers and contributors in areas of personal and national development.
- Explore widely through the use of reading and writing abilities, use of media and contemporary technology and the use of varied research knowledge and competencies.
- Enact varied responsive, imaginative pedagogical approaches to support all learners to develop their academic abilities and potentialities by drawing on the strength of the learners' diverse sociocultural and linguistic experiences, exceptionalities, multiple intelligences and learning styles and provide high level positive psychosocial and emotionally supportive experiences to children and young people, their families and communities and the nation.
- Exhibit reflective practice, enthusiasm, integrity, and commitment to ethical behaviors and leadership skills-transferrable to professional and everyday life encounters.

Competency -Based Learning Outcomes:

Specific abilities identified by the faculty as central to educating future teachers and guidance counselors are:

- Critical Inquiry
- Application and critique of socio-political-cultural perspectives
- Concern for diversity and social justice
- Problem-solving
- Application of knowledge and abilities in and across different contexts
- Communication
- Social interaction
- Curriculum/Program planning
- Effective citizenship and professionalism

Program Overview

The College of Education offers four programs leading to Bachelor of Science degrees and Ministry of Education (MOE) teaching certification in (1) Early Childhood Development; (2) Primary Education; (3) Junior & Secondary Education with concentrations in Biology, Chemistry and Physics, Mathematics, English and Literature and History; and (4) Guidance Counseling. All programs offer candidates the opportunity to experience course work in pedagogy and in the content areas and practicum.

Course Work

Teacher Education Program is grounded in liberal arts and supported by major fields of specialization and professional studies. Based on a four-year integrated approach, Education majors are expected to complete: General Education/Liberal Arts courses and be immersed in an area of specialization and engage in at least 1 year of field experience.

Transition Points And Key Assessment Data

Initial entry to the College of Education Programs

Requirements and data to be collected:

- Completion of 2/3 of the required Core General Education courses
- Completion of the following foundation courses
 - PSY 101
 - EDU 255
 - EDU 256
 - EDU 253 OR
 - ECD 261/EDUP 261
- Minimum overall 2.50 in all courses taken at TU with a minimum grade of C in each Foundations course (Minimum grade of B in each Foundations course taken elsewhere).

Transition Point 1:

Entry of Students to 300 level

Requirements and data to be collected:

- Updated advisement grid, and program completion plan
- Complete all remaining courses in the General Education sequence and Foundations sequence for the College with a minimum overall 2.50 GPA and a minimum grade of “C” in each Foundation course

Foundation courses required for the programs:

- EDU 352
- EDU 353 OR ECD/EDUP 360
- EDU 356
- EDU 359
- Student documentation or artifact from at least one field assignment and evaluation of field assignment.

Transition Point 2:

Entry to Student Teaching and Guidance and Counseling Practicum

Requirements and data to be collected:

The College’s *entry* requirements for student teaching/clinical practice are as follows:

- Application for student teaching and clinical practice with updated advisement grid, and program completion plan
- Minimum *overall* 2.50 GPA on all courses taken at TU.
- A minimum ***overall*** GPA of 2.50 in all Education courses AND a minimum of C grade in ***each*** Professional Education or Content area course taken at TU (A minimum of B grade in Professional Education course taken at other colleges. No more than 2 such courses will be accepted by TU).
- Completion of *all sophomore and junior courses with EDUC prefix; pre-requisite courses for the chosen concentration; and at least 2 semesters of 300 level content courses* (18-20 credits in content area courses) with a grade of C or better in each course.
- Completion of the ***subject area curriculum and methods course/s***
- The approval of the College of Education team for student to pursue the Student Teaching and Guidance and Counseling Practicum placement. If considered not ready for practicum the student will be advised of options in the program or the College or University. These may include:
 - Completing additional course work
 - Taking a leave of absence from the program
 - Completing an alternate degree option
 - Volunteering in a school or Counseling setting to expand experiences

- Seeking academic and/or personal Counseling
- Key assessment data to be collected are:
 - ❖ Unit plan grades
 - ❖ Lesson Plan grades
 - ❖ Grade in one instructional curriculum and methods course (ECD/EDUP 365 & 367); SED (BIO 376, CHEM 376, MATH 377, ENGL 375, HIST 374) & G&C –COUN 382/383 and COUN 352
 - ❖ Disposition assessments in curriculum and methods course (Personal characteristics to be a teacher/guidance counselor (included being responsible, respectful, hardworking, professional, willing to work collaboratively, committed to the field of education).
 - ❖ Portfolio grade: Phase 1
 - ❖ Student evaluations of field work
 - ❖ Grade on Comprehensive examination

Transition Point 3:

Program Completion

Requirements and data to be collected:

- Complete Student Teaching/G&C Practicum with Seminar I & Student Teaching/G&C Practicum with Seminar II with a minimum grade of C in each;
- Key assessments:
 - ❖ The final grade based on levels of performance on all indicators on the Student Teacher and Guidance Counselor Final Evaluations including an analysis of the student teacher or guidance counselor performance; attendance record at the field site and the seminar;
 - ❖ Grade on Portfolio (phase 11) including Work Sample
- Earn a minimum accumulated 2.50 GPA on courses taken at TU.
- Complete all course work required for the degree.
- Score on the Comprehensive examination.
- Employer survey
- Graduate survey
- Course Evaluations
- Trend data (student demographic data, enrollment, retention, completion, staff and faculty member biog.)
- External, additional assessments and evaluations:

Bachelor in Early Childhood Development
Bachelor in Elementary Education

Freshman Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading AND Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
HIST 101	Liberian History and Geography	3	HIST 102	World History & Western Civilization	3
PSY 101	Introduction to Psychology	3	SSC 101	Liberian Society, Social Issues and Problems	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	Total	20		Total	20

Sophomore Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
EDU 252	Peace Education	3	PHIL 101	Introduction to Philosophy	3
FRE 101 GLE 101 CHN 101	Introduction to French or Introduction to Glebo	3	FRE 102 GLE 102 CHN102	Intermediate French Advanced Glebo Advanced Chinese	3
EVS 201	Introduction to Environmental Science	3	EDU 260	Introduction to Teaching Field Experience	3
EDU 255	The Social World of the Child and Adolescent	3	ECD 262 / EDUP 262	Mathematics for the Early Childhood and Elementary grades.	3
EDU 256	Speech, Language and Learning	3	ECD 261 / EDUP 261	Principles & Foundations of Education for the Early Childhood and Primary Levels	3
	TOTAL	18			18

Junior Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ECD 360 / EDUP 360	Culture, Cognition and Learning for the Pre-K to 6 grade	3	EDU 354	Ethnographic Studies of Rural Communities: Child, Family and Community	3
EDU 353	Schooling, Pedagogy and Social Justice	3	ECD 364 / EDUP 364	Understanding Students with Exceptionalities	3
ECD 361 EDUP 361	Science for Teachers in the Early Childhood and Primary Classrooms	3	ECD 365/ EDUP 365	Methods in Teaching Science and Mathematics and Literacy in the Integrated Curriculum: PreK-6 grades	3
ECD 362/ EDUP 362	Diagnosing and Assessing Learning, Curriculum Planning and Evaluation in Early childhood and Primary Settings.	4	ECD 366	Infant and Toddler Care	3
ECD 363 & EDUP 363	Foundation of Literacy for Emergent Readers and for the Primary Grades	3	ECD 367 / EDUP 367	Teaching Language Arts through Literature, Performance and Visual Arts, in the Early childhood and Primary curriculum	3
			ECD 369 / EDUP 369	Social Studies and Social Exploration in the Pre-K-6 Classroom in Liberian Schools	3
	TOTAL	16			18

Fourth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ECD 460 / EDUP 460	Curriculum and Instruction Student Teaching I: Supervised Field Experience GRADES PRE-K- 3rd	3	ECD 461 / EDUP 461	Curriculum and Instruction Student Teaching II: Supervised Field Experience	3
ECD 462 / EDUP 462	C & I Student Teaching 1: Seminar I	2	ECD 463	C&I Student Teaching 11: Seminar II	2
EDU 456	Advocacy, Networking & Collaboration in School and Community	2	ECD 464 / EDUP 464	Creative Activities For Children: Teacher Made Materials For Play And Subject Area Skills Development	3
EDU 455	Classroom Management: Designing and Managing Classroom and the Play Environment	2	EDU 454	Educational Research Methodology II Prerequisite Course: EDU 453	3
EDU 453	Educational Research Methodology	3			3
	TOTAL	12			11
				GRAND TOTAL	133

Early Childhood Development (ECD)/Elementary Course Descriptions:

Numbering Systems:

- 200 level is second year courses
- 300 level is third year courses
- 400 level is fourth year courses
- General Education Department (EDU) courses are represented by '5' as the second number in the sequence for example: 250 255, 258 are second level general EDU courses; 355, 356, 358 are third level general EDU courses; 453, 452, 457 are fourth level general EDU courses.
- Early Childhood Education/Primary Education Department ECD/EDUP courses are represented by '6' as the second number in the sequence for example: 260 265, 268 are second year PED courses; 365, 366, 368 are third year PED courses; 463, 462, 467 are fourth year PED courses.
- Secondary Education Department (SED) courses are represented by '7' as the second number in the sequence for example: 270 275, 278 are second year SED courses; 375, 376, 378 are third year SED courses; 473, 472, 477 are fourth year SED courses.
- Counseling Education Department (COUN) courses are represented by '8' as the second number in the sequence for example: 280 285, 288 are second year COUN courses; 385, 386, 388 are third year PED courses; 483, 482, 487 are fourth year COUN courses.

Special Courses in General Education Core

PROFESSIONAL SEQUENCE

EDU 252

Peace Education

3 Credit Hours

Central propositions such as traditional beliefs in the inevitability of wars and oppression and concepts such as negative and positive peace, structural violence, ecocide, imperialism, human rights, globalism, global media, economic equity, recovery, and reconciliation will be explored. So will the interrelated and interdependent spheres of peace and right relationships – the personal, social, political, institutional and ecological and the significance of Ubuntu and Inkumbulo as remembering, communing and praxis in Liberian and African reality. Skills of critical analysis, reflective thinking as a component of inquiry and problem solving will be emphasized. Through in-class conversations, written assignments and community action projects students will envision such issues as conditions that make peace possible, how conditions are achieved, peaceful alternatives to conflict resolution and how peace education can become integral to the instructional process at all grade levels and schooling in general.

EDU 255***The Social World of the Child and Adolescent*****2 Credit Hours**

Child and adolescent development will be explored from an interdisciplinary perspective: “Who is the Child/Adolescent?” What are the cultural, social, political and economic environments in which childhood and youth are constructed? What are dilemmas of childhood linked to those contexts? Using readings and theories of development in course texts as well as literary works and images from media students examine the role of social, cultural, historical changes and political ideologies in the construction of childhood and adolescence as social categories and critically respond to different theoretical and cultural perspectives on development. Focus on special topics such as child-raising practices, poverty, wars, child labor, lack of appropriate, quality medical care affecting children’s and youth social, cognitive and language development and learning. Re-visioning the rights of children will be critically explored. This will be a guided project-based course. Fieldwork required.

Prerequisite PSY 101

Standards Met: TU CE I (2) & II; NAEYC Std #1: PSTL Domain #I (f, i)

ECD/EDUP 260***Introduction to ECD and Primary Education*****2 Credit Hours**

This is an introductory level course designed to introduce students to philosophical foundation of schooling and how theories and practice converge with the aims of early childhood and primary education, and teacher’s practices. Program models and quality of early childhood and primary schooling in Maryland County and Liberia will be explored. Teacher’s ethics, disposition (habits of thinking and action), problems and concerns are examined; popular myths about the teaching profession are explored. Students write autobiographies to conduct studies of their own lives as learners, conduct surveys, articulate a vision of possibilities of education in Liberia and craft a personal philosophy of education.

Fieldwork required.

Standards Met: TU CE II (5, 6, 7); NAEYC Std. #1: PSTL Domain #I (b) & Domain #5 (b, c)

EDU 256***Speech, Language, Learning*****2 Credit Hours**

Topics such the theoretical perspectives on how language emerges or is acquired, language variations and contexts of use; social and political biases and stratification of languages; language and identity, language varieties in the Liberian context; uniqueness of Liberian English (di-glossia and bilingualism) and Glebo/Glebo, for example; speech and language disorders versus differences will be focused on. Working as a linguist in the field will be part of this course. Instructional strategies to promote language use and literacy skills development will be explored.

Fieldwork required.

Prerequisite Courses PSY 101 & EDU 250

Standards Met: TU CE II (5,7, 9,10); NAEYC Std. #1; PSTL Domain #I (f)

ECD/EDUP 261

Principles and Foundations of Education

3 Credit Hours

This course is an introduction to philosophies and theories of learning and instruction with a special emphasis on the early years. It provides an overview of behaviorism, social and cognitive constructivism and socio-cultural perspectives. These perspectives will be analyzed for their relevance to cultural perspectives on teaching and learning and development in the early years, in Liberia. Developmentally appropriate practices using various curriculum models as well as the teacher's role in designing curriculum and delivering instruction to young children (2-7 yrs.). Play and inquiry approaches as critical components in the early childhood curriculum will be examined critically. Curriculum adaptation to accommodate students with diverse learning and developmental needs will be explored. Students will also be required to review, compare and critique guidelines of the North American National Association for the Education of Young Children's, the International ECD program guidelines and the new early childhood development requirements of Liberia's Minister of Education.

Standards Met: TU CE I (1)&II (9); NAEYC Stds. #1& #4.

EDU 353

Schooling, Pedagogy, and Social Justice

3 Credit Hours

This course explores the questions: How can teacher be helped to examine schooling in West Africa and Liberia and construct an understanding of the intricate relationship between school and society? What is the knowledge base that teachers need if they are prepared to engage in transformative practices? Historical, economic, political and social bases of Liberian and West African educational systems, as a way of understanding the multiple factors affecting schools will be explored. Students will analyze readings, and case studies for explicit and implicit assumptions in issues of ethnicity, gender, language, geography, social class dominance, and how the framing of these issues influence school conditions, curriculum, and pedagogical practice and educational policies. Students will explore the social and economic policy shifts that could bring about changes and reforms in curriculum, pedagogy and student performance outcomes.

Standards Met: TU CE II & V; NAEYC Stds. #2 PSTL Domain #5 (b,e)

EDU 354

Ethnographic Studies of Rural Communities: Child, Family, Community and Learning

3 Credit Hours

This course is an introduction to and use of the ethnographic method as one of the distinguishing approaches to research of peoples in lived social and cultural settings. Students will conduct and report on field studies of a range of social and cultural issues in rural communities in Maryland County. As ethnographers of families and communities focus will be in such areas as the cultural knowledge and epistemologies impacting child raising, parenting styles, health and nutritional practices as well as the social networks

within and between families and community institutions: to promote deeper understanding of indigenous educational practices and belief systems and an appreciation of the way in which learning is relevant to the culture in which the student lives; and explore possibilities for promoting and developing educational opportunities and resources in rural communities. No prior study of social and cultural anthropology is required. The specific skills required by this course are developed during the experience of researching.

Extensive field -work is required.

Standards Met: TU CE I (4)& II (7,8)&IV; NAEYC Stds. #2: PSTL Domain #I (f,h)

ECD/EDUP 360

Culture, Cognition and Learning for the Pre-K to 6 grade Learner

3 Credit Hours

This course covers the research and theories on children's development of conceptual thinking, process and reasoning skills and creative processes, problem solving abilities, as well as the development of particular cognitive styles as children become aware of and explore their physical and social world. Theoretical perspectives based on constructivist and eco-cultural principles such as in children's ethno-mathematical understandings, for example, and implications for creating curriculum and instruction will be explored.

Prerequisite Courses PSY 101 & EDU 250 & EDU 253

Standards Met: TU CE II (5,6,10); NAEYC Std. #1: PSTL Domain #I (f, i)

ECD/EDUP 364

Understanding Students with Exceptionalities

3 Credit Hours

This course explores introduces students to the nature of various disabilities ranging from mild to moderate learning disabilities to other concerns such as developmental delays. The course addresses identification techniques, and introduces students to a repertoire of strategies and adaptations that can help the learner have access to materials in instruction in appropriate ways. Strategies for assisting families to understand and support the learning needs of the child will be explored. Students will think about the policy shifts that they consider essential for responding to children with special needs in Liberian society.

Standards Met: TU CE I (3)&II (5,6,10); NAEYC Std #1: PSTL Domain #I (f)

ECD 366

Infant and Toddler Group Care

3 Credit Hours

This course focuses on understanding infants and toddlers and the physical environment and social interactions to support language, social-cognitive and physical development. It is designed to help the teacher and caregiver understand theories of infant/toddler development and impact of theories on promoting children's learning and development through active explorations and interactions with adults, other children and materials. Examine topics such as cultural variability in child- care. Varied aspects of the infant/toddler programs such as oral communication, vocabulary and books, music and

movement, songs, water play, sand, blocks, inquiry of physical objects, etc. will be explored. Experience in designing, and setting-up imaginative, safe environments will be an integral part of this course. Opportunities for observing interactions between caregivers and infant/toddlers are included.

Fieldwork required. (OPTIONAL for Primary Education concentration students)

Standards Met: TU CE II (7,8,9); NAEYC Stds. #1 & #5; PSTL Domain #I (f)

EDU 456

Advocacy, Networking and Collaboration in school and community

3 Credit Hours

This course engages students in the critical issues shaping current policy formation, implementation and/or enforcement in education in Liberia. Exploration of policies is enhanced by the inclusion of practitioners, advocates and lawmakers as guest speakers. Strategies to facilitate collaboration of between schools, parents and service personnel etc. will be examined. Also to be examined are the social and cultural barriers to parents serving as advocates for their own children. Students will identify current issues, pertinent to the age group of their concentration ECD/Primary/Secondary Ed or the general school population, of which they believe communities need to be aware. Students will develop a public awareness campaign project that incorporates available resources considered as potentially effective at the local, regional and national levels and identify advocacy strategies. The project will be shared in a workshop for community residents. Students working in teams will select a community to host the workshops.

Standards Met: TU CE I (4)&II (10)&IV; NAEYC Std. #2: PSTL Domain #5

EDU 453 & 454

Educational Research Methodology I & II

(6 Credits)

This is a two semesters course in which students are introduced to historical, experimental, descriptive and action research methodologies as they relate to identifying and seeking solutions to problems pertinent to the field of education and in classrooms. Student will be guided through research processes that include problem identification, review of literature, data collection methodologies, data reporting and the analysis of research results. Use of the APA documenting style will be promoted. Two research activities will be the outcome from the two semesters. {1}. Each student will choose a focus topic or question, based on an issue germane to the Liberian educational system for her/his research project, which is required for a senior thesis. {2} Conducting an Action Research in classroom or school setting. Conducting an action research entails: diagnosing an area of need in a classroom or with an individual child during their student teaching or clinical placement, develop a plan for an instructional or psycho-social intervention, gather pre- and post- assessment data to determine impact of the intervention and analyze the data to propose follow-up or alternate intervention approaches. This experience supports the process of developing work samples for the final student teaching or clinical placement portfolio.

Standards Met: TU CE II (6)& IV&V; NAEYC Stds.3 & 6.

PROFESSIONAL SEQUENCE

ECD/EDUP 262

Mathematics for Teachers in the Early Childhood and Elementary Classrooms

3 Credit Hours

Topics in mathematics, for the pre-K to elementary grades will be the focus. Special emphasis is on problem-solving and the development and application of algorithms and topics in geometry, measurements and data interpretation and algebraic thinking for example, to be included. Problem solving, critical thinking, mental math, and math games, use of technology, interactive approaches will be emphasized: as young children ideally should in their own classrooms.

Standards Met: TU CE I (1, 8, 10); NAEYC Std. #4: PSTL Domain #I (a, b, g)

ECD/EDUP 361

Science for Teachers in the Early Childhood and Primary Classrooms

3 Credit Hours

The course is designed to enhance content knowledge of topics in science for the early childhood and elementary classrooms. This course begins with the principles of constructivist learning, inquiry, and exploration-based science instruction. Students in this course will become familiar with relevant Liberian Curriculum for science and math and North America's National Science Education standards (NA/ NSES). Students will have multiple opportunities to develop content knowledge about such topic as the characteristics of living things: plants and animals; the human body; ecosystems, and humans and the environment; weather, light and shadow; motion and machines; water and sand.

Standards Met: TU CE I (1, 8, 10); NAEYC Stds. #4 & #5: PSTL Domain #I(a, b, g)

ECD/EDUP 362

Diagnosing and Assessing Learning, Curriculum Planning and Evaluating Effectiveness in Early Childhood and Primary Settings

3 Credit Hours

This course addresses three fundamental questions: How would we know if the children are developing well and learning what we want them to learn? And how could we decide whether the programs for children from infancy through the primary grades are doing a good job? And how do we plan for intervention? Answer to the first question will entail exploring such topics as variation in assessment practices depending on ages, culture, languages and abilities; specific diagnostic and assessment tools and measures from which to select; and involving families in assessment. To explore answers to the second question on program effectiveness, students will become familiar with program and early learning standards and the range of developmental and learning outcomes, that are specific to early childhood programs and address the developmental domains (physical well-being and motor development; social and emotional development; approaches to learning; language development; and cognition and general knowledge), as well as those that are relevant to all programs. Answer to the third question will come from experiences in planning for intervention. Students will have opportunities to apply assessment and program evaluation tools in field sites.

Fieldwork required.

Standards Met: TU CE I & III (11, 13, 14)&IV (16); NAEYC Stds #3 & #4: PSTL Domain #4

ECD/EDUP 363

Foundations of Literacy for Emergent Readers and for the Primary Grades

3 Credit Hours

This course examines the processes through which young children in dual language or bi-dialectical situations acquire listening, speaking, reading and writing skills. Students will be introduced to current theoretical perspectives in the field of socio-linguistics, and special education and the impact of those perspectives on thinking about language, literacy development and instruction. Strategies for integrating all communication modes in literacy instruction from emergent to the elementary years; strategies for building vocabulary, reading fluency, comprehension and so on will be introduced

Student will use varied approaches to assessing language and literacy performance and needs, explore how assessment and instruction are integrated processes and the need to differentiate instruction to meet diverse learning needs. .

Standards Met: TU CE I & II (9) & IV; NAEYC Std. #5: PSTL Domain #I (a, b, g)

ECD/EDUP 365

Methods of Teaching Science, Mathematics and Literacy with the PreK-6 Learner

3 Credit Hours

This course covers the design, planning and adaptation of developmentally supportive learning environments in the teaching and learning of science, mathematics, and literacy in the PreK-6 age groups. Students in this course will experience experiential-inquiry-concept-based teaching and learning that reflects current approach to explorations in science and math instruction. How to assess learning developmentally and how to use children's natural activities, physical and social environment and other locally available materials to teach science and math will be stressed. Students will design curriculum units reflecting integrated concept-based math/science/language arts/social studies/music and art instruction. Fieldwork Required. Prerequisite courses ECD/EDUP 267;

ECD/EDUP 361; ECD/EDUP 363

Standards Met: TU CE I & III; NAEYC Std. #5: PSTL Domain #I (a, b) & Domain #2 (a, b)

ECD/EDUP 367

Teaching Language Arts through Literature, Performance and Visual Arts, in the Early Childhood and Primary curriculum

3 Credit Hours

Students will explore how active engagement with books, storytelling and other folk traditions, games and poems, puppetry and teacher-made materials can be used in instruction to promote reading and writing. The course also introduces students to the skills and craft of performing and visual arts: drama, dance, music, drawing, painting and creative writing as vital curriculum tools for language and literacy development and instruction. Students will examine traditional Liberian art forms to enhance learning in ways that are culturally relevant, inclusive, imaginative and progressive. Each student

will work with an individual child or a small group in an early childhood or school setting to try out those methods and materials. Planning curriculum and assessing the impact of instruction is required. Fieldwork required.

Standards Met: TU CE III & IV; NAEYC Std. #5: PSTL Domain #I & Domain #2 (a,b,c)

ECD/EDUP 368

Social Studies and Social Exploration in the Pre-K-6 Classroom in Liberian Schools

3 Credit Hours

The course is organized around themes in social studies, and theories of learning and teaching strategies, ways to connect social studies to the world beyond the classroom will be introduced. This course will allow prospective teachers to explore how the natural, physical and social environment of children can be the basis for teaching and learning of themes and concepts in social studies and social exploration. Children sharing and working together cooperatively, resolving conflicts will be emphasized. Students will design social studies units and lessons with a strong emphasis on developmentally appropriate programs and activities and inquiry approaches to teaching and learning.

Standards Met: TU CE I&III & IV; NAEYC Std. #5: PSTL Domain #I & Domain #2 (a,b,c)

EDU 455

Classroom Management: Designing and Managing the Learning Environment

3 Credit Hours

Various approaches for effective classroom management and enhanced learning will be studied. Classroom management will be presented as encompassing many practices crucial in teaching that include developing relationships, structuring respectful communities in classrooms for productive collaborative learning, teaching moral development and citizenship and peace building, designing the instructional environment and diversifying instruction to successfully motivate children to learn, caring for children's emotions, developing a positive attitude to children and their communities and encouraging home and community involvement. The practical application of these practices to assist teachers and school administrators to establish and maintain effective learning environments and support children's social and emotional and character development will be explored.

Standards Met: TU CE I (1)& III (11); PSTL Domain #3

ECD/ EDUP 464

Creative Activities for Children: Teacher Made Materials for Play and Subject Area Skills Development.

3 Credit Hours

This course will be an opportunity for prospective teachers to plan and produce materials and games appropriate for children's play and skills development in subject areas of their choice. Constructed products will be evaluated and critiqued for the extent to which they are grounded in knowledge of children's development and competencies in the domain focused on.

Standards Met: TU CE III (11,13,14); NAEYC Std. #5: PSTL Domain #2 (e,f)

Student Teaching and Student Teaching Seminar

ECD/EDUP Curriculum and Instruction Supervised Fieldwork & Seminars

(2 semesters @ 4 credits per semester-total 8 credits)

ECD/EDUP 460

1st Semester- Supervised student teaching and

ECD/EDUP 462 - Seminar

ECD/EDUP 461

2nd semester- Supervised student teaching and

ECD/EDUP 463 - Seminar

Student teaching is the capstone experience requiring 360 hours of direct contact time with children in an early educational setting and/or early grades in primary schools setting for a period of ten weeks each in semester 1 and in semester II. The overall goal of ECD/EDUP supervised fieldwork is to give students a rich practical experience in designing and implementing instruction effectively and imaginatively to meet students' diverse needs. In the co-requisite seminar for each semester's placement, in small group settings, student teachers will be guided in critical reflection on their practices and experiences in the field as well as explore the integration of theory and practice. Opportunities to teach and co-teach with a cooperative teacher and other school personnel is an integral part of this course

Standards Met: TU CE I & II (7,8)& III & IV&V; NAEYC Stds. #3,#4,#5,#6,#7; PSTL Domains #2,#3,#4,#5

ELECTIVE COURSES

EDU 358

Educational Administration and Leadership

3 Credit Hours

In this course students will be introduced to theories, research and practices related to effective organizational leadership and development. Issues related to capacity -building, creating school vision and culture, decision- making, and problem solving and the relationship between the school management and teachers will be examined. Also to be considered are the organizational, cultural, human and policy variable that may impede building positive collaborative school leadership and promoting an effective, successful school. A critical topic in this course is how teachers and allied school personnel can be encouraged to play more leadership roles in schools and in the development and evaluation of curriculum. TU CE I (4, 8, 10) & IV.

EDU 357***Curriculum Planning and Development******3 Credit Hours***

This is not a content course, but a course that focuses on such topics as principles and models of curriculum and instruction that are found to promote student learning, the importance of multiple modes of assessment to inform teaching and to evaluate the impact of instruction; and using resources meaningfully in the elementary and secondary education classroom. In this course the use of “backward design” planning will promote alignment of standards, instructional goals and assessment and responsive teaching practices. Assessment strategies and tools such as oral questioning of students, observations, student conferences, portfolios, performance tasks, prior-knowledge assessment, rubrics, and student self-assessment will be introduced. Student work samples will be analyzed in order to evaluate and assess learning. Strategies for differentiating instruction will be an integral part of planning.

Standards Met: TU CE I & III (14); PSTL Domain #2.

EDU Special Topics

This course enables students and faculty, including visiting faculty, to work together on an area of special interest in education. These are offered by special arrangement in the College.

Bachelor in Secondary Education

Freshman Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading AND Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
HIST 101	Liberian History and Geography	3	HIST 102	World History & Western Civilization	3
PSY 101	Introduction to Psychology	3	SSC 101	Liberian Society, Social Issues and Problems	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	Total	20		Total	20

Sophomore Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
EDU 252	Peace Education	3	PHIL 101	Introduction to Philosophy	3
FRE 101 GLE 101 CHN 101	Introduction to French or Introduction to Glebo	3	FRE 102 GLE 102 CHN102	Intermediate French Advanced Glebo Advanced Chinese	3
EVS 201	Introduction to Environmental Science	3	EDU 260	Introduction to Teaching Field Experience	3
EDU 255	The Social World of the Child and Adolescent	3	ECD 262 / EDUP 262	Mathematics for the Early Childhood and Elementary grades.	3
EDU 256	Speech, Language and Learning	3	ECD 261 / EDUP 261	Principles & Foundations of Education for the Early Childhood and Primary Levels	3
	TOTAL	18			18

*Qualifying exam must be passed for student to pursue junior year courses

Junior Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
EDU356	Culture, Cognition and Learning for Secondary	3	EDU 354	Ethnographic Studies of Rural Communities: Child, Family and Community	2
EDU 353	Schooling, Pedagogy and Social Justice	3	EDU 358	Literacy Instruction in the Content Area for Secondary Schools	3
EDU 352	Diagnosing and Assessing Learning and Curriculum Planning and Evaluation in the Secondary School	3	MAJOR	Content Course in Specialized Area	3or 4
EDU 359	Understanding Students with Exceptionalities in Secondary Schools		MAJOR	Content Course in Specialized Area	3
MAJOR	Content Course in Specialized Area	4	MAJOR	Content Course in Specialized Area	3
MAJOR	Content Course in Specialized Area	3	MAJOR	Content Course in Specialized Area	3
	TOTAL	17			18

Fourth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
EDU 471	Curriculum and Instruction Student Teaching I: Supervised Field Experience	3	EDU 472	Curriculum and Instruction Student Teaching II: Supervised Field Experience	3
EDU 476	C & I Student Teaching 1: Seminar I	2	EDU 477	C&I Student Teaching 11: Seminar II	2
EDU 456	Advocacy, Networking & Collaboration in School and Community	2	ELECTIV E	Perspective in Science and Mathematics	3
EDU 453	Educational Research Methodology	3	EDU 454	Educational Research Methodology II Prerequisite Course: EDU 453	3
MAJOR	Content Course in Specialized Area	3			
	TOTAL	13			11
				GRAND TOTAL	135

MAJOR SUBJECT AREA CONCENTRATIONS OF THE SECONDARY PROGRAM

Course Descriptions

EDU 251

Introduction to Teaching

2 Credit Hours

This is an introductory level course designed to help students explore the teaching profession and examine their own perceptions about the teacher, effective teaching and principles that contribute to effective learning in the classroom. Students are introduced to the world of education; the realities of the teaching profession and discuss the aims of public education. Teacher's roles, responsibilities, ethics, problems and concerns are examined. The course addresses philosophical, historical, economic, political and social bases of our educational system. Current trends in Liberian education are examined; popular myths about the teaching profession are explored and students are helped to begin to articulate their personal philosophy of education. Students write autobiographies to conduct studies of their own lives as learners, conduct surveys, articulate a vision of possibilities of education in Liberia and craft a personal philosophy of education. Fieldwork required.

EDU 253

Principles and Foundations of Education (For Sed & G&C Majors only)

3 Credit Hours

This course is an introduction to philosophies, theories and fields of inquiry in learning and instruction. It provides an overview of behaviorism, social and cognitive constructivism and socio-cultural perspectives and the field of neuroscience and linguistics. Inquiry-based instructional approaches and project-based curriculum, for example, will be explored. Philosophical and theoretical perspectives and curriculum models will be analyzed for their relevance to cultural perspectives on teaching and learning and development, in Liberia. Curriculum adaptation to accommodate students with diverse learning and developmental needs will be explored. Students will also be required to review, compare and critique guidelines of the International Standards especially for subjects taught at the middle and secondary schools levels with the Liberian Curriculum standards for grades 7 to 12.

Standards Met:

EDU 255***Social and Psychological World of the Child and Adolescent******3 Credit Hours***

Child and adolescent development will be explored from an interdisciplinary perspective: “Who is the Child/Adolescent?” What are the cultural, social, political and economic environments in which childhood and youth are constructed? What are dilemmas of childhood linked to those contexts? Using readings and theories of development in course texts as well as literary works and images from media students examine the role of social, cultural, historical changes and political ideologies in the construction of childhood and adolescence as social categories and critically respond to different theoretical and cultural perspectives on development. Focus on special topics such as child-raising practices, poverty, wars, child labor, lack of appropriate, quality medical care affecting children’s and youth social, cognitive and language development and learning. Re-visioning the rights of children will be critically explored. This will be a guided project-based course. Fieldwork required. Prerequisite PSY 101

Standards Met: TU CE I (2) & II; PSTL Domain #I (f, I)

EDU 256***Speech, Language, Learning******3 Credit Hours***

Topics such the theoretical perspectives on how language emerges or is acquired, language variations and contexts of use; social and political biases and stratification of languages; language and identity, language varieties in the Liberian context; uniqueness of Liberian English (di-glossia and bilingualism) and Glebo/Grebo, for example; speech and language disorders versus differences will be focused on. Working as a linguist in the field will be part of this course. Instructional strategies to promote language use and literacy skills development will be explored. Fieldwork required.

Pre-requisite PSY 101

Standards Met: TU CE II (5,7, 9,10); #1; PSTL Domain #I (f)

EDU 353***Schooling, Pedagogy, and Social Justice******3 Credit Hours***

This course explores the questions: How can teacher be helped to examine schooling in West Africa and Liberia and construct an understanding of the intricate relationship between school and society? What is the knowledge base that teachers need if they are prepared to engage in transformative practices? Historical, economic, political and social bases of Liberian and West African educational systems, as a way of understanding the multiple factors affecting schools will be explored. Students will analyze readings, and case studies for explicit and implicit assumptions in issues of ethnicity, gender, language, geography, social class dominance, and how the framing of these issues influence school conditions, curriculum, and pedagogical practice and educational policies. Students will explore the social and economic policy shifts that could bring about changes and reforms in curriculum, pedagogy and student performance outcomes.

Standards Met: TU CE II & V; PSTL Domain #5 (b, e)

EDU 356***Culture, Cognition and Learning******3 Credit Hours***

This course covers the research and theories on children's development of conceptual thinking, process and reasoning skills and creative processes, problem solving abilities, as well as the development of particular cognitive styles as children become aware of and explore their physical and social world. Theoretical perspectives based on constructivist and eco-cultural principles such as in children's ethno-mathematical understandings, for example, and implications for creating curriculum and instruction will be explored.

Prerequisite PSY 101

Standards Met: TU CE II (5, 6, and 10); PSTL Domain #I (f, i)

EDU 354***Ethnographic Studies of Rural Communities: Child, Family, Community and Learning******3 Credit Hours***

This course is an introduction to and use of the ethnographic method as one of the distinguished approaches to research of peoples in lived social and cultural settings. Students will conduct and report on field studies of a range of social and cultural issues in rural communities in Maryland County. As ethnographers of families and communities focus will be in such areas as the cultural knowledge and epistemologies impacting child raising, parenting styles, health and nutritional practices as well as the social networks within and between families and community institutions: to promote deeper understanding of indigenous educational practices and belief systems and an appreciation of the way in which learning is relevant to the culture in which the student lives; and explore possibilities for promoting and developing educational opportunities and resources in rural communities. No prior study of social and cultural anthropology is required. The specific skills required by this course are developed during the experience of researching. *Extensive field -work is required.*

Standards Met: TU CE I (4) & II (7, 8) & IV; PSTL Domain #I (f, h)

EDU 355***Literacy Instruction in the Content Area the Middle and Secondary Schools******Credit Hours***

This course is designed to prepare students to teach in the middle or secondary schools with an understanding of literacy development as a holistic process. A critical dimension of the course will be to support our students' identification of ways in which teachers can assess, design, implement and promote effective literacy in their respective subject content areas. It explores topics such as content reading with English Language Learners, strategies for building vocabulary and comprehension skills, structured reading lessons, promoting independent reading and critical thinking, promoting the reading/writing connection, effective writing instruction. All students will be expected to engage at least one student or a small group in a series of lessons in an area of literacy instruction and develop a literacy curriculum informed by insights from the experience.

COUN 352

Diagnosing and Assessing Learning Curriculum, Planning and Evaluation: Section II *(Field work required)*

3 Credit Hours

This course prepares students in the guidance and Counseling program to study children in their environment. Students will learn to assess, diagnose and interpret strengths and needs, recognizing uniqueness in cultures, languages, values, backgrounds and abilities using formal and informal assessment tools. Students will develop their ability to incorporate information from the diagnostic and assessment measures to design interventions in middle and secondary school. The course also examines individual and group approaches to authentic assessment, evaluation, and the basic concepts of standardized and non-standardized evaluations. Prerequisite course

EDU 358

Curriculum Planning and Inquiry approaches to teaching of Sciences in middle and Secondary Schools *(Field work required)*

3 Credit Hours

This is **not a content** course, but a course that focuses on such topics as principles and models that inform curriculum/ intervention planning. Students will learn how to develop lesson plans, identify program and learner performance outcomes, modules and rubrics that are useful for program development at all levels. Using resources meaningfully and tools for evaluating the impact of interventions and programs will be introduced. Students will develop curriculum or intervention projects informed by insights that emerged from the assessment data. Prerequisite EDU 351 & EDUUnderstanding Students with Exceptionalities

Standards Met: TU CE I & III (14); PSTL Domain #2.

EDU 455

Classroom Management: Designing and Managing the Learning Environment **3 Credit Hours**

Various approaches for effective classroom management and enhanced learning will be studied. Classroom management will be presented as encompassing many practices crucial in teaching that include developing relationships, structuring respectful communities in classrooms for productive collaborative learning, teaching moral development and citizenship and peace building, designing the instructional environment and diversifying instruction to successfully motivate children to learn, caring for children's emotions, developing a positive attitude to children and their communities and encouraging home and community involvement. The practical application of these practices to assist teachers and school administrators to establish and maintain effective learning environments and support children's social and emotional and character development will be explored.

Standards Met: TU CE I (1) & III (11); PSTL Domain #3

EDU 456***Advocacy, Networking and Collaboration in school and community*****3 Credit Hours**

This course engages students in the critical issues shaping current policy formation, implementation and/or enforcement in education in Liberia. Exploration of policies is enhanced by the inclusion of practitioners, advocates and lawmakers as guest speakers. Strategies to facilitate collaboration of between schools, parents and service personnel etc. will be examined. Also to be examined are the social and cultural barriers to parents serving as advocates for their own children. Students will identify current issues, pertinent to the age group of their concentration ECD/Primary/Secondary Ed or the general school population, of which they believe communities need to be aware. Students will develop a public awareness campaign project that incorporates available resources considered as potentially effective at the local, regional and national levels and identify advocacy strategies. The project will be shared in a workshop for community residents. Students working in teams will select a community to host the workshops. Fieldwork required.

Standards Met: TU CE I (4) &II (10) &IV; PSTL Domain #5

EDU 453***Educational Research Methodology I*****3 Credit Hours****3 Credits****3 Hours Lecture**

At the end of this semester students will have 1. Identified the problem, reviewed the literature and defined the methodology to be used for the collection of data for the senior thesis. 2. Begun the design of an action research in a classroom or intervention setting and implemented the process of collecting pre and post- test data. Conducting an action research entails: diagnosing an area of need in a classroom or with an individual child during the clinical placement, develop a plan for an instructional or psycho-social intervention, gather pre- and post-assessment data to determine impact of the intervention and analyze the data to propose follow-up or alternate intervention approaches.

Standards Met: TU CE II (6) &IV&V;

EDU 454***Educational Research Methodology II: Senior Thesis & Completion of Work Sample for Portfolio*****3 Credit Hours**

This course is the second half of the research methodology course. Students will collect and analyze data, organized the findings, prepare the conclusion and make recommendations for future studies. Students will present and defend their completed research project using APA style format, to a panel of faculty and community members. Work samples shall be completed. (Complete descriptions for developing the work samples are available in the package for the Clinical experience)

(Prerequisite is EDU 453)

Standards Met: TU CE II (6) & IV &V;

CLINICAL PRACTICE & CLINICAL SEMINAR

STUDENT TEACHING AND STUDENT TEACHING SEMINAR

Secondary Education Majors- Curriculum and Instruction Supervised Fieldwork & Seminars (2 semesters at 5 credits per semester-total 10 credits)

EDU 450

***Curriculum and Instruction Supervised Student Teaching I
3 Credit Hours***

***EDU 457: Co requisite Seminar I
1 Credit Hour***

EDU 452

***Curriculum and Instruction Supervised Student Teaching II
3 Credit Hours***

***EDU 458: Co-requisite Seminar II
1 Credit Hour***

Student teaching is the capstone experience requiring 360 hours of direct contact time with middle school and secondary school settings for a period of ten weeks each in semester 1 and in semester II. Each student teacher will rotate in the middle and secondary schools for 5 weeks periods. The overall goal of supervised fieldwork is to give students a rich practical experience in designing and implementing instruction effectively and imaginatively to meet students' diverse needs. Opportunities to teach and co-teach with a cooperative teacher and other school personnel, is an integral part of this course.

In the co-requisite seminar for each semester's placement, in small group settings, student teachers will be guided in critical reflection on their practices and experiences in the field as well as explore the integration of theory and practice.

Standards Met: TU CE I & II (7, 8) & III & IV & V; PSTL Domains #2, #3, #4, #5

ELECTIVE COURSES

COUN 386

***Structural and Psychological Dimensions of Domestic Violence (3 credits)
3 Credit Hours***

This course addresses the complex reasoning behind domestic violence, from the structural issues to the psychological issues. Students will get inside the culture, the history and the mind of the abuser and gain an understanding of the character. The course will dispel the myths about abuse and clarify the truths as well as the warning signs, finalizing with prevention and interventions.

Standards Met: CACREP G1, G2, D4

EDU 358***Educational Administration and Leadership******3 Credit Hours***

In this course students will be introduced to theories, research and practices related to effective organizational leadership and development. Issues related to capacity -building, creating school vision and culture, decision- making, and problem solving and the relationship between the school management and teachers and other school personnel will be examined. Also to be considered are the organizational, cultural, human and policy variable that may impede building positive collaborative school leadership and promoting an effective, successful school. A critical topic in this course is how teachers and allied school personnel can be encouraged to play more leadership roles in schools and in the development and evaluation of curriculum.

TU CE I (4, 8, 10) & IV; CACREP O1, O2,

EDU 359***Understanding Students with Exceptionalities (ELECTIVE)******3 Credit Hours***

This course introduces students to the nature of various disabilities ranging from mild to moderate learning disabilities to other concerns such as developmental delays. The course addresses identification techniques, and introduces students to a repertoire of strategies and adaptations that can help the learner have access to materials in instruction in appropriate ways. Strategies for assisting families to understand and support the learning needs of the child will be explored. Students will think about the policy shifts that they consider essential for responding to children with special needs in Liberian society.

Standards Met: TU CE I (3) & II (5, 6, 10); PSTL Domain #I (f)

EDU Special Topics

This course enables students and faculty, including visiting faculty, to work together on an area of special interest in education. This course is offered by special arrangement in the College.

SECONDARY SCHOOLS PROGRAM COURSE DESCRIPTIONS

SUBJECT AREA CONCENTRATIONS

BIO 371

Evolution and Culture

Pre-Requisites: BIO 101; CHEM 101; PHY 101

3 Credit Hours

Interest in human behavior motivates much of our research in evolution and behavior of all organisms. It is also an area in which poor science has consequences and where controlled experiments and unbiased sampling are usually not possible. This course presents current understanding of epigenetic and epigenetic modes of inheritance, how traits evolve in cultures and groups and the levels of selection and nitration between cultural and genetic evolution. The evolution of behavior on both human and non-human organisms will be explored for a better understanding of evolution, scientific methods and thinking and the limits of knowledge.

Standard Met: NSTA Standard #1

BIO 372

Cell Biology

Pre-Requisites: BIO 101, CHEM 101

4 Credit Hours

Cell biology is the study of the structure and function of prokaryotic and eukaryotic cells. In this course we will examine many different areas of cellular biology including the synthesis and function of macromolecules such as DNA, RNA and proteins; control of genetic expressions; membrane and organelle structure and function; bioenergetics; and cellular communication. Examples of relevant human disorders will also be used to help the students' understand what happens when cells don't work as they should.

STANDARD MET: NSTA Standard #1

BIO 373

Botany for Education Students

Pre-Requisites: BIO 101, EVS 201; PHY 101; BIO 372

4 Credit Hours

Study plant ecology, plant pathology, mycology, the ecological physiology of plants, plant biochemistry, plant molecular biology, genetic engineering of plants, and the taxonomy, evolution and biogeography of flowering plants. Topics in Ethno-botany will also be included in this course: plant products that are an important part of everyday life, and the ways that the development of different cultures has been influenced by plants throughout history, origins of major agricultural crops, economically important plant products, and medicinal and poisonous plants in Liberia and West Africa.

BIO 374***Animal Behavior and Function******Pre-Requisites: BIO 101, 102, ENVSC 201; PHYS 101; BIO 372******4 Credit Hours***

This course will cover such topics as functions and design of circulatory systems in a wide range of animal groups; the various physiological and biochemical adaptations developed by diving birds and mammals that allow them to remain submerged for prolonged periods; the similarities and differences of reproductive strategies in different animal groups; the relationship between animals, temperature and their environment and the ways in which they have adapted to survive in an extended range of temperatures; the effects of genetic change on proteins, the phylogeny of cytochrome C and the genetic analysis of human hemoglobin. Design, carry out and write up an experimental project.

Standard met: NSTA Standard #1

BIO 376***Methods of Teaching Biological Science in Secondary School******Pre-Requisites: BIO 101, 102, ENVSC 201; PHYS 101; BIO 372; 374******4 Credit Hours***

Open only to students in the science teaching major concentrations. Through explorations of epistemological foundations of biology, chemistry and physics (the natural sciences) and their pedagogical and philosophical underpinnings, develop a point of view in science teaching. The course offers a review of Liberian science curricula, strategies for teaching science with emphasis on planning using backward design and the 5E instructional model, resources and lab. Performance/Project-based assessment and evaluation of learning emphasized.

Field Experience Required:

Standards Met: NSTA standard #2 & standard #3

BIO 377***Anatomy and Physiology for Education Students******Pre-Requisites: BIO 101, CHEM 101; BIO 371******4 Credit Hours***

A detailed study of the human organism according to levels of chemical and structural organization with special reference to cytology, histology and organs of the integumentary, skeletal, muscular, and nervous systems and fluid and electrolyte balance. NSTA Standard #1

BIO 477***Ecology******Pre-Requisites: BIO 101, 102, ENVSC 201; PHYS 101; BIO 371******3 Credit Hours***

Ecology is the study of the interaction between organisms and the environment. In this course we will investigate the relationship between abiotic (nonliving) and biotic (living) components of an ecosystem. Building upon an introduction to environmental factors, we will examine the interplay between these components at the organismal, population, community and ecosystem levels. Throughout the course, we will discuss current

ecological applications and issues, such as habitat destruction, biogeographic ecology, nutrient cycling and energy flow, sustainability, disease and parasitism- the challenges of infectious disease in the developing world, focusing on tuberculosis, HIV, and malaria-invasive species, and global climate change. Field trips will be scheduled at times before and other times during our regular class hours (will last several hours). You will be responsible for your transportation to the site. In addition to the prerequisites, it is strongly encouraged that you have also completed the all the math requirements prior to enrolling in this course. If you have not taken the course prerequisites, you are very likely to have a difficult time doing well in this. Standards Met: NSTA Standard #1

ISC 471

Integrated Science

Pre-Requisites: BIO 101, CHEM 101; PHYSICS 101; BIO 371

4 Credit Hours

Integrated science is an interdisciplinary approach to the teaching and learning of science. Students taking this course will learn about concepts, content and inquiry processes linking various topics across the disciplines in the sciences. Students will be provided with hands-on opportunities for systematic inquiry into the sciences from an interdisciplinary perspective. Thinking scientifically, critically and creatively through engaging in problem-solving activities will be promoted. They will develop the knowledge and skills of how to apply this approach in the teaching of science in classrooms in the middle and secondary schools in Liberia.

NSTA Standard #1 & Standard #2

ISC 472

Perspectives on Science and Mathematics

Pre- Requisite; None

2 Credit Hours

This course is intended to help future math and science teachers learn how to think about math and science “from the outside” to ask questions about what scientists and mathematicians do and why, about where science and technology come from and how they got to be important in the world today, about what kinds of questions scientists and mathematicians have tried to answer and why, what is the significance of scientists and mathematicians using local contexts and their associated issues and problems to advance the search for deeper meaning in scientific discoveries? This course additionally offers an opportunity to think about science and math education in Africa incorporating indigenous African ways of learning and knowing. This course is also designed to teach students the skills of the liberal arts sophisticated research and information analysis, fluent writing, and substantive argument. It requires students, having acquired all these perspectives and skill to put them to work in science and math pedagogy.

BIO 473

Bio-Statistics for Education Students

Pre-Requisites: BIO 101, 102, MATH 103

3 Credit Hours

The ability to organize and analyze biological data is an essential research tool. This

course provides an introduction to the methods used to analyze biological data. The course will introduce topics such as describing and displaying data, probability, hypothesis testing, how to design experiments, and many others. Hands on experience will be provided through weekly exercises using biological data and R, free open source statistical software.

NSTA Standard #1

CHEMISTRY

CHEM 201

Organic Chemistry

Pre-Requisites: CHEM 101

3 Credit Hours

Structures, nomenclature, properties, stereochemistry and bonding of organic compounds are topics covered in this course.

CHEM 202

Inorganic Chemistry

Pre-Requisites: CHEM 101

3 Credit Hours

Introduction to periodic chemistry, atomic structure, bonding and reactivity of the elements and their compounds are some topics discussed in this course.

CHEM 371

Biochemistry

Pre-Requisites: CHEM 101, 102

4 Credit Hours

This course is designed to introduce students to the biochemical design of life. Structures, properties and functions of carbohydrates, lipids, proteins, amino acids and nucleic acids are some topics examined in this course.

CHEM 372

Analytical Chemistry

Pre-Requisites: CHEM 101, 102

4 Credit Hours

This course is an introduction to analytical chemistry that focuses on quantitative chemical analysis. Topics include steps in chemical analysis, gravimetric analysis, volumetric analysis and chemical equilibrium. This course is three hours lecture and a three-hour once a week laboratory.

CHEM 373***Introduction to Environmental Chemistry******Pre-Requisites: CHEM 101, 102, 103, 377, 372******4 Credit Hours***

It examines environmental issues as seen through chemical perspective. Topics include water pollution and purification, air and soil pollution, toxic organic chemicals and pesticides, global warming, alternative fuels and renewable energy.

CHEM 376***Methods of Teaching Chemistry in Secondary Schools******Pre-Requisites: CHEM101, 102, ENVSC 201; PHYS 101;
CHEM 377, 371, 372, 373******3 Credit Hours***

Open only to students in the science teaching major concentrations. Through explorations of epistemological foundations of biology, chemistry and physics (the natural sciences) and their pedagogical and philosophical underpinnings, develop a point of view in science teaching. The course offers a review of Liberian science curricula, strategies for teaching science with emphasis on planning using backward design and the 5E instructional model, resources and lab. Performance/Project-based assessment and evaluation of learning emphasized.

Field Experience Required:

Standards Met: NSTA standard #2 & standard #3

CHEM 473***Physical Chemistry******Pre-Requisites: CHEM 101, 102, PHYS 101 and MATH 102; CHEM 377******4 Credit Hours***

This course explains the concepts of the properties and behavior of chemical systems. Topics include gas laws, laws of classical thermodynamics, chemical reaction thermodynamics, and electrochemical reactions. This course is three lecture hours and three hour, once a week, laboratory.

CHEM 474***Introduction to Industrial Chemistry******Pre-Requisites: CHEM 102, 377******4 Credit Hours***

This course studies the chemical aspects of cement, charcoal, iron ore, rubber, plastics, paint, soap, detergent, petroleum, and palm oil industries. The location of the industry, quality of products, safety of operation and environmental issues are treated.

Extensive field experience is required.

MATHEMATICS

MATH 104

Elementary Statistics

Pre-Requisite: MATH 101 and MATH 102

3 Credit Hours

This course deals with the collection, organization, presentation, and analysis of data. It endeavors to provide students statistical concepts, principles, and methods on topics regarding descriptive and inferential statistics such as: frequency distribution and graphs; measures of central tendency and other positions; measures of variation; probability and counting techniques; test of hypothesis; correlation; and regression.

MATH 373

Differential Calculus for Education Students

Pre-Requisites: MATH 101, MATH 102, MATH 104

3 Credit Hours

This course provides the fundamental principles of Mathematics necessary in understanding the concepts of Mathematical Analysis. It covers the latter part of Analytic Geometry, and an introduction of Differential Calculus. Its foremost objective is to help the students develop a sound understanding of the fundamental concepts of Analytic Geometry and Differential Calculus and a thorough appreciation of their applications. Topics discussed are the straight line, quadratic curves, limits of functions, rules of differentiation, maxima and minima of functions of one variable, and using derivatives to graph polynomial functions, and higher and partial derivatives.

MATH 374

Geometry for Education Students

Pre-Requisites: MATH 101 AND MATH 102

3 Credit Hours

Geometry is a critical component of a mathematics education because students are required to relate concepts from Algebra and Trigonometry to geometric phenomena. This course requires students to focus on logical proof and critical thinking when solving problems or evaluating arguments. It enhances the knowledge of the students' about points, segments, triangles, polygons, circles, solid figures, and their associated relationships as a mathematical system. Inductive and deductive thinking skills are used in problem solving situations, and applications to the real world are stressed. It also emphasizes writing proofs to solve (prove) properties of geometric figures.

MATH 375

Number Theory for Education Students

Pre-Requisites: MATH 101 and MATH 373

3 Credit Hours

This course is designed to develop the mathematical strengths of the students who are major of mathematics. This course will emphasize of the properties of numbers specifically positive integers. Students will also learn the concepts on the properties of integers, divisibility algorithms, Diophantine equation, congruencies, prime numbers,

quadratic reciprocity, arithmetic function and algebraic numbers. The goals of this course are: (1) learn the beautiful theorems of elementary number theory; (2) enhance one's ability to read, understand, and write proofs; (3) develop skills in problem solving and logical thinking; and (4) apply the concepts and skills learned in their everyday life.

MATH 376

Integral Calculus for Education Students

Pre-Requisites: Math 101, 102, 373

3 Credit Hours

The course is designed to develop the students' understanding of the concepts of mathematics and to provide experience with its methods and applications. The course emphasizes on the applications of mathematics to different areas. Topics covered are Applications of Derivatives, Implicit Differentiation, Integrals, Definite Integrals, Logarithmic and Exponential Functions, Partial Differentiation, Applications of Partial Derivatives, Multiple Integration, Differential Equations and its Applications.

MATH 377

Methods of Teaching Mathematics

Pre-Requisites: MATH 373

3 Credit Hours

This course focuses in particular on the pedagogical context of teaching mathematics and its impact upon teachers and students with diverse social and cultural background. The issues covered include in-depth knowledge of the aims and objectives of teaching mathematics and of the national numeracy strategies and understanding of the expectations for success as a teacher in terms of the curriculum in mathematics. Moreover, varied teaching strategies including lesson planning and demonstration teaching are also given credence to the course. These can all be made possible by involving students in communities of practices appropriate to the work of discipline through adaptation of values, implicitly and explicitly, in mathematics teaching.

MATH 378

Linear Algebra for Education Students

Pre-Requisites: MATH 373

3 Credit Hours

This course aims to provide students Majoring Mathematics an understanding to the area of Mathematics known as Linear Algebra. The course main objective is to provide an in depth disciplinary expertise as a solid foundation in linear algebra by exploring linear system of equations, matrices, vector space, linear transformations, and eigenvectors and eigenvalues, to be aware of the contributions of Linear Algebra applications in varied disciplines, and to motivate students to work cooperatively in coming up with scholarly outputs using some important aspects of linear algebra. Understand the expectations for success through series of serious assessments taking forms theoretical examinations and mathematical problem solving applications on given topics and also practical exams such as oral defense.

MATH 471***Abstract Algebra for Education Students******Pre-Requisite: MATH 378******3 Credit Hours***

This course intends to build foundations on factorizations, solutions of equations, and algebraic laws, to systematize and generalize those areas whenever possible with provisions to view the purpose behind definitions, theorems, and newly constructed systems particularly constituting a firm foundation about groups, rings, and fields. The opportunity to have valuable experience on real analysis on the development of the number systems from integers to rational, real, and complex numbers provides students' easiness in transition from computational Mathematics to abstract Mathematics and proofs and deepens their understanding on axiomatic treatment of Mathematics in preparation for future instruction and investigation.

MATH 473***Inferential Statistics for Education Students******Pre-Requisites: MATH 201******3 Credit Hours***

This is an intermediate course in inferential statistics. The focus of the course is on the use and interpretation of statistical procedures used with quantitative methods of research and evaluation. This course aims to give clear and comprehensive view of statistics in relation to studies and research, thus, it will provide tools used for statistical analysis and decision making as applied to educational research setting. This course includes both parametric and non-parametric tests to draw conclusions about a population. The topics included are test concerning means, test concerning proportions, analysis of variance, correlation, regression, chi-square, and non-parametric tests such as Wilcoxon Rank Sum Test, Sign-test, Mann-Whitney test, and Kruskal-Wallis test. In addition, the students are expected to gather, organize, analyze and interpret the data inferentially by being able to identify the appropriate statistical tools that should be used in given research problems.

ELECTIVES***MATHEMATICS******SPECIAL TOPICS IN MATHEMATICS:***

These may vary from one semester to the next. Possible topics may include:

Mathematics, Technology, and Society

The role of mathematics in the development of science and technology and its impact on society

LANGUAGE AND LITERATURE COURSES

ENGL 371

Oral African Literature

Pre-Requisites: ENG 204

3 Credit Hours

The course is a descriptive survey of the major genres of traditional African verbal and forms. It also examines the lyrics, myths, folktales, legend, epic, proverbs, praise-poetry, and ritual dramatic forms. These and stylistic techniques are evaluated in order to demonstrate the nature and scope of traditional African creative imagination.

ENGL 372

The Sociolinguistics of Language

Pre-Requisite: ENGL 201

3 Credit Hours

The Sociolinguistics of Language focuses on the contemporary variations in English: geographic, social and functional varieties of English in countries such as Liberia and in West Africa. It enables the study of the spread and functions of English as a world language and in specific local situations. Additionally, we will look at other language varieties and how such variation constructs and is constructed by identity and culture. An exploration of attitudes and ideologies about these varieties will be of particular importance to understanding this relationship. We will also consider some of the educational, political, and social repercussions of these sociolinguistics facts. The course also offers an opportunity to focus on the principles of second language learning. Individual differences are in second language learning (general learning ability, phonetic coding ability, grammatical sensitivity, inductive learning ability, associative memory), grammatical competence and communicative competence in second language learners – the learner's inter-language and its description.

ENG 373

World Literature

Pre-Requisite: ENGL 204

3 Credit Hours

This course is designed to enable students appreciate the literature of the diverse cultures and people in the world as an important part of their overall educational experiences. In particular, the course aims at developing students' critical thinking process, the understanding and celebrating of diverse cultures and experiences as a tool for independent assessment of human issues. It also should help in molding and forming the characters of the students morally and intellectually. Readings the works of writers in the African Diaspora will be a central part of this course.

ENG 374***Eco-Literature******Pre-Requisites: ENGL 204******3 Credit Hours***

Eco- Literature is an interdisciplinary course in which the genres of literature are used to explain the interaction, the inter-dependency and the interrelationship in the eco-system. This course focuses on the evolution of human attitudes toward nature, especially as they have been both reflected in and influenced by different eco-writers from the romantic era to the present. The course also enable the study how the tools of literature particularly, eco-criticism and post-colonialism are being used to comment on the issues of non-abating exploitation of the physical environment, wanton destruction of the ecosystem and social injustices perpetrated by multi-nationals in Africa, and most especially in Liberia, under the guise of neo-colonialism and in conspiracy with a corrupt and moribund home governments.

This course also seeks to answer the question whether Literature is an important tool in correcting socio-cultural issues related with environmental degradation. Finally, we shall also look at the role of Literature in bringing the issue of environmental degradation to the front burner and correcting attitudes that are inimical to the survival of the physical environment.

ENG 375***Methods of Teaching English and Literature in the Secondary Schools******Pre-Requisites: ENGL 372******3 Credit Hours***

In this course, explorations will lead to developing a point of view in teaching English and Literature.. Focus also on use of MOE content standards in developing curriculum and for instruction, strategies to promote the integration of teaching literature and syntactic rules of standardized English and reading and writing for meaning, the use of socio-cultural resources, unit and lesson planning, assessment and evaluation of teaching and learning in the middle and secondary levels. Standards Met:

ENG 477***18th Century Literature and Early English Novel Period******Pre-Requisites: ENG 372******3 Credit Hours***

The three genres of literary writing – poetry, drama and fiction are considered. Particular attention is paid to the works of John Dryden, Jonathan Swift, Alexander Pope, Samuel Johnson (poetry): William Congreve, Oliver Goldsmith and R.S. Sheridan (drama): Jonathan Swift, Samuel Johnson (fiction). The aim is to introduce English Single Honors students to the influence of “satire” and “comedy” in the literature of England from 1660 – 1700. Attempt will be made to relate the artist to his socio-cultural setting, especially to the importance of politics and city civilization creating a new aesthetic awareness.

Part B of the course also studied selected Works in English Renaissance and 17th Century Poetry. It examines some of the lyrics, sonnets, satires and pastorals written poets from Thomas Wyatt to John Donne. Among the authors included for study are

Marlowe, Shakespeare, Ben Jonson, Sheldon, Sydney and the metaphysical poets. The epic mode and classical humanism of Edmond Spenser and John Milton are examines. Background knowledge of the renaissance art and worldview to general, facilitates analysis of variations of style and subject-general of the poems.

Part C focuses on the study of the early English novels: A study of the rise and development of the indigenous English novel. Emphasis is on detailed analysis and appraisal of the themes and conventions of the early English novel. Representative works will be those of Defoe, Richardson, Fielding, Smidler, Stern. Bronte, Scott and the Gothic novel. The list is not exhaustive

ENGL 471

African Film, Art and Politics, C. 1900 - Present

Pre-Requisites: ENGL 204

3 Credit Hours

This course explores the relationship between film, music, art and politics in twentieth century Africa with a special emphasis on Liberia. Artistic production and consumption is considered in the context of various major political shifts, from the experience of colonialism, pre and post-war Liberia to for example, the struggle against Apartheid. Each week addresses a different theme in an attempt to introduce students to the various dynamics that shape African cultures, societies and governments. Additionally, this course seeks to engage students in a debate about how popular films, art and music affect historical imaginations and memory. While much of the images of Africa have previously been the product of Hollywood and European films, this course will introduce Nollywood and burgeoning African film industry as an African alternative to how films depict, and people understand their history. We will also look at how western perceptions and understanding of African art have shifted, and how museums have framed African art throughout the twentieth century will remain important points of discussion throughout the course. Themes of differences, culture, and language, violence and trauma, gender, memory and globalization will be explored critically.

ENGL 472

Gender, Feminism, and Contemporary Literature

Pre-Requisites: ENGL 372

3 Credit Hours

The course will examine, among others, the theoretical assertion that variable gender identities are a result of psychological, historical and cultural factors that impact on society by analyzing the works of some gender theorists as well as creative writers from Africa, the West and other traditions that are relevant to the subject. The latter part of the course focuses the conventional stereotypes of women and male writers and examines the changing image of women as reflected in literature and so relating to historical, economic, and cultural circumstances. Issues to be discussed include the idealization of woman in the chivalric and courtly traditions versus the portrayal of woman as Eve, temptress and object of attire; the “bad” woman in the bourgeoisie novel versus woman as mother and soul of the home, earth mother, misogyny and portrayal of the early feminist; woman in African literature. Works to be critically analyzed from the feminist

perspective will be chosen from African folklore and traditional literature, selections of medieval and Renaissance poetry.

ELECTIVE

ENGL 105

The Transformational Generative Grammar of English

It studies the principles of T-G grammar: Components of early T-G theory. English syntactic analysis based on early T-G theory – deep structure and kernel structure, surface structure of the English sentences.

It also focuses on competence and performance in T-G theory; procedures for analyzing English sentences – phrase structure rules, transformational rules and morphophonemic rules. There is analysis of single-base transformations and transformational operations (i.e. basic sentence transformations).

HISTORY

HIST 377

Pre-Colonial Africa

Pre-Requisites: HIST 101, 102; SSC 101

3 Credit Hours

Exploration of the historical accounts of pre-colonial Africa constructed from earliest historical records, artifacts and archeological finding, for example.

A goal of this class is the examination of such themes as causality of events, motives/consequences, migration/immigration, empires/civilizations, conquest/dominance, growth/stagnation, continuity and change to relate past phenomena over time and place and how these themes intersect Africa's human and natural environment. Course concludes with the early stages of the slave trade in Africa, Africa's place in the "first globalization" of the 1800s, and the issues surrounding the study of African history as a discipline.

HIST 371

Africa and the Trans-Atlantic Slavery Trade from 15th to 19th Century

Pre-Requisites: HIST 101, 102; SSC 101

3 Credit Hours

Slavery had long been practiced in Africa. Between the 7th and 27th centuries, Arab slave trade (also known as slavery in the East) took 18 million slaves from Africa via trans-Saharan and Indian Ocean routes. Between the 15th and the 19th centuries (500 years), the Atlantic slave trade took an estimated 7–12 million slaves to the New World. In West Africa, the decline of the Atlantic slave trade in the 1827s caused dramatic economic shifts in local polities. The gradual decline of slave-trading, prompted by a lack of demand for slaves in the New World, increasing anti-slavery legislation in Europe and America are examined. Through reading the works of literature and original sources, this course will focus on such topics as the role of slavery in European colonization, the horrors of the middle passage and the history of the Caribbean and the Americas.

HIST 372***European History from the Renaissance to the Present I******Pre-Requisites: HIST 101, 102; SSC 101******3 Credit Hours***

This course introduces students to European history from around 1500 to the present. During this time, small, poor, and fragmented Europe became a world civilization, whose political, cultural, and economic power now touch the four corners of the globe. Our course will ask how and why this happened. How, in other words, did "modernity" become "western," for better and worse? As we cover this half-millennium, we will look at major landmarks in European cultural, intellectual, social, political, and economic development: the Renaissance, the epochal expansion of Europe into the new world, the break-up of Latin Christianity into competing religious communities. Our readings will include learned treatises in religion, classics in political theory, fiction, and other documents from the past, as well as a textbook. Work in sections centers on reading and discussion of original sources and of lectures, and on the improvement of writing skills.

HIST 372***Post-Colonial Africa: 1947 – Present******Pre-Requisite: HIST 371******3 Credit Hours***

This is a course about how Africa got to be where it is now. It covers the period from the beginning of the crisis which shook colonial empires in the 1947s through the coming to power of independent African governments in most of the continent in the 1960s through the fall of the last white regime in South Africa in 1994 to a troubled present. By bridging the conventional divide between "colonial" and "independent" Africa, the course will open up questions about the changes in African economies, religious beliefs, family relations, and conceptions of the world around them during the last half century. Students will read political and literary writings by African intellectuals as well as the work of scholars based inside and outside Africa, and they will view and discuss videos as well. The course will emphasize the multiple meanings of politics--from local to regional to Pan-African levels and it aspires to give students a framework for understanding the process of social and economic change in contemporary Africa. . Our core themes in this course are power, exploitation, imperialist capitalism, neocolonialism, dependency, entrenched poverty, alienation, ideology, conflicts, citizenship, resistance that have intersected Africa's cultural, political, and social histories as the nations of the continent unfold in a global context. Issues of leadership and transformation of African societies will be explored. Previous coursework on Africa is desirable but not required.

HIST 374***Methods of Teaching History in Secondary Schools******Pre-Requisites: HIST 372, 377******3 Credit Hours***

In this course, explorations will lead to developing a point of view in teaching history. Epistemological foundations of approaches to history and implications for teaching will be examined. Focus also on use of historical thinking and MOE content standards in developing curriculum and for instruction, inquiry and project-based strategies and

integrating literature, the arts and socio-cultural resources, unit and lesson planning, assessment and evaluation of teaching and learning in history.

HIST 375

European History from the Renaissance to the Present II

Pre-Requisites: HIST 371, 372

3 Credit Hours

This part II of the course emphasis will be on the construction of the modern state, the formation of overseas empires, the coming of capitalism, the Scientific Revolution, the French Revolution, liberalism and the industrial Revolution, socialism and the rise of labor, modern colonialism, the world wars, communism and fascism, decolonization, the Cold War, and the European Union. Readings will include learned treatises in religion, classics in political theory, fiction, and other documents from the past, as well as a textbook. Work in sections centers on reading and discussion of original sources and of lectures, and on the improvement of writing skills.

HIST 470

Contemporary Liberian History

Pre-Requisites: HIST 101, 102; SSC 101

3 Credit Hours

This course focuses on Liberia's modernization process and the role of the administration of President William V.S. Tubman. Liberia's role and affiliations in the decolonization movements and the creation of organizations among African States, adding to the anti-colonial movements and voices for independence across the continent, among the former colonial states outside of Africa and in the UN as well as the diversification of its foreign relations beyond the dominance of the United States of America, will be explored. This course will again offer a look internally at Liberia's representative democratization processes; the status of the indigenous communities and cultures; the transfer of Liberia's wealth; the way Liberians responded to contemporary socio-political divisions and economic crises leading to Liberia's civil War. The way forward in post-war socio-political and economic developments will be explored critically.

HIST 472

Urbanization of Contemporary Africa: Space and Identity and Politics

3 Credit Hours

Though the course will focus mainly on the contemporary era, our explorations will consider African cities in historical perspective. It begins with a brief history of urbanism on the continent to lay the groundwork for an examination of colonial legacies and the strategic role that African cities have played in globalization and empire, past and present. This will help us to locate urban Africans in today's most recent era of globalization. Then, considering a wide-range of contexts across the continent (but mainly of sub-Saharan Africa) from a variety of disciplinary perspectives, we will delve into some cross-cutting contemporary themes in the study of African cities related to: infrastructure and planning, economies and livelihoods, and politics and identities—including negotiations around religion, generation, and gender. Insights gained will be used to reflect on notions of the city, citizenship, and international development.

ELECTIVES

HIST 473

Running While Others Walk: African Perspectives on Development

3 Credit Hours

Throughout the history of modern Africa, Africans have specified their desired future development, and identified the major obstacles in achieving it. Debates about development have intensified in the post-colonial period, especially as African countries have replaced the leaders installed at independence. Amidst the general critique of the imposition of external values and rules, Africans have differed, sometimes sharply, on priorities, process, and programs. While for some the challenge is to catch up with development elsewhere, for others it is essential to leap ahead, to set the pace, to initiate a radical social, economic, and political transformation. To ground and extend the common approaches to studying development that emphasize economics and that rely largely on external commentators, we will explore African perspectives. Our major task will be a broad overview, sampling the analyses of Africa's intellectuals in several domains. Course participants will review, compare, and analyze major contributions of African thinkers and political figures, developing an understanding of contemporary intellectual currents.

HIST 474

Colonial and Post-Colonial Africa

3 Credit Hours

This is a history of Africa from the late nineteenth century to the present day. In the first half of the course, we will study the imperial scramble to colonize Africa, the broader integration of African societies into the world economy, the social, political and medical impact of imperial policies, Western popular images of Africa in the colonial period, the nationalist struggles that resulted in the independent African states, and the persistent problems faced by those post-colonial states. In the final half of the course, we will investigate three cases: Congo-Zaire and the state as a source of chaos through the Second Congo War; violence, liberation and memories of childhood in late colonial Rhodesia and postcolonial Zimbabwe; the political history of economic development programs and the advent of "resource conflicts," particularly those involving diamonds.

Bachelor in Guidance and Counseling

Freshman Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
HIST 101	Liberian History and Geography	3	HIST 102	World History & Western Civilization	3
PSY 101	Introduction to Psychology	3	SSC 101	Liberian Society, Social Issues and Problems	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	Total	20		Total	20

Sophomore Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
EDU 252	Peace Education	3	PHIL 101	Introduction to Philosophy	3
FRE 101/ GLE 101	Introduction to French or Introduction to Glebo	3	FRE 101/ GLE 101	Introduction to French or Introduction to Glebo	3
EVS 201	Introduction to Environmental Science	3	MATH103	Probability and Statistics	3
EDU 255	The Social World of the Child and Adolescent	3	EDU253	Principles & Foundations of Education for Secondary Education	3
EDU 256	Speech, Language and Learning	3	COUN 280	Introduction to Guidance and Counseling	3
	TOTAL	18			18

*Qualifying exam must be passed for student to pursue junior year courses

Junior Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
EDU356	Culture, Cognition and Learning for Secondary	3	EDU 354	Ethnographic Studies of Rural Communities: Child, Family and Community	2
EDU 353	Schooling, Pedagogy and Social Justice	3	EDU 359	Understanding Students with Exceptionalities	3
EDU 352	Diagnosing and Assessing Learning and Curriculum Planning and Evaluation in the Secondary School	3	COUN 381	Parents, Family, Group Counseling	3
EDU 380	Counseling Theories and Techniques	3	COUN 382	Intervening with Displaced and Marginalized Populations	3
COUN 384	Cross-Cultural Perspective and Practices in Health and Wellness	3	COUN 383	Vocational and Career Counseling	2
COUN 388	Group Processes for Guidance and Counseling Students	2	COUN 389	Expressive Therapies in Guidance and Counseling	2
	TOTAL	17			17

Fourth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
COUN 481	Guidance and Counseling Practicum I	3	COUN 482	Guidance and Counseling Practicum II	3
COUN 486	Guidance and Counseling Practicum Seminar I	1	COUN 487	Guidance and Counseling Practicum Seminar II	1
EDU 455	Classroom Management: Designing and Managing the Learning Environment	3	COUN 483	Social, Cultural, and Identity Awareness	3
EDU 456	Advocacy, Networking & Collaboration in School and Community	2	COUN 480	Crisis Intervention, Conflict Resolution, and Mediation	3
COUN 488	Preparing Students for Academic Success	3	EDU 454	Educational Research Methodology II Prerequisite Course: EDU 453	3
EDU 453	Educational Research Methodology I	3			
	TOTAL	15			13
				GRAND TOTAL	136

PROFESSIONAL SEQUENCE

GUIDANCE COUNSELING

COUN 280

Introduction to Guidance Counseling

2 Credit Hours

This is a foundation course for students pursuing Guidance and Counseling to explore trends in school Counseling and educational systems. There is also an overview of professional and personal ethical and legal consideration related to the practice of school Counseling. Roles, functions, settings and professional identity as it relates to other professionals in the school will also be explored. Introduces theories, processes and needs assessments for academic, career, and personal/social development. This course will also help students understand relationship of the school Counseling program to the academic mission of the school. Students write autobiographies to conduct studies of their own lives as learners, conduct surveys, articulate a vision of possibilities of education in Liberia and craft a personal philosophy of education and Guidance and Counseling. Fieldwork required.

Standards Met: TU CE II (5,6,7); A1, A2, A3, C1, G3, K1, A4 ;PSTL Domain #I (b) & Domain #5(b, c)

COUN 380

Counseling Theories and Techniques

Pre-Requisite: COUN 280

3 Credit Hours

This course is designed to empower guidance counselors with effective techniques and Interventions. Students learn the art of interviewing, assessment, listening and report writing skills required of the professional counselor. The students study different theoretical Counseling approaches and execute in-class practice. The course will examine ethical and legal issues as well as cultural sensitivities. It includes the systematic development of casework, progress notes, intake, follow-up, debriefing and appropriate referral procedures.

Standards Met: CACREP C1, G1, H4, I2, M4, D2, D3, J4, A4

COUN 381

Parents, Family and Group

2 Credit Hours

This course teaches theories, interventions and processes that will be effective with parents, guardians, families and groups to promote the academic, career, and personal/social development of students. It examines strategies and methods for working with parents, guardians, families, and communities to empower them to act on behalf of their children to address problems that affect student success in school according to the prevailing cultures, beliefs and traditions. This is a skills and content course designed to help you gain rudimentary knowledge of various parenting, family, group and peer programming interventions. The course will include referral procedures to use with

agents in the community to secure assistance for students and their families. Students will participate in an experiential group. **FIELDWORK REQUIRED**
Standards Met: CACREP C1, M4, M5, M6, N4, N5, E2, F4, D2

COUN 382

Intervening with Displaced and Marginalized Populations

3 Credit Hours

The course expounds on the aspects of Liberia's and other countries' post-war refugees, displaced and marginalized populations to understand the barriers that impede students' academic, career and personal/social development. Students will learn to recognize uniqueness in cultures, languages, values, backgrounds and abilities. Students will also learn strategies and methods for working with disadvantaged parents, guardians, families and communities to empower them to act on behalf of their children. Students will understand peer programming interventions and other interventions appropriate for refugees, postwar victims and marginalized populations as well as strategies for identifying strengths and coping with environmental and developmental problems.

Standards Met: CACREP H4, H8.M5, M6, A5, C1, C3, D3, D4

COUN 383

Vocational and Career Counseling

3 Credit Hours

This course provides the preparation needed to assist in the building of effective working teams between school administration, teachers and staff, parents, and community members in the promotion of, vocational and career development. The course will explore career development theories and appropriate assessment strategies that can be used to evaluate a student's academic, career, and vocational development as well as the decision making process. Skills in learning how to assess and interpret an individual's natural talents, strengths and needs, recognizing uniqueness in cultures, values and traditions and the connection with appropriate careers will be included. Course focus will include considerations in that Liberia is a country of entrepreneurship, and self-employment is therefore a vital part in the development of its youth.

Standards Met: CACREP C2, G3, H5, H6, H8, I2, K2, L1

COUN 384

Cross-Cultural Perspectives & Practices in Health & Wellness

3 Credit Hours

The course will integrate the perspectives of wellness and practices for health care in various cultures including those of the traditional Liberian medicine. The course will examine the prevalent health concerns for Liberian families in a developing context such as malaria and other tropical diseases, food scarcity and nutritional deviancy, HIV, substance abuse, depression and forms of abuse. The stigmatization of physical and mental illnesses and disabilities will be addressed. Focus is on etiology, prevention and intervention. Additional topics will include family planning, family dynamics of the disease process, aging and traditional treatment modalities.

Standards Met:
CACREP [C3, C4, G1, G2, H4, H7, H8]

COUN 389***Expressive Therapies in Guidance & Counseling******2 Credit Hours***

The purpose of this course is to explore the expressive therapies of drama, dance, art, music, play and poetry as a demonstration of self-awareness and sensitivity to diverse individuals, groups and classrooms. The course will provide students with an alternative approach of current models of school counseling program. The course introduces the use of drama, music and the arts in assessing and interpreting students' strengths and needs, recognizing uniqueness in cultures, languages, values, backgrounds and abilities. Included in the course will be African literary works and images reflected in the arts and media to an exploration and analysis of historical, economic and cultural factors.

Standards Met: CACREP

COUN 480***Crisis Intervention, Conflict Resolution and Mediation******3 Credit Hours***

This course examines the issues surrounding psychological and emotional crisis, with an emphasis on trauma. There is also an overview of the operation of the school emergency management plan and the roles and responsibilities of the school counselor during crises, disasters, and other trauma-causing events and the impact it has on educators and schools. The course explores various crisis situations that can arise in a school setting and the possible interventions that can be implemented pertaining to loss due to death, suicide and separation, such as divorce. The course reviews techniques and exercises that will better equip the students in conflict resolution and mediation with school-aged individuals, teachers, principals and families. The course will include an exploration of triggers of abuse and the structural causes of gender based and domestic violence, concluding with treatment, prevention and interventions.

Standards Met: CACREP G1, G2, A6, C4, D4

COUN 483***Social, Cultural and Identity Awareness******3 Credit Hours***

This course offers students the opportunity to reflect on what it means to develop an identity. Identity as single and stable or multi-faceted and dynamic and theories of identity formation will be examined. Through the reading of narratives and writing their stories students will explore topics such as how language reveals identity and character; racialized and ethnic identity; masculinity/femininity and family dynamics; migratory and regional identity; power, social class and identity; media/technology and identity. The implication of identity formation and definition for Counseling and student performance and achievement will be also explored.

Standards Met: CACREP H4, E1, E2, E3, E4, F1, F3, D1

COUN 488***Preparing Students for Academic Choice and Success******3 Credit Hours***

This course focuses on the knowledge and skills middle and high school students need for their academic development and preparation for options in post-secondary educational settings. How to counsel and prepare students for post-secondary planning including becoming familiar with the measures for self and aptitude awareness, and knowledge and skills for preparing students to meet competing social-emotional, academic and financial demands, managing schedules, study skills, and to understand the language of admission and applications requirements and meet deadlines, financial aid and so on. It emphasizes how to create curriculum programming and engaging workshops in collaboration with school staff and leaders and community agencies.

Standards Met: CACREP A1, A2, A3 & M.

CLINICAL PRACTICE & CLINICAL SEMINAR**COUN 481*****Guidance and Counseling Practicum I (Supervised Field Experience):******3 Credit Hours***

This part 1 of a two part field-based experience provides the Guidance Counseling student the opportunity to put into practice the qualities, principles, skills in programming in guidance and Counseling in schools and educational settings for *Grades 1 to Grade 6 (Primary school years)*. Students will demonstrate their ability to design, implement, manage and evaluate school guidance and Counseling program for young children. Practicum students will learn the important roles of guidance counselors as system change agents, as well as engage in student assistance programs, and school leadership, curriculum and advisory meetings. Practicum students will provide variety of interventions including individual and group Counseling and classroom guidance to promote students' holistic development. Measurable outcomes for school Counseling programs and activities will be identified and evaluated. Practicum students will begin to demonstrate their understanding of elements of professionalism and engaging in collaborative relationship with various stakeholders for the positive growth and development of ALL children as well as apply systems theories and models, and processes of consultation in school systems.

Standards Met: CACREP O1, O2, O3, O4, O5, D2, M4, I2

COUN 486***Guidance and Counseling Practicum Seminar I******2 Credit Hours*******Must be taken with COUN 481***

This part 1 of a two part seminar supports students in Guidance and Counseling Practicum I through guided reflective discussions designed to clarify questions and issues arising while practicum students are in the field. Practicum students will keep a journal and demonstrate ability and disposition to critically evaluate their performance and outcomes of their practice. Students will begin to explore ethical and legal considerations specifically related to the practice of school Counseling. The seminar provides an

opportunity to be further supported in constructing and critically evaluating a case study as well as models of program evaluation and explore research of school guidance and Counseling.

Standards Met: CACREP O1, O2, O3, O4, O5 J1, J2, J3, D2, E1, D1, D5,

COUN 482

Guidance and Counseling Practicum II (Supervised Field Experience)

3 Credit Hours

This part 2 of a two part field-based experience provides the students the opportunity to further practice the qualities, principles, skills implemented in Part 1 of this capstone field experience. Students in part 2 of the practicum will design, implement, manage and evaluate school guidance and Counseling programs in middle and high school settings. Practicum students will learn the important roles of guidance counselors as system change agents, and as active participants in student assistance programs, school leadership and curriculum and advisory meetings. Practicum students will provide individual and group Counseling and classroom guidance opportunities to support students' holistic development. Ongoing support will be provided in composing and critically evaluating a case study, and models of guidance and Counseling interventions that promote the academic, career and person/social development of students.

Standards Met: CACREP C1, D1, D2, A4, D3, H4

COUN 487

Guidance and Counseling Practicum Seminar II

2 Credit Hours

****Must be taken with COUN 482***

This part 2 of the co-requisite seminar for students in G&C practicum II provides continuation of the opportunities to critically reflect on their performance and disposition in the field. Practicum students are encouraged to incorporate relevant research and theoretical perspectives in school guidance and Counseling to enhance understandings and perceptions. Practicum students keep a journal and demonstrate strategies for reflective evaluation of their performance and outcomes in school guidance and Counseling. Students explore more deeply and reflectively on ethical and legal considerations specifically related to the practice of school Counseling. G&C Practicum students are evaluated on a number of assessment measures including a research project, and portfolio including work samples,.

Standards Met: CACREP I1, I2, O1, O2, O3, O4, O5 J1, J2, J3, E1, D1, D5,

ELECTIVE

COUN 489

Structural & Psychological Dimensions of Domestic Violence

3 Credit Hours

This course addresses the complex reasoning behind domestic violence, from the structural issues to the psychological issues. Students will get inside the culture, the history and the mind of the abuser and gain an understanding of the character. The

course will dispel the myths about abuse and clarify the truths as well as the warning signs, finalizing with prevention and interventions.

Standards Met: CACREP G1, G2, D4

EDU 358

Educational Administration and Leadership

3 Credit Hours

In this course students will be introduced to theories, research and practices related to effective organizational leadership and development. Issues related to capacity -building, creating school vision and culture, decision- making, and problem solving and the relationship between the school management and teachers and other school personnel will be examined. Also to be considered are the organizational, cultural, human and policy variable that may impede building positive collaborative school leadership and promoting an effective, successful school. A critical topic in this course is how teachers and allied school personnel can be encouraged to play more leadership roles in schools and in the development and evaluation of curriculum.

TU CE I (4,8,10) & IV; CACREP O1, O2,

EDU Special topics

This course enables students and faculty, including visiting faculty, to work together on an area of special interest in education.

College of Engineering and Technology

The College of Engineering Technology is dedicated to empower future engineers of both gender with quality education and creative ability to advance industrial modernization and technological development. It is a *service oriented* College that believes in the interdependence of man and nature.

Vision

The College aspires to provide a multidisciplinary environment geared towards nurturing and developing future Engineers with appropriate and environmentally friendly (green) technology for Africa and the world.

Mission

The College of Engineering & Technology is *dedicated to empowering future engineers* with quality education and creative ability to transform their environment for the ecological service of humanity. It also aims to empower its graduates as professional entrepreneurs able to create employment while striving to utilize resources for the service of humanity.

Overall Program Description

The Engineering and Technology programs are 5 year programs. For the first two years of all engineering students they are required to take a set of common courses in general education and engineering sciences. During their third year they are exposed to their majors, while taking additional core courses in the area of science, mathematics, general engineering, computer aided analysis and graphics using MATHCAD and AUTOCAD software. They completely focus on the courses of their major field during the last three years of the curriculum.

Bachelor of Science in Electrical Engineering

Program Description

The Electrical Engineering Program is designed to provide the educational requisites in the training of men and women for the Bachelor of Science in Electrical Engineering. The coursework is grounded in sciences and technology while the learning objectives are based on mathematical solutions founded on logic and principles of analysis. The program in Electrical Engineering seeks to provide a solid foundation in the current theory and practice of electrical engineering, including familiarity with basic tools of math and science as well as the ability to communicate ideas. Graduates will be qualified either to enter the profession of Electrical Engineering, or to continue toward graduate studies. Core electrical engineering courses cover the main components of modern electrical engineering. Topics include courses on circuit theory, machine theory, electro magnetism, communication, control theory, signals and systems. Students are also exposed to the following major of concentration: Electric Power System Engineering, Sustainable Energy Engineering, Communication System Engineering and/or Computer Systems Engineering.

Program Objectives

- To develop *competent engineers* who have reliable ability not only to recognize problems but to design creative solutions to the problems in relation to construction, manufacture, and other various requirements of electrical engineering.
- To train engineers knowledgeable of engineering science and designs, and are capable of analyzing, designing, constructing and installing various systems associated with the power, communication or computer industry.
- To prepare engineers who are cognizant of their professional, ethical and social economic responsibility to society and the environment as a whole.

Student Learning Outcomes

Students will be able to:

- Demonstrate knowledge of the mathematical and scientific foundation of Electrical Engineering
- Demonstrate knowledge and ability to analyze, design and build electrical and electronic circuits and structures associated with their area of concentration.
- Understand the importance of engineering ethics, environmental safety, entrepreneurship and professionalism
- Demonstrate all of the above knowledge by sitting and successfully passing a professional qualifying exam.

Curriculum Requirements:

- 52 Credits of General Education Courses
- Maximum of 167-173 core and professional courses

Core Requirements

- Mathematics, Physics, And Chemistry
- Social Sciences, Environmental Science & Safety
- Engineering Graphics, Engineering Analysis & Design, Engineering Management
- Circuits And Field Theory
- Control System Theory

Concentration Options

- Communication & Control Systems Engineering, Computer & Information System Engineering or Power & Energy Systems Engineering
- Internship/Coop

Cognate Requirements

- Principles of engineering analysis & design
- Algebra, Geometry, Trigonometry, and Calculus
- Engineering graphics and Computer-Aided design
- Circuits and Field Analysis & Design Skills

Bachelor of Science in Electrical Engineering

First Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
CHEM 101	Principles of Chemistry	4	BIO 101	General Biology	4
PHY 101	General Physics	4	PHI 101	Introduction to Philosophy	3
PSY 101	Introduction to Psychology	3	GENG 101	Intro to Engineering Drawing I	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	Total	21		Total	20

Second Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
FRE 101/ GLE 101 CHN 101	Introduction to French or Introduction to Glebo Introduction to Chinese	3	FRE 102/ GLE 102 CHN 102	Intermediate French Advanced Glebo Advanced Chinese	3
HIST 102	World History and Western Civilization	3	PHY 202	Physics for Engineers II	4
MATH 201	Differential Calculus	3	MATH202	Integral Calculus	3
PHY 201	Physics for Engineers I	4	MATH 206	Intro to Linear algebra	3
GENG 203	Introduction to Engineering Drawing II	1	GENG 202	Engineering Graphics/ CAD I	3
EVS 201	Introduction to Environmental Science	3			
	TOTAL	20			19

*Qualifying exam must be passed for student to pursue junior year courses

Third Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
MATH 301	Multivariable Calculus	3	EENG 302	Engineering Electrodynamics	3
EENG 301	Electrical Networks I	3	MATH 302	Ordinary Differential Equations	3
EE 301	Entrepreneurship Education I		EE 302	Entrepreneurship Education II	
CENG 301	Surveying I	3	EENG 304	Electrical Networks II	3
GENG 301	Engineering Mechanics I (Statics)	3	GENG 306	Electrical Fundamentals	3
EENG 303	Electrical Workshop	2	EENG 308	Electrical Power and Machines	3
GENG 305	Computer Programming (MATLAB)	3	GENG 310	Internship	1
GENG 307	Material Science	3			
Total		20	Total		16

Fourth Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
EENG 401	Electronics I (Analog)	2	EENG 402	Electronics II (Digital)	2
EENG 403	Electromagnetic Field Theory	3	EENG 404	Communication Systems	3
GENG 403	Engineering Management I	3	EENG 406	Electrical Machinery	3
EENG 407	Control Systems I	2	GENG 408	Engineering Economics	3
EENG 409	Power Systems	3	EENG 408	Instrumentation and Measurement	2
			GENG 412	Research Methodology	1
Total		13	Total		14

Summer Internship

Course Code	Course Title	Credit Hours
GENG 400	Internship	1

Fifth Year

First			Second		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
Code	Course Title	Credit	Code	Course Title	Credit
EENG 501	Signals and Systems(DSP)	3	EENG 500	EE Seminar	1
EENG 503	Power Electronics	3	EENG 502	Power Systems Protection	3
GENG 505	Electrical Engineering Project Design	4	EENG 504	High Voltage Engineering	3
EENG 507	Power Systems Analysis	3	EENG 506	Optical Fiber Communication Systems	3
EENG 509	Control Systems II	2	EENG 508	Electric Machines and Drives	3
Cumulative Minimum Credits Required For Graduation					168

Course Descriptions***PHY 101******General Physics******4 Credit Hours***

This course introduces basic concepts in Physics. Key topics for this module include units and measurement, scalars and vector quantities, motion and test of motion, equation of linear motion and applications, motion under gravity, projectiles and applications, circular motion and simple harmonic motion (S.H.M), Hooks Law, Electricity and Magnetism, and optics.

GENG 106***Intro to Engineering Analysis and Design******4 Credit Hours***

This course covers an introduction to engineering education and the engineering profession. Engineering ethics, basic concepts and tools are presented. It provides an over view of the engineering problem solving and design process. Techniques and methods used in defining and solving engineering problems are reviewed also design methodologies including analysis, synthesis and creative thinking are presented. Finally the students are provided an opportunity to complete an engineering design project.

GENG 202***Engineering graphics/CAD I******Pre-Requisite: GENG 102******3 Credit Hours***

The course is a follow up to GENG 102. It starts by introducing students to computer aided drawing using AutoCad software. This first series reviews basic concepts of GEN102, using the computer drawing process, such as 2D drawings, lettering formats, dimensional diagrams, scaling, sketching and geometrical constructions logic,

orthographic projections, isometric drawing, sectional views and dimensioning. Details are added using examples from civil, electrical or mechanical engineering design process.

GENG 203

Intro to Engineering Drawing I

3 Credit Hours

This course is an introduction to drawing for engineering students especially those without previous drawing or drafting experience. It covers the fundamentals of drafting using the manual system approach as compared to computer aided drawing. It covers 2D drawing and views, lettering, dimensional diagrams, free sketching and the use of various drawing scales. This course comes with a free 2.5 hrs practice session.

MATH 201

Calculus I

Pre-Requisite: MATH 102

3 Credit Hours

This course focuses on differential calculus including the limits and differentiation of all functions, fundamental theorem of the calculus, and introduction to the applications of the derivative.

MATH 202

Calculus II

Pre-Requisite: MATH 201

3 Credit Hours

This is part two of MATH 201 and it focuses on integration calculus including limits and integration of all functions, fundamental theorem of calculus, introduction of the application of the integral of functions, infinite series, improper integrals, etc.

PHY 201

Physics for Engineers I

Pre-Requisite: MATH 104, MATH201

4 Credit Hours

This course is enhancement of PHY101. It stresses applications of physical principles in the fields of industry and engineering technology, precision measurement, properties of matter, hydrostatics and hydraulics, laws of mechanics, introduction to vectors analysis, resultant, conditions of equilibrium, statics of structures, trusses; reactions friction, centre of gravity, moment of inertia moments, dynamics, force and motion, rotary motion, energy and momentum, conservation laws. It is a course meant to introduce Engineering students to the concepts of physics centered on calculus mathematics and thus prepare them for engineering mechanics. A weekly 2.5 hour lab provides practical demonstration of the various concepts introduced.

PHY 202**Physics for Engineers II****Pre-Requisite: PHY 201, MATH 20, MATH 202****4 Credit Hours**

This course is an upgrade of PHY 102. It continues on the foundation of PHY 201 with emphasis in waves and electromagnetic energy. Students start with a study of electromagnetic phenomena; including electrostatics; capacitors; resistors and direct-current circuits; magnetism and magnetic induction; RC, LR, and LRC circuits; waves; electromagnetic waves; and radiation; They are introduced to properties and propagations of sound, wave motion, light, electromagnetic spectrum, the nature of light, speed, emission, absorption of light, reflection, refraction, and diffraction of light plus polarization of light. Finally an overview of the relationship between matter, energy, and light is presented. All presentations emphasize on the concepts and principles centered on calculus mathematics linked to MATH201 & 202. A 2.5 hour lab period demonstrates the practical applications of the various concepts taught.

MATH 206**Intro to Linear Algebra****Pre-Requisite: MATH202****3 Credit Hours**

This is an introductory course to linear algebra and its applications. Fundamental theory of matrices, determinants and curve fitting, vector spaces, orthogonality and least squares, eigenvalues and eigenvectors, and linear transformation are covered. This is a required course for all engineers.

EENG 301**Electrical Networks I****3 Credit Hours**

This course introduces basic network analysis techniques including Ohm's and Kirchhoff's laws, VI laws for RLC circuit elements. It also introduces common signal models like Thevenin's and Norton's theorems; the transient and steady state response of RLC circuits; phasors; sinusoidal analysis and complex power. It includes study of polyphase circuits, magnetically coupled circuits; and introduction to P Spice or other CAD program.

EENG 302**Engineering Electrodynamics****Pre-Requisite: EENG-301****3 Credit Hours**

The course determines the interactions between electrical charges and currents using an extension of the classical Newtonian model. The course also describes the behavior of moving electrical charges and their interaction with magnetic and electric fields and mechanical phenomena. The course looks at the applications as how to employ the effects of changing electric and magnetic fields along with the forces and motions these fields induce on objects with electric charges.

EENG 303

Electrical Workshop***2 Credit Hours***

This is the major electrical workshop for senior students where an emphasis is placed on professional hands on and practical works. The students are exposed to modern engineering techniques and procedures that are available in the industries today and understand the applications of modern electrical, electronic and mechanical testing equipment and machines.

EENG 304***Electrical Networks II******3 Credit Hours***

This covers the first order circuits, the parallel and series RLC second order circuits both with natural and step responses, the frequency response and network analysis by Convolution theorem; Laplace and Fourier transforms methods of network analysis; two-port networks; filter circuits and introduction to synthesis.

EENG 308***Electrical Power and Machines******3 Credit Hours***

This course covers power generation and distribution, transmission line theory, and synchronous machines. It also covers one-line diagrams of electrical power systems, per unit quantities, analysis of interconnected systems using load flow studies, calculation of faults using symmetrical components, and analysis of protecting relaying for power system protection using computation techniques.

CENG 301***Surveying I***

Pre-Requisite: MATH 102, GENG 101, 102

4 Credit Hours

This course introduces the students to the principles of land surveying. They learn the use of the engineer's compass, theodolite, level and plane table; linear and elevation measurements; surveying methods applied to problems in construction, traverse survey calculations of areas and contouring; trigonometric leveling, height, and distances, subtended barometric leveling, simple circular curve, and survey for engineering projects.

GENG 301***Engineering Mechanics I (Statics)******3 Credit Hours***

This course is the fundamental of engineering mechanics which deals with forces acting on rigid bodies at rest covering coplanar and non-coplanar forces, concurrent and concurrent forces, friction forces, centroid and moment of inertia. The course focuses on finding forces for a variety of force systems, as well as analyzing forces acting on bodies to find the reacting forces supporting those bodies. Students develop critical thinking skills necessary to formulate appropriate approaches to problem solutions.

GENG 305***Computer Programming (MATLAB)******Pre-Requisite: GENG 205, EENG301******3 Credit Hours***

This course emphasizes computer aided design and simulation of electrical circuits and system. It introduces computer- aided design techniques using MatLab, Simulink or PSpice software. Students develop various electrical, mechanical, civil and cybersecurity system models and apply computer aided design techniques to solve them.

GENG 306***Electrical Fundamentals******3 Credit Hours***

This course starts with an introduction to electrical engineering world and to the understanding of currents, voltage, resistance and power; introduction to safety regulations and rules. It continues with the study of electrical passive components with emphasis on their applications to AC and DC networks, transformers, simple R. C and R.L.C circuits, blue print reading and wire color coding for domestic and industrial installations, introduction to semi-conductor theory, devices and circuits, and electrical experiments in the laboratory.

GENG 307***Material Science******Pre-Requisite: CHM 101, MATH 102, and PHY 202.******3 Credit Hours***

This course introduces the physical, mechanical, electrical, and chemical properties of materials, especially of importance to civil, electrical and mechanical engineers. It offers an overview of the ways in which these properties affect the material selection process, material behavior, and the design process.

MATH 301***Multivariable Calculus******Pre –Requisite: MATH 202, GENG 205******3 Credit Hours***

The course is a continuation of MATH 202. It introduces the theory and application of partial differentiations, multiple integrals, and vector calculus. This is a required course for all engineers.

MATH 302***Ordinary Differential Equations******3 Credit Hours***

This course includes study of ordinary differential equations, first order equations, homogeneous and non- homogenous higher constant co-efficient equations, matrix diagramming techniques with applications to systems of first order linear equations, Laplace transform techniques, series solutions of second order linear variable coefficient equations, numerical method, and applications to engineering.

EED 301***Entrepreneurship Education I***

The course seeks to provide the students with the knowledge, skills and attitudes needed to become successful entrepreneurs; promote positive attitudes among the undergraduate students at the University towards entrepreneurship and business, and foster an enterprising spirit and self-confidence among them. It will also help the students to develop an entrepreneurial culture and skills that are necessary for building an entrepreneurial foundation for the nation. A combination of these will serve as a catalyst for sustainable private sector growth in Liberia, play a major role in the fight against the hurdles of youth unemployment and poverty, and also promote personal development. The course is taught on a modular basis from module one through three covering topics like understanding entrepreneurship and the concept of work and business, becoming an entrepreneur, and scanning the environment for business opportunities.

EED 302***Entrepreneurship Education II******Pre-Requisite: EED 301***

The course continues from EE 301, and seeks to enhance the skills of the students on practical entrepreneurial activities borrowing from the knowledge gained from EE 301. There are two additional modules to be covered with topics such as business research and developing a business plan, as well as starting and operating a successful business.

GENG 400***Internship******1 Credit Hour***

This course prepares engineering students who are ready to go for field experience as future engineers. Department Professors give a form of tutorial/seminar to students on practical aspects of engineering technology such as analysis, design, maintenance, manufacturing and environmental concerns. Another training scenario is to expose students to various current engineering activities on or off campus, thus allowing the students to link technology to field practice. In this course the students are exposed to basic skills associated with co-op engineering work experience, including expectations on the job, how to assess themselves and set goals relative to the needs of their employer.

This is a monitoring course which students register for prior to their field assignment. A final report is expected from each student at the end of their program term along with a letter of recommendation from their sponsor. Extra fees may be attached to this course to facilitate the processing of their assignment. This will be set separately as Internship fees.

EENG 401***Electronics I (Analog)******2 Credit Hours***

This course introduces the basics of electronics. It covers semi conductor properties and conduction mechanisms; p-n junction operation; I-V characteristics of various devices, transistor biasing and stability; and single-stage amplifiers; analysis of small-signal audio amplifiers, differential amplifiers, multistage amplifiers; feedback, power amplifiers, frequency response, Nyquist, Bode plots, filters and tuned amplifiers, signal generators, and Computer-aided design

EENG 402***Electronics II (Digital)******2 Credit Hours***

This course introduces students to digital systems; number systems, Boolean algebra, leading to two-level logic and minimization/simplification methods, K-map and Quine McCuskey methods, combinatorial and sequential circuit design of digital systems; practical programmable logic devices (PAL, PLA, multiplexers, encoders, ROMS) and basics of sequential logic.

EENG 403***Electromagnetic Field Theory******3 Credit Hours***

This course presents and discusses electric fields, flux, and potential; Coulomb's, Poisson's, and Gauss's laws; and permittivity and conductivity, including, magnetic materials, and forces; Biot-Savart law and time varying fields; and Maxwell's equations. This course also covers wave propagation on transmission lines and wave guides, resonant cavities, power flow in propagating waves, antennas and radiation, Smith chart, S-parameters, active and passive components, and measurement techniques

Pre req.: MATH 203,205, 204; EENG 301

EENG 404***Communication Systems******3 Credit Hours***

This course covers key principles in communication engineering: spectral analysis, autocorrelation, Weiner-Khinchines theorem, amplitude, frequency, angle and pulse modulation, modulators and demodulators, the sampling theorem, pulse modulation, PAM, PWM, and PPM. It deals with the propagation of radio waves, multipath transmission, and introduction to noise, remote control and supervisory systems. It also covers Using teams, students design an electrical engineering project that primarily involves the communication or controls sub discipline. Design teams are advised by a faculty member and engineering practitioners. Lectures cover supplemental technical background specific to the project, as well as cross-disciplinary aspects of project management and development, value engineering, aesthetics, and constructability. Integrates project design with further development of student communications skills; students present the design to practicing engineers and interested parties such as community groups.

EENG 406**Electrical Machinery****3 Credit Hours**

This course provides the students with fundamental concepts and principles of operation of various types of electric machines including Transformers, DC, and AC machines. It starts with the main components of electric machines and their principle of operations. Students are expected to identify the characteristics, applications, advantages and disadvantages of electric machines. Students develop analytical techniques for predicting device and system interaction characteristics as well as learn to design major classes of electric machines. Problems used in the course are intended to strengthen understanding of the phenomena and interactions in electro-mechanics, and include examples from current research.

EENG 407**Control Systems I**

Pre-Requisite: MATH 204,205 GENG 205, EENG 302,304, 306

3 Credit Hours

This course covers modeling of physical systems. Its starts with the development of dynamic equation of mechanical, electrical, thermal and fluid flow systems; transfer functions for mechanical, electrical and electromechanical control components; block diagrams, signal flow graphs. It includes the development of characteristic equations, s-plane roots and stability. It includes study of performance criteria, root locus, polar and Bode plots; M- and N- diagrams, inverse Nyquist plots; state space description of control systems and analogue computer simulation of control systems using MATLAB.

EENG 408**Instrumentation and Measurement**

Pre-Requisite: EENG 301; 303; 305

3 Credit Hours

This course introduces student to measurements associated with electrical engineering phenomena. It emphasizes the linkage between instruments, physical laws and the calibrations of instruments. This is a two part lab course. It covers transducer, digital and analogue testing instruments, curve tracers, recorders; also measurement of voltages, currents, power, temperature, displacements. This course further introduces student to measurements associated with electrical engineering phenomena. It emphasizes on the linkage between instruments, physical laws and the calibrations of instruments. This is a two part lab course. It covers power and digital measurements: magnetic ratio and multiple ratio measurements; data acquisition, conversion and interfacing; data logging switches and displays; EM field measurements.

EENG 409**Power Systems****3 Credit Hours**

This course is an introductory subject in the field of electric power systems and electrical to mechanical energy conversion. Students are exposed to fundamentals of energy-handling electric circuits, power electronic circuits such as inverters, and

electromechanical apparatus, modeling of magnetic field devices and description of their behavior using appropriate models, simplification of problems using transformation techniques, analysis of power electric circuits, magnetic circuits, and elements of linear and rotating electric machinery. Students learn the use of lumped parameter electro-mechanics to understand power systems, models of synchronous, induction, and DC machinery, the interconnection of electric power apparatus and operation of power systems. The course then covers the topics of transmission line parameter calculation, symmetrical component analysis, transformer and load modeling, symmetrical and unsymmetrical fault analysis, power flow, and power systems stability.

GENG 403

Engineering Management I

3 Credit Hours

This course covers an overview of engineering management and economic. It focuses on practical analytical skills needed by all engineers to ensure that their various designed interventions are economically prudent and environmentally friendly (ex: elements of projects management, cost benefit analysis, quantity analysis, financial analysis, etc)...elements of entrepreneurship training is included.

GENG 408

Engineering Economics

3 Credit Hours

This course looks at the engineering economics alternatives that are involved with capital investments for materials, equipment and labor. The techniques of economic analysis may be used to assist in determining the best alternative. It introduces economic terminologies and basic cash flow diagrams, economic factors and their use, nominal and effective interest rates, continuous compounding, the use of multiple economic factors in engineering, present-worth and capitalized cost evaluation, replacement analysis and e-bonds; inflation and cost estimation, capital rationing under budget constraints; and engineering decision making for large capital investment.

GENG 412

Research Methodology

1 Credit Hour

The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Students use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in informing their understanding of their environment (work, social, local, global). Students learn how to identify problems to study, develop hypotheses and research questions, specify independent and dependent variables; check for the validity and reliability of studies and design research projects. They are exposed to the broad range of designs used in communication research from laboratory and field experiments, surveys, content analysis, focus groups and in-depth interviewing.

EENG 501***Signals and Systems (DSP)***

Pre-Requisite: EENG 304, EENG 305, MATH 205.

3 Credit Hours

This is a design-based course covering a comprehensive treatment of basic signal theory in time and frequency domains. Discrete and continuous time cases are treated simultaneously. It covers concepts of signals and systems, convolution difference and differential systems, block diagrams, state-space realizations and solution, matrix theory, Fourier series, transform techniques (Fourier, FFT, Z and Laplace), frequency response and stability.

EENG 502***Power Systems Protection******3 Credit Hours***

The course includes study of nature of Power Systems, overview of technologies and services; high voltage DC transmission, medium voltage DC lines with Siplink, flexible AC transmission systems; power transmission lines, transformers, voltage regulation and stability; solar power solutions; transmission lines faults; grid access solution for decentralized power generation; power flow in power systems; and protection and maintenance of hybrid systems.

EENG 503***Power Electronics******3 Credit Hours***

This course covers characteristics of power electronics devices, converters, power supplies, cyclo-converters, D.C. drives, electric motors, microcomputer control, protective projects and computer simulations; and relaying, projects, and computer simulations.

EENG 504***High Voltage Engineering******3 Credit Hours***

This course covers definition of high voltage; need for generation of high voltages; advantages of high voltage engineering; applications of high voltage engineering; high voltage insulation. It also deals with high voltage testing and measurement; specimens and electrodes; measurement of vbr at 50 hz. high voltage; test equipment for oil and other insulation; surge insulation testing; destructive testing; non-destructive testing; high voltage techniques in bio-medical engineering; and over voltage transients, lightning, protection of high voltage equipment; lightning effect on buildings; insulation co-ordination; introduction to insulation co-ordination for protection; basic definitions of terms; factors on which basic insulation levels depend; impulse characteristics of electric equipment; harmonics and unbalanced loading in transformers; and transformer insulation.

EENG 505***Electrical Engineering Project Design******4 Credit Hours***

This course deals with the designing of a selected Project Work under the supervision of a Professor.

EENG 506***Optical Fiber Communication Systems******3 Credit Hours***

This course introduces the basic concepts required to understand optical communication systems and networks. Theory, applications, and design principles are emphasized. The principles of wavelength division multiplexed (WDM) systems, RF photonic systems and passive optical networks (PONs) are presented. The characteristics and limitations of system components (laser diodes, external modulators, optical fibre, optical amplifiers, optical receivers) and the factors affecting the performance of both analogue and digital transmission systems are studied.

EENG 507***Power Systems Analysis******3 Credit Hours***

This course exposes students to the principles of Power Systems Analysis. They are provided opportunities to perform power system analysis in normal operation and under symmetrical and unsymmetrical faults, including basic principles for protection against such faults. Additionally, the students learn basic principles for formulation and application of optimal power flow. The course begins with a brief review of power system operation, three-phase system calculations and the representation (modeling) of power system elements. The modeling of current transformers under steady-state and transient conditions is presented with emphasis on the impact on protective devices. A unit on system grounding and its impact on protective device operation are included. Course emphasis then shifts to protective devices and their principles of operation. Both electromechanical and numeric relay designs are covered. The final course segments cover specific applications such as pilot protection of transmission lines, generator protection and transformer protection.

EENG 508***Electric Machines and Drives******3 Credit Hours***

The course focuses on electrical machines and their important role in modern society, e.g. as traction motors in electric vehicles and generators in hydro power stations. It includes study of the basic concepts of electric drive systems with emphasis on system analysis and application. Topics include: DC machine control, variable frequency operation of induction and synchronous machines, unbalanced operation, scaling laws, adjustable speed drives, adjustable torque drives, coupled circuit modeling of AC machines; It also includes introduction to electric drive systems; dynamics of electric drive systems; joint speed torque characteristics of electric motors and mechanical loads; speed-torque characteristics of electric motors; modeling of electric drives systems; speed control of

DC motors; design of feedback control system for electric drives; speed control of induction motor; basic principles for speed control, voltage/frequency control, slip energy recovery, and current source speed control; braking of electric motors (DC and induction motors). The study also includes several laboratory experiments and computer-based exercises conducted to enhance and consolidate the understanding of electric drives principles and applications. [Selected topics in the field of electric machines and drives that deals with new trends and practical issues and should focus on analysis, simulation, and control design of electric drive based speed, torque, and position control systems].

EENG 509

Control Systems II

2 Credit Hours

This course covers integral, proportional and derivative control actions such as three term controllers, lead/lag compensators, controllability and observability. It introduces optimal control theory, pole assignment and state estimation; digital computer simulation and non-linearity.

EENG 500

EENG Seminar

1 Credit Hour

This course provides the students the opportunity to prepare a Research Paper on a selected topic and present it at a supervised seminar.

Bachelor of Science in Civil Engineering

Program Description

The Civil Engineering Program is designed to provide the educational requisites in the training of men and women for the degree of Bachelor of Science in Civil Engineering. The coursework is rooted from sciences and technology, while the learning objectives are based on mathematical solutions, founded on logic and principles of analysis. The Department of Civil Engineering trains students in the analysis, design, construction, maintenance and operation of small and large-scale physical systems. The current reconstruction and rehabilitation of the nation's roads, bridges, buildings, water and sewer systems and many other physical facilities are the focus of the profession. The magnitude of the rehabilitation also requires civil engineers to develop skills in communication, management and teamwork. The course of study for a degree in Civil Engineering takes five (5) academic years (including vacation breaks for experiential learning) and covers topics in the three areas of concentration: Structural Engineering, Highway Engineering and Environmental (Water, Air and Solid waste) Engineering. The program does not only prepare graduates for professional practice but it also motivates the students to pursue graduate studies.

Program Objectives

- To develop **competent engineers** who are able to recognize and design solutions to problems in relation to construction, manufacture, and various other requirements of civil engineering.
- To train engineers **knowledgeable** of engineering science and designs, and are capable of analyzing needs, designing and building various structures, roads, bridges, and other civil works.
- To prepare engineers who are **cognizant** of their professional, ethical and socio- economic responsibility to society and the environment as a whole.
-

Student Learning Outcomes

Students are able to:

- Demonstrate knowledge of the mathematical and scientific foundation of Mechanical Engineering
- Demonstrate Knowledge and ability to design and construct various mechanical systems in keeping with established standards and specifications.
- Calculate for and build various machine parts
- Understand the importance of engineering ethics, environmental safety, entrepreneurship and professionalism
- Demonstrate all of the above knowledge by sitting and successfully passing a professional qualifying exam

Curriculum Requirements Total Credits 169

General Education	-52 Credits
Engineering Math/Science	- 27 Credits

General Engineering Courses	- 48 Credits
Major	- 31 Credits
Conc/Technical Elective	- 11 Credits

Core Requirements

- Mathematics, physics, and chemistry
- Social Sciences, environmental science & safety
- Engineering graphics, engineering analysis & design, engineering management
- Analysis and design of civil structures

Concentration Options

- highway engineering, construction engineering or environmental engineering
- Internship

Cognate Requirements

- Principles of engineering analysis
- Algebra, Geometry, Trigonometry, and Calculus
- Engineering graphics and structural designs
- Strength and properties of materials
- Design of civil structures and buildings

Bachelor of Science in Civil Engineering

First Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
CHEM 101	Principles of Chemistry	4	BIO 101	General Biology	4
PHY 101	General Physics	4	PHI 101	Introduction to Philosophy	3
PSY 101	Introduction to Psychology	3	GENG 106	Intro to Engineering Analysis and Design	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	Total	21		Total	20

Second Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
FRE 101/ GLE 101 CHN 101	Introduction to French or Introduction to Glebo Introduction to Chinese	3	FRE 102/ GLE 102 CHN 102	Intermediate French Advanced Glebo Advanced Chinese	3
HIST 102	World History and Western Civilization	3	PHY 202	Physics for Engineers II	4
MATH 201	Differential Calculus	3	MATH202	Integral Calculus	3
PHY 201	Physics for Engineers I	4	MATH 206	Intro to Linear algebra	3
GENG 203	Introduction to Engineering Drawing II	1	GENG 202	Engineering Graphics/ CAD I	3
EVS 201	Introduction to Environmental Science	3			
	TOTAL	20			18

*Qualifying exam must be passed for student to pursue junior year courses

Third Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
GENG 301	Engineering Mechanics I	3	GENG 304	Engineering Mechanics II	3
MATH 301	Multivariable Calculus	3	MATH 302	Ord. Differential Calculus	3
GENG 309	Electrical Fundamentals	4	CENG 302	Surveying II	4
CENG 301	Surveying I	4	GENG 308	Strength of Materials	3
GENG 305	Computer Programming (MATLAB)	3	MENG 3xx	Technical Elective – MENG Manufacturing Process	3
GENG 307	Material Science	3	EE 302	Entrepreneurship Education II	
EE-301	Entrepreneurship Education I				
	TOTAL	20			15

Fourth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
GENG 403	Engineering Management I	3	CENG 404	Engineering Management II	3
CENG 405	Soil Mechanics	3	CENG 406	Geotechnical Engineering	3
CENG 401	Structural Analysis & Design I	3	CENG 402	Structural Analysis and Design II	3
CENG 407	CE Fluid Mechanics	3	CENG 408	Intro to Thermodynamics	3
CENG 403	Quantity Surveying	3	CENG 410	Civil Engineering Lab II	1
CENG 409	Civil Engineering Lab I	1	GENG-408	Engineering Economics	3
			GENG-412	Research Methodology	1
	TOTAL	16			17

Summer Internship

Course Code	Course Title	Credit Hr.
GENG-400	Internship	1
TOTAL		1

Fifth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
Course No.	Course Title	Credit	Course No.	Course Title	Credit
CENG 501	Structural Analysis & Design III (Reinforced Concrete)	3	CENG 502	Structural Analysis & Design IV (Steel Design)	3
CENG 503	Highway Engineering I	3	CENG 505	Highway Engineering II	3
CENG 507	Environmental / Sanitary I (Water Management)	4	CENG 508	Environmental/Sanitary II (Waste Management)	1
CENG 505	Civil Engineering Project Design	3	CENG 510	Seminar	1
Total		13	Total		8
Cumulative Minimum Credits Required for Graduation					167

Course Descriptions***PHY 101******General Physics******4 Credit Hours***

This course introduces basic concepts in Physics. Key topics for this module include units and measurement, scalars and vector quantities, motion and test of motion, equation of linear motion and applications, motion under gravity, projectiles and applications, circular motion and simple harmonic motion (S.H.M), Hooks Law, Electricity and Magnetism, and optics.

GENG 106***Intro to Engineering Analysis and Design******4 Credit Hours***

This course covers an introduction to engineering education and the engineering profession. Engineering ethics, basic concepts and tools are presented. It provides an over view of the engineering problem solving and design process. Techniques and methods used in defining and solving engineering problems are reviewed also design methodologies including analysis, synthesis and creative thinking are presented. Finally the students are provided an opportunity to complete an engineering design project.

GENG 202***Engineering graphics/CAD I******Pre-Requisite: GENG 102******3 Credit Hours***

The course is a follow up to GENG 102. It starts by introducing students to computer aided drawing using AutoCad software. This first series reviews basic concepts of GEN102, using the computer drawing process, such as 2D drawings, lettering formats, dimensional diagrams, scaling, sketching and geometrical constructions logic,

orthographic projections, isometric drawing, sectional views and dimensioning. Details are added using examples from civil, electrical or mechanical engineering design process.

GENG 203

Intro to Engineering Drawing I

3 Credit Hours

This course is an introduction to drawing for engineering students especially those without previous drawing or drafting experience. It covers the fundamentals of drafting using the manual system approach as compared to computer aided drawing. It covers 2D drawing and views, lettering, dimensional diagrams, free sketching and the use of various drawing scales. This course comes with a free 2.5 hrs practice session.

MATH 201

Calculus I

Pre-Requisite: MATH 102

3 Credit Hours

This course focuses on differential calculus including the limits and differentiation of all functions, fundamental theorem of the calculus, and introduction to the applications of the derivative.

MATH 202

Calculus II

Pre-Requisite: MATH 201

3 Credit Hours

This is part two of MATH 201 and it focuses on integration calculus including limits and integration of all functions, fundamental theorem of calculus, introduction of the application of the integral of functions, infinite series, improper integrals, etc.

PHY 201

Physics for Engineers I

Pre-Requisite: MATH 104, MATH201

4 Credit Hours

This course is enhancement of PHY101. It stresses applications of physical principles in the fields of industry and engineering technology, precision measurement, properties of matter, hydrostatics and hydraulics, laws of mechanics, introduction to vectors analysis, resultant, conditions of equilibrium, statics of structures, trusses; reactions friction, centre of gravity, moment of inertia moments, dynamics, force and motion, rotary motion, energy and momentum, conservation laws. It is a course meant to introduce Engineering students to the concepts of physics centered on calculus mathematics and thus prepare them for engineering mechanics. A weekly 2.5 hour lab provides practical demonstration of the various concepts introduced.

PHY 202**Physics for Engineers II****Pre-Requisite: PHY 201, MATH 20, MATH 202****4 Credit Hours**

This course is an upgrade of PHY 102. It continues on the foundation of PHY 201 with emphasis in waves and electromagnetic energy. Students start with a study of electromagnetic phenomena; including electrostatics; capacitors; resistors and direct-current circuits; magnetism and magnetic induction; RC, LR, and LRC circuits; waves; electromagnetic waves; and radiation; They are introduced to properties and propagations of sound, wave motion, light, electromagnetic spectrum, the nature of light, speed, emission, absorption of light, reflection, refraction, and diffraction of light plus polarization of light. Finally an overview of the relationship between matter, energy, and light is presented. All presentations emphasize on the concepts and principles centered on calculus mathematics linked to MATH201 & 202. A 2.5 hour lab period demonstrates the practical applications of the various concepts taught.

MATH 206**Intro to Linear Algebra****Pre-Requisite: MATH202****3 Credit Hours**

This is an introductory course to linear algebra and its applications. Fundamental theory of matrices, determinants and curve fitting, vector spaces, orthogonality and least squares, eigenvalues and eigenvectors, and linear transformation are covered. This is a required course for all engineers.

CENG 301**Surveying I****4 Credit Hours****Pre-Requisite: GENG 101, 102**

This course introduces the students to the principles of land surveying. They learn the Use of the engineer's compass, theodolite, level and plane table; linear and elevation measurements; surveying methods applied to problems in construction, traverse survey calculations of areas and contouring; trigonometric leveling, height, and distances, subtended barometric leveling, simple circular curve, survey for engineering projects.

CENG 302**Surveying II****3 Credit Hours**

This course continues to expose the students to principles of land surveying. They learn the intersection and resection methods of calculations from given data; tachometry system; electromagnetic distance measurement methods; and use of GPS and other satellite-aided systems.

MATH 301**Multivariable Calculus****3 Credit Hours****Pre-Requisites: MATH 202 GENG 205**

The course is a continuation of MATH 202. It introduces the theory and application of partial differentiations, multiple integrals, and vector calculus. This is a required course for all engineers

MATH 302**Ordinary Differential Equations****3 Credit Hours**

This course includes study of ordinary differential equations, first order equations, homogeneous and non-homogeneous higher constant coefficient equations, matrix diagramming techniques with applications to systems of first order linear equations, Laplace transform techniques, series solutions of second order linear variable coefficient equations, numerical method, and applications to engineering.

EENG 302**Engineering Electrodynamics****Pre-Requisite: GENG-301****3 Credit Hours**

The course determines the interactions between electrical charges and currents using an extension of the classical Newtonian model. The course also describes the behavior of moving electrical charges and their interaction with magnetic and electric fields and mechanical phenomena. The course looks at the applications as how to employ the effects of changing electric and magnetic fields along with the forces and motions these fields induce on objects with electric charges.

GENG 301**Engineering Mechanics I (Statics)****3 Credit Hours**

This course is the fundamental of engineering mechanics which deals with forces acting on rigid bodies at rest covering coplanar and non-coplanar forces, concurrent and concurrent forces, friction forces, centroid and moment of inertia. The course focuses on finding forces for a variety of force systems, as well as analyzing forces acting on bodies to find the reacting forces supporting those bodies. Students develop critical thinking skills necessary to formulate appropriate approaches to problem solutions.

GENG 304**Engineering Mechanics II (Dynamics)****3 Credit Hours****Pre-Requisite GENG 301, MATH 301**

This course is a continuation of GENG 301. Principal topics are kinematics and kinetics of particles and rigid bodies of finite size in motion. Techniques of vector mathematics are employed.

GENG 305**Computer Programming (MATLAB)**

Pre-Requisite: GENG 205, EENG301

3 Credit Hours

This course emphasizes computer aided design and simulation of electrical circuits and system. It introduces computer- aided design techniques using MatLab, Simulink or PSpice software. Students develop various electrical, mechanical, civil and cybersecurity system models and apply computer aided design techniques to solve them.

GENG 306**Electrical Fundamentals****3 Credit Hours**

This course starts with an introduction to electrical engineering world and to the understanding of currents, voltage, resistance and power; introduction to safety regulations and rules. It continues with the study of electrical passive components with emphasis on their applications to AC and DC networks, transformers, simple R. C and R.L.C circuits, blue print reading and wire color coding for domestic and industrial installations, introduction to semi-conductor theory, devices and circuits, and electrical experiments in the laboratory.

GENG 307**Material Science**

Pre-Requisite: CHM 101, MATH 102, and PHY 202.

3 Credit Hours

This course introduces the physical, mechanical, electrical, and chemical properties of materials, especially of importance to civil, electrical and mechanical engineers. It offers an overview of the ways in which these properties affect the material selection process, material behavior, and the design process.

GENG 308**Strength of Materials****3 Credit Hours**

Pre-Requisite: GENG 202, MATH 202

This course is the study of the stress and strain in members of machines and structures. Normal stress, shear stress, temperature stress; structural joints; torsion, shear and bending moment diagrams, beam analysis and design, deflections of beams eccentricity in loading, column design combined stresses, and failure theories .

GENG 400**Internship****1 Credit Hour**

This course prepares engineering students who are ready to go for field experience as future engineers. Department Professors give a form of tutorial/seminar to students on practical aspects of engineering technology such as analysis, design, maintenance, manufacturing and environmental concerns. Another training scenario is to expose students to various current engineering activities on or off campus, thus allowing the

students to link technology to field practice. In this course the students are exposed to basic skills associated with co-op engineering work experience, including expectations on the job, how to assess themselves and set goals relative to the needs of their employer. This is a monitoring course which students register for prior to their field assignment. A final report is expected from each student at the end of their program term along with a letter of recommendation from their sponsor. Extra fees may be attached to this course to facilitate the processing of their assignment. This will be set separately as Internship fees.

CENG 401

Structural Analysis & Design I

3 Credit Hours

Pre-Requisite: GENG301

This course is an elementary course in the analysis of structures and their loading. It includes analysis of determinate structures such as beams, frames, roof and bridge trusses subject to both fixed and moving loads; deflection theory, moments-area, and conjugated beams are introduced and graphical analysis of structures.

CENG 402

Structural Analysis and Design II

3 Credit Hours

Pre-Requisite CENG 401

This course focuses on analysis of indeterminate structures and their loading. Methods of analysis include slope-deflection method, three-moment equations and moment distribution method. The analysis of columns involves the application of column analogy method.

CENG 403

Quantity Surveying

3 Credit Hours

This course is primarily centred on construction and the management of the costs and budgets of large projects. It studies from the moment a plan is drawn until a large construction project has been completed. It involves survey of the legal, technical and financial capacity. The students are taught on some related legal matters aspect of the course. They are exposed on the functions of quantity concerned with the control of the cost on construction projects, the management and maintenance of the budget, valuations and any legal matters arising through the course of the project.

CENG 404***Engineering Management II******3 Credit Hours******Pre-Requisite: GENG 403***

This course focuses on legal and ethical matters relating to the engineering profession. It covers engineering ethics, the ethical behavior of the engineer and his responsibility to the public, the environment and the client. Codes of conduct for engineers, law of contracts and contractual relationship and obligations are also introduced with application in diverse engineering fields. Elements of entrepreneurship training are included.

CENG 405***Soil Mechanics******3 Credit Hours******Pre-Requisite: PHY201, GENG202, MATH 202***

This course is an introduction to the description and characteristic of soil behavior as an engineering material. It includes the study of the physical properties of soil, such as the soil and water relationship. Altenburg's limit, soil permeability and seepage applications are discussed. Shear strength in soil, angle of friction and cohesion of conditions are introduced. Slip circles of soil is included.

CENG 406***Geotechnical Engineering******3 Credit Hours***

This course introduces the key principles of geotechnical engineering including investigating existing subsurface conditions and materials; determining their physical/mechanical and chemical properties, assessing risks posed by site conditions; designing earthworks and structure foundations; and monitoring site conditions; earthwork and foundation. Various factors such as soil consolidation and settlement of foundation are studied; time of settlement and methods of their evaluation are reviewed. Bearing capacities of soils for cases of shallow and deep foundations is introduced. Earth pressure theory is also considered.

CENG 407***CE Fluid Mechanics******3 Credit Hours***

This course introduces the basic nature of fluids and instrumentation linked to fluids from the perspective of civil structures and system: fluid static, hydrostatics pressure, flotation hydrometers, barometers, fluid dynamics without friction; Bernoulli's principle, venturi-meters, orifices, weirs notches; loss of head, hydraulic structures and equipment, cavitations; hydrology, rainfall, run-off underground water, flow rivers and streams; Laminar and turbulent flows. Hydraulic structure, their construction and performance, relative to drainage, sewers, and plumbing system are introduced. This is similar to MENG 302.

CENG 408***Intro to Thermodynamics******3 Credit Hours***

This course covers the study of the first and second laws of thermodynamics and their application to energy transformations during various processes. Property relations are studied for pure substances, ideal gases, mixture of ideal gases, and atmospheric air. Steam power cycles, refrigeration cycles, spark-ignition and compression-ignition engines, and turbine cycles are evaluated to determine performance parameters and energy efficiencies.

CENG 409***Civil Engineering Lab I******1 Credit Hour***

This course is a generic laboratory to demonstrate civil engineering related functions. Part one starts with engineering mechanics loading, deflections, stress and principles of surveying.

CENG 410***Civil Engineering Lab II******1 Credit Hour***

This laboratory covers soil mechanics, geotechnical and advance structural design.

GENG 403***Engineering Management I******3 Credit Hours***

This course covers an overview of engineering management and economic. It focuses on practical analytical skills needed by all engineers to ensure that their various designed interventions are economically prudent and environmentally friendly (ex: elements of projects management, cost benefit analysis, quantity analysis, financial analysis, etc)...elements of entrepreneurship training is included.

GENG 408***Engineering Economics******3 Credit Hours***

This course looks at the engineering economics alternatives that are involved with capital investments for materials, equipment and labor. The techniques of economic analysis may be used to assist in determining the best alternative. It introduces economic terminologies and basic cash flow diagrams, economic factors and their use, nominal and effective interest rates, continuous compounding, the use of multiple economic factors in engineering, present-worth and capitalized cost evaluation, replacement analysis and e-bonds; inflation and cost estimation, capital rationing under budget constraints; and engineering decision making for large capital investment.

GENG 412***Research Methodology******1 Credit Hour***

The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Students use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in informing their understanding of their environment (work, social, local, global). Students learn how to identify problems to study, develop hypotheses and research questions, specify independent and dependent variables; check for the validity and reliability of studies and design research projects. They are exposed to the broad range of designs used in communication research from laboratory and field experiments, surveys, content analysis, focus groups and in-depth interviewing.

CENG 501***Structural Analysis & Design III (Reinforced Concrete)******3 Credit Hours***

This course shifts focus from structural analysis to design of structures. It starts with the design of structural members and connections. It shows the comparative strength of members depending on their composition. This first course investigates the properties of non-metal structures like concrete, wood or plastics, etc. Combined stresses, unsymmetrical bending, and plastic design theory are introduced. Design with concrete beams and wooden roof trusses are included. Environmental stresses and continuous frame designs are also included.

CENG 502***Structural Analysis & Design IV (Steel Design)******3 Credit Hours***

This course shifts focus from structural analysis to design of structures. It starts with the design of structural members and connections. It shows the comparative strength of members depending on their composition. This second course investigates the properties of metal structures like steel, aluminum or other metals, etc. Combined stresses, unsymmetrical bending, and plastic design theory are introduced. Design with steel girders and roof trusses are included. Settlement and temperature stresses, and continuous frame designs are also included.

CENG 503***Highway Engineering I******3 Credit Hours***

This course introduces the students to specific engineering principles linked to the design of roads and highway, including design geometrics surveys, plans; Highway systems, planning, finance, contracts and administration.

CENG 504***Highway Engineering II******3 Credit Hours***

This course continues with highway design principles covering, highway sub grade structure, construction methods, and soil-stabilized roads. Highway based courses, asphalt pavement and Portland cement.

CENG 507***Environmental / Sanitary I (Water Management)******3 Credit Hours***

This course covers the key principles environmental and sanitation engineering with emphasis on protection and management of the water systems. Topics include assessment of environmental quality; introduction to water and wastewater treatment technologies; elements of design and operation of water and wastewater treatment systems, including physical, chemical and biological treatment methods are discussed. They are exposed to the engineering aspects of collection, pumping, storage, and distribution of water for public, domestic, and industrial uses; also the collection of storm, sanitary and combined waste water. Finally they are exposed to various integrated water supply and pollution control design problems and required to design creative solutions as a class project.

CENG 508***Environmental/Sanitary II (Waste Management)******3 Credit Hours***

This course covers the key principles environmental and sanitation engineering with emphasis on protection and management of the air and solid waste systems. Topics include assessment of environmental quality; introduction to air pollution control and solid waste treatment technologies; elements of design and operation of air and solid waste processing systems, including physical and technical aspects of air pollution and solid waste management are discussed. Finally they are exposed to geophysical processes and air pollution meteorology as well as physical and chemical properties of pollutants and waste matter. As they final design project students are encouraged to come up with creative design solutions to current national or international problems linked to Africa.

CENG 505***Civil Engineering Project Design******4 Credit Hours***

This course provides the opportunity for the student to design selected Project Work under the supervision of a Professor.

○ ***Civil Eng Design Project (environmental):***

Using teams, students design a civil engineering project that primarily involves the environmental/sanitation sub discipline. Design teams are advised by a faculty member and engineering practitioners. Lectures cover supplemental technical background specific to the project, as well as cross-disciplinary aspects of project development, value

engineering, aesthetics, and constructability. Integrates project design with further development of student communications skills; students present the design to practicing engineers and interested parties such as community groups.

- ***Civil Eng Design Project (structural)***

Using teams, students design a civil engineering project that primarily involves the structural sub discipline. Design teams are advised by a faculty member and engineering practitioners. Lectures cover supplemental technical background specific to the project, as well as cross-disciplinary aspects of project development, value engineering, aesthetics, and constructability. Integrates project design with further development of student communications skills; students present the design to practicing engineers and interested parties such as community groups.

- ***Civil Eng Design Project (Highway)***

Using teams, students design a civil engineering project that primarily involves the highway and transportation sub discipline. Design teams are advised by a faculty member and engineering practitioners. Lectures cover supplemental technical background specific to the project, as well as cross-disciplinary aspects of project development, value engineering, aesthetics, and constructability. Integrates project design with further development of student communications skills; students present the design to practicing engineers and interested parties such as community groups.

CENG 510

Seminar

1 Credit Hour

Students present in a seminar their final year project work and defend it in the presence of their professors/supervisor(s).

Bachelor of Science in Mechanical Engineering

Program Description

The Mechanical Engineering Program is designed to provide the educational requisites in the training of men and women for the degree of Bachelor of Science in Mechanical Engineering. Like any other engineering program, the coursework is based on science and technology. The learning objectives are also grounded on mathematical solutions, logic, principles of analysis and experiential learning for creativity. The Program combines a broad-based education in the engineering sciences with a strong grounding in qualitative problem-solving, design, engineering management and communications skills. It prepares students for a broad range of careers associated with the design and implementation of mechanical systems in a wide variety of fields including medicine, aerospace, automotive, energy systems. Among the courses that provide breadth in the discipline are included: design, dynamics, engineering materials, thermodynamics, fluid mechanics, heat transfer, systems analysis and design, and associated laboratories.

Program Objectives

- To train engineers knowledgeable of mechanical engineering designs and the complexity of machines;
- To develop competent engineers with the ability to recognize problems and to design solutions to problems pertaining to construction, manufacture, and various other requirements of mechanical engineering;
- To prepare engineers who are cognizant of their professional, ethical, social-economic and global responsibility to society and the environment as a whole.

Student Learning Outcomes

Students will be able to:

- Demonstrate knowledge of the mathematical and scientific foundation of Mechanical Engineering;
- Demonstrate knowledge and ability to design and construct various mechanical systems in keeping with established standards and specifications;
- Calculate for and build various machine parts;
- Understand the importance of engineering ethics, environmental safety, entrepreneurship and professionalism;
- Demonstrate all of the above knowledge by sitting and successfully passing a professional qualifying exam.

Bachelor of Science in Mechanical Engineering

First Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
CHEM 101	Principles of Chemistry	4	BIO 101	General Biology	4
PHY 101	General Physics	4	PHI 101	Introduction to Philosophy	3
PSY 101	Introduction to Psychology	3	GENG 106	Intro to Engineering Analysis and Design	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	Total	21		Total	20

Second Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
FRE 101/ GLE 101 CHN 101	Introduction to French or Introduction to Glebo Introduction to Chinese	3	FRE 102/ GLE 102 CHN 102	Intermediate French Advanced Glebo Advanced Chinese	3
HIST 102	World History and Western Civilization	3			
MATH 201	Differential Calculus	3	PHY 202	Physics for Engineers II	4
PHY 201	Physics for Engineers I	4	MATH202	Integral Calculus	3
GENG 203	Introduction to Engineering Drawing II	1	MATH 206	Intro to Linear algebra	3
EVS 201	Introduction to Environmental Science	3	GENG 202	Engineering Graphics/ CAD I	3
	TOTAL	20			19

*Qualifying exam must be passed for student to pursue junior year courses

Third Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
MATH 301	Multivariable Calculus	3	MATH 302	Ordinary Differential Equations (ODE)	3
GENG 301	Engineering Mechanics I (Statics)	3	EE 302	Entrepreneurship Education II	0
GENG 305	Computer Programming (MATLAB)	3	GENG 306	Electrical Fundamentals	3
GENG 307	Material Science	3	GENG 304	Engineering Mechanics II (Dynamics)	3
EE 301	Entrepreneurship Education I	0	GENG 308	Strength Of Materials	3
MENG 301	ME Basic Practical Workshop	1	MENG 302	Kinematics of Machine	3
GENG 302	AutoCAD II (3D Modeling)	3	MENG 308	ME Basic Practical Workshop II	1
	TOTAL	16			16

Fourth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
MENG 401	Engineering Thermodynamics	3	MENG 402	Heat Transfer	3
GENG 403	Engineering Management I	3	MENG 404	Fluid Mechanics II	3
MENG 403	Fluid Mechanics I	3	MENG 406	Applied Thermodynamics	3
MENG 405	Dynamic Systems	3	MENG 408	System Dynamics and Control	3
MENG 407	Mechanical Lab / Workshop I	1	GENG 408	Engineering Economics	3
MENG 409	Manufacturing Processes	3	MENG 410	Mechanical Lab / Workshop II	1
MENG 411	Machine Design I	3	GENG 412	Research Methodology	1
	TOTAL	19			17

Summer Internship

Course Code	Course Title	Credit Hr.
GENG-400	Internship	1
TOTAL		1

Fifth Year

Semester I			Semester II		
Course No.	Course Title	Credit	Course No.	Course Title	Credit
MENG 501	Computer Aided Design / Manufacturing (CAD /CAM)	3	MENG 500	ME Seminar	1
MENG 505	Mechanical Engineering Project Design	4	MENG 504	Fluid Power System	3
MENG 509	Machine Design II (Analysis and Design of Machine Components)	3	MENG 506	Production Management	3
MENG 511	Internal Combustion Engine & Automotive Power Systems	3	MENG XXX	Technical Elective II	3
MENG XXX	Technical Elective I	3			
	TOTAL	16			10
Cumulative Minimum Credits Required for Graduation					171

Technical Electives:**First Semester**

Course Code	Course Title	Credit Hrs.
MENG 503	Alternative Energy Systems	3
MENG 507	Finite Element Method	3

Second Semester

Course Code	Course Title	Credit Hrs.
MENG 508	Heating, Ventilation and Air Conditioning System	3
MENG 510	Modeling, Simulation and Control of mechanical system	3

Graduation Requirement for B.Sc. Degree in Engineering for Mechanical Engineering Students is 171 credit hours.

Course Descriptions

PHY 101

General Physics

4 Credit Hours

This course introduces basic concepts in Physics. Key topics for this module include units and measurement, scalars and vector quantities, motion and test of motion, equation of linear motion and applications, motion under gravity, projectiles and applications, circular motion and simple harmonic motion (S.H.M), Hooks Law, Electricity and Magnetism, and optics.

GENG 106

Intro to Engineering Analysis and Design

4 Credit Hours

This course covers an introduction to engineering education and the engineering profession. Engineering ethics, basic concepts and tools are presented. It provides an over view of the engineering problem solving and design process. Techniques and methods used in defining and solving engineering problems are reviewed also design methodologies including analysis, synthesis and creative thinking are presented. Finally the students are provided an opportunity to complete an engineering design project.

GENG 202

Engineering graphics/CAD I

Pre-Requisite: GENG 102

3 Credit Hours

The course is a follow up to GENG 102. It starts by introducing students to computer aided drawing using AutoCad software. This first series reviews basic concepts of GEN102, using the computer drawing process, such as 2D drawings, lettering formats, dimensional diagrams, scaling, sketching and geometrical constructions logic, orthographic projections, isometric drawing, sectional views and dimensioning. Details are added using examples from civil, electrical or mechanical engineering design process.

GENG 203

Intro to Engineering Drawing I

3 Credit Hours

This course is an introduction to drawing for engineering students especially those without previous drawing or drafting experience. It covers the fundamentals of drafting using the manual system approach as compared to computer aided drawing. It covers 2D drawing and views, lettering, dimensional diagrams, free sketching and the use of various drawing scales. This course comes with a free 2.5 hrs practice session.

MATH 201**Calculus I****Pre-Requisite: MATH 102****3 Credit Hours**

This course focuses on differential calculus including the limits and differentiation of all functions, fundamental theorem of the calculus, and introduction to the applications of the derivative.

MATH 202**Calculus II****Pre-Requisite: MATH 201****3 Credit Hours**

This is part two of MATH 201 and it focuses on integration calculus including limits and integration of all functions, fundamental theorem of calculus, introduction of the application of the integral of functions, infinite series, improper integrals, etc.

PHY 201**Physics for Engineers I****Pre-Requisite: MATH 104, MATH201****4 Credit Hours**

This course is enhancement of PHY101. It stresses applications of physical principles in the fields of industry and engineering technology, precision measurement, properties of matter, hydrostatics and hydraulics, laws of mechanics, introduction to vectors analysis, resultant, conditions of equilibrium, statics of structures, trusses; reactions friction, centre of gravity, moment of inertia moments, dynamics, force and motion, rotary motion, energy and momentum, conservation laws. It is a course meant to introduce Engineering students to the concepts of physics centered on calculus mathematics and thus prepare them for engineering mechanics. A weekly 2.5 hour lab provides practical demonstration of the various concepts introduced.

PHY 202**Physics for Engineers II****Pre-Requisite: PHY 201, MATH 20, MATH 202****4 Credit Hours**

This course is an upgrade of PHY 102. It continues on the foundation of PHY 201 with emphasis in waves and electromagnetic energy. Students start with a study of electromagnetic phenomena; including electrostatics; capacitors; resistors and direct-current circuits; magnetism and magnetic induction; RC, LR, and LRC circuits; waves; electromagnetic waves; and radiation; They are introduced to properties and propagations of sound, wave motion, light, electromagnetic spectrum, the nature of light, speed, emission, absorption of light, reflection, refraction, and diffraction of light plus polarization of light. Finally an overview of the relationship between matter, energy, and light is presented. All presentations emphasize on the concepts and principles centered on calculus mathematics linked to MATH201 & 202. A 2.5 hour lab period demonstrates the practical applications of the various concepts taught.

MATH 206***Intro to Linear Algebra******Pre-Requisite: MATH202******3 Credit Hours***

This is an introductory course to linear algebra and its applications. Fundamental theory of matrices, determinants and curve fitting, vector spaces, orthogonality and least squares, eigenvalues and eigenvectors, and linear transformation are covered. This is a required course for all engineers.

MENG 301***ME Basic Practical Workshop******1 Credit Hour***

This is a two part lab course. It covered various experimental techniques involving measurement of pressure, flow in pipes, velocity, noise, acceleration, temperature, etc. This part emphasizes mechanical structural integrity and motion.

MENG 302***Kinematics of Machine******3 Credit Hours******Pre-Requisite: GENG 301 (Eng. mechanics: statics)***

This course introduces the fundamentals and principles of kinematics and kinetic; degree of freedom, four bar linkage synthesis, position, velocity, and acceleration as applied in the analyses of machinery, CAM, and gear linkages of Machines are also covered.

GENG 302***AutoCAD II (3D Modeling)******3 Credit Hours******2 Hours Lecture******2 Hours drafting workshop lab******Pre-Requisite GENG 202***

This course emphasizes the computer aided design process using AutoCAD. It continues with descriptive geometry, intersection and development of surfaces, working drawings and sketching of standard parts and construction designs. It concludes with 3D drawing and introduces students to the graphic kernel systems and applications unique to their discipline (electrical, mechanical and civil).

MENG 308***ME Basic Practical Workshop II******1 Credit Hour***

This course introduces students to measurements associated with mechanical engineering phenomena. It emphasizes the linkage between instruments, physical laws and the calibrations of instruments. This is a two part lab course. It covers various experimental techniques involving measurement of pressure, flow in pipes, velocity, noise, acceleration, temperature, etc. The first part emphasizes heat transfer and fluid flow. This course introduces student to measurements associated with mechanical engineering phenomena. It emphasizes the linkage between instruments, physical laws and the calibrations of instruments.

MATH 301**Multivariable Calculus****3 Credit Hours****Pre-Requisite GENG 205**

The course is a continuation of MATH 202. It introduces the theory and application of partial differentiations, multiple integrals, and vector calculus. This is a required course for all engineers

MATH 302**Ordinary Differential Equations****3 Credit Hours**

This course includes study of ordinary differential equations, first order equations, homogeneous and non-homogeneous higher constant co-efficient equations, matrix diagramming techniques with applications to systems of first order linear equations, Laplace transform techniques, series solutions of second order linear variable coefficient equations, numerical method, and applications to engineering.

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Pre-Requisite: CHM 101, MATH 102, and PHY 202.

3 Credit Hours

This course introduces the physical, mechanical, electrical, and chemical properties of materials, especially of importance to civil, electrical and mechanical engineers. It offers an overview of the ways in which these properties affect the material selection process, material behavior, and the design process.

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Pre-Requisite: GENG 202, MATH 202

This course is the study of the stress and strain in members of machines and structures. Normal stress, shear stress, temperature stress; structural joints; torsion, shear and bending moment diagrams, beam analysis and design, deflections of beams eccentricity in loading, column design combined stresses, and failure theories .

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This course covers the study of the first and second laws of thermodynamics and their application to energy transformations during various processes. Property relations are studied for pure substances, ideal gases, mixture of ideal gases, and atmospheric air. Steam power cycles, refrigeration cycles, spark-ignition and compression-ignition engines, and turbine cycles are evaluated to determine performance parameters and energy efficiencies

MENG 402**Heat Transfer****3 Credit Hours****Pre-Requisite: MENG 401**

This course introduces the principles of heat transfer, including an understanding of the principles and concepts of conductive, convective, and radioactive heat transfer, and heat exchangers.

MENG 403**Fluid Mechanics I****3 Credit Hours**

This course introduces the basic nature of fluids and instrumentation linked to fluid from an engineering perspective. It includes fluid static, hydrostatics pressure, flotation hydrometers, barometers, fluid dynamics without friction; Bernoulli's principle, venturi-meters, orifices, weirs notches; loss of head, hydraulic structures and equipment, cavitations; hydrology, rainfall, run-off underground water, flow rivers and streams; laminar and turbulent flows; and hydraulic machines their selection and performance, drainage and plumbing.

MENG 404**Fluid Mechanics II****3 Credit Hours**

This course extends the concepts of continuum, continuity and momentum balances for laminar and turbulent flow with applications and design problems and fluid kinematics (Bernoulli's equation, Lagrangian method and Eulerian method, types of fluid flow and types of flow lines). Concepts of compressible and incompressible fluids, modeling and boundary layers are also covered.

MENG 405**Dynamic Systems****3 Credit Hours**

This is a first course in System Dynamics. The object of this course is to provide an understanding into basic principles and methods underlying the steady state and dynamic characterization of physical systems and components. The focus is on multi-discipline approach. Construction of mathematical models of systems using Bond-graph and computer simulation (both in time and frequency domains using software tool(s) are

emphasized. Application of modeling techniques to understanding the behavior of free vibration (damped and undamped), forced vibration for harmonic excitation, and systems involving multi-degree freedom-including applications such as vibration absorber are also covered.

MENG 406

Applied Thermodynamics

3 Credit Hours

MENG 407

Mechanical Lab / Workshop I

1 Credit Hour

This course allows students to work with their advisors on a practical engineering problem either research oriented or linked to a practical problem on or off campus. In this way the student gains hands-on experience under the tutelage of his/her advisor. The student must demonstrate clear self proficiency in engineering analysis & design.

MENG 408

System Dynamics and Control

3 Credit Hours

The objective of this course is to provide a deeper understanding of the principles and methods underlying the steady state and dynamic characterization of feedback control systems. The focus is on multi-discipline approach as in the previous course. Construction of mathematical models of systems using Bond-graphs, block diagrams and development of transfer functions and state space models are emphasized. System performance is studied mainly using computer simulation (both in time and frequency domains) software tool(s). Design of control systems is attempted using the same computer simulation tools. Introduction to some advanced topics in control systems is also provided.

MENG 409

Manufacturing Processes

3 Credit Hours

This course discusses materials and their properties. It integrates manufacturing concepts to material processing such as: heat treatment, principles of metal cutting, forming & shaping, metal casting processes and equipment. It covers various metal forming processes, sheet metal working, welding techniques and powder metallurgy.

MENG 410

Mechanical Lab / Workshop II

1 Credit Hour

This course allows senior students to work with their advisors on a practical engineering problem either research oriented or linked to a practical problem on or off campus. In this way the students gain hands-on experience under the tutelage of their advisor. The students must demonstrate clear self proficiency in engineering analysis & design.

MENG 411***Machine Design I******3 Credit Hours***

This course introduces the fundamentals and principles of kinematics and kinetic; degree of freedom, four bar linkage synthesis, position, velocity, and acceleration as applied in the analyses of machinery, CAM, and gear linkages of machines are also covered.

GENG 403***Engineering Management I******3 Credit Hours***

This course is an overview of engineering management and economic. It focuses on practical analytical skills needed by all engineers to ensure that their various designed interventions are economically prudent and environmentally friendly (ex: elements of projects management, cost benefit analysis, quantity analysis, financial analysis, etc)...elements of entrepreneurship training is included.

GENG 408***Engineering Economics******3 Credit Hours***

This course looks at the engineering economics alternatives that are involved with capital investments for materials, equipment and labor. The techniques of economic analysis may be used to assist in determining the best alternative. It introduces economic terminologies and basic cash flow diagrams, economic factors and their use, nominal and effective interest rates, continuous compounding, the use of multiple economic factors in engineering, present-worth and capitalized cost evaluation, replacement analysis and e-bonds; inflation and cost estimation, capital rationing under budget constraints; and engineering decision making for large capital investment.

GENG 412***Research Methodology******1 Credit Hour***

The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Students use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in informing their understanding of their environment (work, social, local, global). Students learn how to identify problems to study, develop hypotheses and research questions, specify independent and dependent variables; check for the validity and reliability of studies and design research projects. They are exposed to the broad range of designs used in communication research from laboratory and field experiments, surveys, content analysis, focus groups and in-depth interviewing.

MENG 500**ME Seminar****1 Credit Hour**

Students present seminar on their final year project work and defend it in the presence of their professors/supervisor(s).

MENG 501**Computer Aided Design / Manufacturing (CAD /CAM)****3 Credit Hours****MENG 504****Fluid Power System****3 Credit Hours**

This course begins with basic hydraulics circuits followed by the sizing and control of hydraulic cylinders and motors. Prime movers are introduced and matched to system requirements. Valves are described while circuit tracing and component recognition are emphasized. The course also addresses air consumption, pneumatic component sizing and ladder logic. There are limited consideration of hydraulic servo and two design projects.

MENG 505**Mechanical Engineering Project Design****4 Credit Hours**

This is a study of a selected Project Work under the supervision of a Professor. Using teams, students design a mechanical engineering project that primarily involves one of three (mechanical system, fluid and heat systems, energy and power systems) sub discipline. Design teams are advised by a faculty member and a practicing engineer. Lectures cover supplemental technical background specific to the project, as well as cross-disciplinary aspects of project management and development, value engineering, aesthetics, and constructability. Integrates project design with further development of student communications skills; students present their design to a panel of practicing engineers and interested parties such as community groups.

MENG 506**Production Management****3 Credit Hours****MENG 509****Machine Design II (Analysis and Design of Machine Components)****3 Credit Hours**

This is follow up course to MENG 411 Machine Design I; principles of dynamics of machinery are further presented, dynamic forces are analyzed, balancing rotating part, fundamental of engine dynamic, multi-cylinder engines, and CAM dynamics are introduced

MENG 511***Internal Combustion Engine & Automotive Power Systems******3 Credit Hours***

This course covers the internal combustion engines (ICE) and engine design with topics that include: air capacity, engine vibration, kinematics and dynamics of the crank mechanism, air cycles, combustion, petroleum and alternative fuels, engine electronics and fuel cells. Automotive emissions, government standards, test procedures, instrumentation, and laboratory reports are emphasized.

MENG 503***Alternative Energy Systems******3 Credit Hours***

This course provides students with an overview of various alternative energy systems. Students are exposed to the structural and engineering analysis & design parameters of various systems. The course covers one or more of the following energy sources or energy conversion devices: solar, wind, tidal, hydro, wave, biomass, geothermal, alternative fuels, or fuel cells.

MENG 507***Finite Element Method******3 Credit Hours***

This course introduces the theory of Finite Element Method. Applications of static and dynamic finite element analysis of real world mechanical systems are performed. This course focuses on solid dynamics linked to commercial F.E.A. Codes such as Ansys, Abaqus. NASTRAN software, etc will be utilized.

MENG 508***Heating, Ventilation and Air Conditioning System******3 Credit Hours*****MENG 510******Modeling, Simulation and Control******3 Credit Hours***

Bachelor of Science in Renewable Energy Engineering

Program Description

The Renewable Energy Engineering Program is designed to provide the educational requisites in the training of men and women for the degree of Bachelor of Science in Renewable Energy Engineering. The coursework provides students analytical and hands-on skills in designing, building, operating and enhancing sustainable energy systems with the combination of energy generation, distribution and utilization within environment. In addition, it also provides the use of best technologies such as solar thermal systems, photovoltaic, wind, and biomass. At the same time, faculty and students will engage in applied research in emerging technologies and provide professional services to their communities. It is a five year and unique program in engineering and started to become popular. The program does not only prepare graduates for professional practice but it also motivates the students to pursue graduate studies.

Program Objectives

- To develop **competent engineers** who are able to recognize and design solutions in the fields of energy engineering.
- To train engineers in critical thinking, problem solving, and effective communication.
- To prepare engineers who are **cognizant** of their professional, ethnical and socio- economic responsibility to society and the environment as a whole.

Student Learning Outcomes

Students are able to:

- Demonstrate knowledge of the mathematical and scientific foundation of Renewable Engineering
- Ability to design and conduct experiments and analyse the data.
- Ability to function within a team and communicate effectively.
- Understand the importance of engineering ethics, environmental safety, entrepreneurship and professionalism
- Demonstrate all of the above knowledge by sitting and successfully passing a professional qualifying exam

Curriculum Requirements Total Credits 163

General Education - 52 Credits

Engineering Math/Science - 24 Credits

General Engineering Courses – 15 Credits
Major - 56 Credits
Conc/Technical Elective – 16 Credits

Core Requirements

- Mathematics, physics, and chemistry
- Social Sciences, environmental science & safety
- Utilization of Electrical Power, Special Electrical Machines, Biofuels and Biomass Technology, Wind Energy Technology

Concentration Options

- Industrial and Maintenance Engineering, Senior Design Project, Industrial Electronics, Hydropower Technology,
- Internship

Cognate Requirements

- Principles of engineering analysis
- Algebra, Geometry, Trigonometry, and Calculus
- Engineering graphics and structural designs
- Strength and properties of materials
- Design of civil structures and buildings

Bachelor of Science on Renewable Energy Engineering

First Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
CHEM 101	Principles of Chemistry	4	BIO 101	General Biology	4
PHY 101	General Physics	4	PHI 101	Introduction to Philosophy	3
PSY 101	Introduction to Psychology	3	GENG 106	Intro to Engineering Analysis and Design	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	TOTAL	21			20

Second Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
FRE 101/ GLE 101 CHN 101	Introduction to French or Introduction to Glebo Introduction to Chinese	3	FRE 102/ GLE 102 CHN 102	Intermediate French Advanced Glebo Advanced Chinese	3
HIST 102	World History and Western Civilization	3			
MATH 201	Differential Calculus	3	PHY 202	Physics for Engineers II	4
PHY 201	Physics for Engineers I	4	MATH202	Integral Calculus	3
GENG 203	Introduction to Engineering Drawing II	1	MATH 206	Intro to Linear algebra	3
EVS 201	Introduction to Environmental Science	3	GENG 202	Engineering Graphics/ CAD I	3
	TOTAL	20			19

*Qualifying exam must be passed for student to pursue junior year courses

Third Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
Course No.	Course Title	Credit	Course No.	Course Title	Credit
REENG 301	Utilization of Electrical Power	3	REENG 302	Introduction to Renewable Energy Power Systems	3
REENG 303	Rural Electrical Energy System Planning and Design	3	REENG 304	Special Electrical Machines	3
EENG 301	Electrical Network I	3	EENG 302	Electrical Network II	3
MATH 301	Multivariable Calculus	3	MATH 302	Ordinary Differential Equations	3
GENG305	Computer Programming (MATLAB)	3	GENG 306	Electrical Fundamentals	3
EE 301	Entrepreneurship Education I		EE 302	Entrepreneurship Education II	
	TOTAL	15			15

Fourth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
REENG 401	Biofuels and Biomass Technology	3	REENG 402	Energy Modeling and GHG Emission Analysis	3
REENG 403	Solar Energy Technology	3	REENG 404	Wind Energy Technology	3
REENG 405	Energy Management and Environmental Impact	3	REENG 406	Power Electronics	3
REENG 407	REENG Practical Workshop II	1	RENG 408	Engineering Economics for Renewable Energy Systems	3
REENG 409	High Voltage Engineering	3	REENG 410	Power Generation and Hybrid Systems	3
EENG 401	Electronics I	3	EENG 402	Electronics II	3
EENG 407	Control Systems	3	GENG-412	Research Methodology	1
	TOTAL	19			19

Summer Internship

Course Code	Course Title	Credit Hours
GENG – 400	Internship	1
TOTAL		1

Fifth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
Course No.	Course Title	Credit	Course No.	Course Title	Credit
REENG 501	Industrial and Maintenance Engineering	3	REENG 502	Hydropower Technology	3
REENG 503	Industrial Electronics	4	REENG 504	Instrumentation	3
REENG 503	Renewable Energy Engineering Project Design	3	REENG 506	REENG Seminar	1
	TOTAL	19			19

Course Descriptions***PHY 101******General Physics******4 Credit Hours***

This course introduces basic concepts in Physics. Key topics for this module include units and measurement, scalars and vector quantities, motion and test of motion, equation of linear motion and applications, motion under gravity, projectiles and applications, circular motion and simple harmonic motion (S.H.M), Hooks Law, Electricity and Magnetism, and optics.

GENG 106***Intro to Engineering Analysis and Design******4 Credit Hours***

This course covers an introduction to engineering education and the engineering profession. Engineering ethics, basic concepts and tools are presented. It provides an over view of the engineering problem solving and design process. Techniques and methods used in defining and solving engineering problems are reviewed also design methodologies including analysis, synthesis and creative thinking are presented. Finally the students are provided an opportunity to complete an engineering design project.

GENG 202***Engineering graphics/CAD I******Pre-Requisite: GENG 102******3 Credit Hours***

The course is a follow up to GENG 102. It starts by introducing students to computer aided drawing using AutoCad software. This first series reviews basic concepts of GEN102, using the computer drawing process, such as 2D drawings, lettering formats, dimensional diagrams, scaling, sketching and geometrical constructions logic,

orthographic projections, isometric drawing, sectional views and dimensioning. Details are added using examples from civil, electrical or mechanical engineering design process.

GENG 203

Intro to Engineering Drawing I

3 Credit Hours

This course is an introduction to drawing for engineering students especially those without previous drawing or drafting experience. It covers the fundamentals of drafting using the manual system approach as compared to computer aided drawing. It covers 2D drawing and views, lettering, dimensional diagrams, free sketching and the use of various drawing scales. This course comes with a free 2.5 hrs practice session.

MATH 201

Calculus I

Pre-Requisite: MATH 102

3 Credit Hours

This course focuses on differential calculus including the limits and differentiation of all functions, fundamental theorem of the calculus, and introduction to the applications of the derivative.

MATH 202

Calculus II

Pre-Requisite: MATH 201

3 Credit Hours

This is part two of MATH 201 and it focuses on integration calculus including limits and integration of all functions, fundamental theorem of calculus, introduction of the application of the integral of functions, infinite series, improper integrals, etc.

PHY 201

Physics for Engineers I

Pre-Requisite: MATH 104, MATH201

4 Credit Hours

This course is enhancement of PHY101. It stresses applications of physical principles in the fields of industry and engineering technology, precision measurement, properties of matter, hydrostatics and hydraulics, laws of mechanics, introduction to vectors analysis, resultant, conditions of equilibrium, statics of structures, trusses; reactions friction, centre of gravity, moment of inertia moments, dynamics, force and motion, rotary motion, energy and momentum, conservation laws. It is a course meant to introduce Engineering students to the concepts of physics centered on calculus mathematics and thus prepare them for engineering mechanics. A weekly 2.5 hour lab provides practical demonstration of the various concepts introduced.

PHY 202

Physics for Engineers II

Pre-Requisite: PHY 201, MATH 20, MATH 202

4 Credit Hours

This course is an upgrade of PHY 102. It continues on the foundation of PHY 201 with emphasis in waves and electromagnetic energy. Students start with a study of electromagnetic phenomena; including electrostatics; capacitors; resistors and direct-current circuits; magnetism and magnetic induction; RC, LR, and LRC circuits; waves; electromagnetic waves; and radiation; They are introduced to properties and propagations of sound, wave motion, light, electromagnetic spectrum, the nature of light, speed, emission, absorption of light, reflection, refraction, and diffraction of light plus polarization of light. Finally an overview of the relationship between matter, energy, and light is presented. All presentations emphasize on the concepts and principles centered on calculus mathematics linked to MATH201 & 202. A 2.5 hour lab period demonstrates the practical applications of the various concepts taught.

MATH 206

Intro to Linear Algebra

Pre-Requisite: MATH202

3 Credit Hours

This is an introductory course to linear algebra and its applications. Fundamental theory of matrices, determinants and curve fitting, vector spaces, orthogonality and least squares, eigenvalues and eigenvectors, and linear transformation are covered. This is a required course for all engineers.

REENG 301

Utilization of Electrical Power

3 Credit Hours

This course covers illumination and methods of light production. It includes study of High Pressure Mercury Vapour Lamp (HPMVL) Road Ways, and The Miners Cap Lamp. It also covers Switch Gears, Protection of Electrical Equipment, and Disposition of Circuits for Station Auxiliaries of a 20 MW Generator, Protection of Generators, Power Transformers and Plain-Feeder Systems.

REENG 302

Introduction to Renewable Energy Power Systems

3 Credit Hours

The course deals with the history of energy grid, types of renewable energy and its relevance over fossil fuels. It includes discussion of different agenda for climate change action plan and new initiatives.

REENG 303

Rural Electrical Energy System Planning and Design

3 Credit Hours

This course covers electrical load survey and forecasting, rural load management, route survey and profiling of distribution and transmission lines. It includes study of mechanical design and electrical design of low – tension distribution lines, selection of conductors and insulators; and planning, selection and design of substations for rural electrical system. Load flow methods for transmission and distribution, faults analysis, different types of faults and their calculation procedures, coordination between power and

telecommunication lines as well as maintenance of transmission and distribution lines are also covered.

REENG 304

Special Electrical Machines

3 Credit Hours

This course covers special electrical machines and their classification. It includes detailed study of single-phase induction motors, and torque of the single-phase induction motor.

EENG 301

Network Analysis I

3 Credit Hours

This course introduces basic network analysis techniques including Ohm's and Kirchhoff's laws, VI laws for RLC circuit elements. It also introduces common signal models like Thevenin's and Norton's theorems; the transient and steady state response of RLC Circuits; Phasors; Sinusoidal analysis and complex power. Polyphase circuits, magnetically coupled circuits; introduction to P Spice or other CAD program

EENG 302

Network Analysis II

3 Credit Hours

This covers the first order circuits, the parallel and series RLC second order circuits both with natural and step responses, the frequency response and network analysis by Convolution theorem; Laplace and Fourier transforms methods of network analysis; two – port networks; filter circuits and introduction to synthesis.

MATH 301

Multivariable Calculus

3 Credit Hours

Pre -Requisite: MATH 202, GENG 205

The course is a continuation of MATH 202. It introduces the theory and application of partial differentiations, multiple integrals, and vector calculus.

MATH 302

Ordinary Differential Equations

3 Credit Hours

This course includes study of ordinary differential equations, first order equations, homogeneous and non- homogeneous higher constant co-efficient equations, matrix diagramming techniques with applications to systems of first order linear equations, Laplace transform techniques, series solutions of second order linear variable coefficient equations, numerical method, and applications to engineering.

GENG 305***Computer Programming (MATLAB)******Pre-Requisite: GENG 205, EENG301******3 Credit Hours***

This course emphasizes computer aided design and simulation of electrical circuits and system. It introduces computer- aided design techniques using MatLab, Simulink or PSpice software. Students develop various electrical, mechanical, civil and cybersecurity system models and apply computer aided design techniques to solve them.

GENG 306***Electrical Fundamentals******3 Credit Hours***

This course starts with an introduction to electrical engineering world and to the understanding of currents, voltage, resistance and power; introduction to safety regulations and rules. It continues with the study of electrical passive components with emphasis on their applications to AC and DC networks, transformers, simple R. C and R.L.C circuits, blue print reading and wire color coding for domestic and industrial installations, introduction to semi-conductor theory, devices and circuits, and electrical experiments in the laboratory.

REENG 321***REENG Practical Workshop I******1 Credit Hour***

This is a laboratory work in relation to network security's nuts and bolts and building a secure Network.

GENG 400***CE Internship******1 Credit Hour***

This course prepares engineering students who is ready to go for field experience as future engineers. Department Professors will give a form of tutorial/seminar to students on practical aspects of engineering technology such as analysis, design, maintenance, manufacturing and environmental concerns. Another training scenario would be to expose the students to various current engineering activities on or off campus, thus allowing the student to link technology to field practice. In this course the students are exposed to basic skills associated with co-op engineering work experience, including expectations on the job, how to assess themselves and set goals relative to the needs of their employer.

This is a monitoring course which students register for prior to their field assignment. A final report is expected of each student at the end of their program term along with a letter of recommendation from their sponsor. Extra fees may be attached to this course to facilitate the processing of their assignment. This will be set separately as Internship fees.

REENG 401***Biofuels and Biomass Technology******3 Credit Hours***

This course covers energy crisis, rural and urban energy loads. It includes biomass as source of energy; its classification, thermo-chemical characteristics, production and processing. It includes study of environmental aspects of biomass production and utilization, waste mitigation systems and application of biomass.

REENG 402

Energy Modeling and GHG Emission Analysis

3 Credit Hours

This course is a study of a five-step standard analysis of clean energy system, energy modals, cost analysis, GHG analysis, financial summary, sensitivity and risk analysis. Objectives and strategies of energy modeling, partners and budget of energy modeling, and GHG emission analysis are also covered.

REENG 403

Solar Energy Technology

3 Credit Hours

This course introduces the solar system and the solar energy data. It covers estimation of solar energy on different planes, principles, characteristics and types of solar photovoltaic (PV) cell. Manufacturing and performance testing of solar PV modules, PV modules, array batteries, battery chargers block diodes, inverters, load distribution unit, monitoring equipment, circuit breakers, load estimation, sizing of array and batteries are among the topics included.

REENG 404

Wind Energy Technology

3 Credit Hours

This course introduces students to wind energy. Topics includes properties of wind, wind velocity and wind rose diagram, estimation of power in wind, types of wind turbines, characteristics, construction of wind mills. It also includes study Aerodynamic considerations of wind mill design, wind stream profile, rotor blade profile and cross section.

REENG 405

Energy Management and Environmental Impact

3 Credit Hours

This course deals with basic principles, concept and components of ecosystem, energy flow, nutrient cycling, cybermetrics ecological regulation, ecological regulation, and ecological diversity. Interaction of various components of environment, ecological disorders, Environmental Impacts Assessment (EIA) of water resources projects with emphasis on renewable energy projects (SHP, biomass, solar energy) are also presented. This also includes study of the conservation of resources, environmental policies, laws and acts, significance of EIA of renewable energy projects, and case study of large and small hydro projects.

REENG 406***Power Electronics*****3 Credit Hours**

This course is design to introduce students to the Applications of Power Electronics, Diodes and Uncontrolled Rectification. It includes study of Thyristors and AC/DC Converters, Turn-Off Devices and Self-Commutated Circuits, Power Transistor, Gate Controlled Switch, DC Switching and Regulation, Chopper using Thyristors, Fundamentals of Inverters, Full-Bridge Inverter, Half-Bridge Inverter with an Inductive Load, Thyristor Inverters with Forced Commutation, and Types of Forced Commutation, Series and Parallel Inverters

REENG 407***REENG Practical Workshop II*****3 Credit Hours**

This covers all the practical work of the courses in year four semester one.

REENG 408***Engineering Economics for Renewable Energy Systems*****1 Credit Hour**

This course is an introduction to basic economics theory and engineering economics issues. It covers traditional cost benefit analysis; estimating technology costs for a first time implementation; risk associated with smart grid projects. Included too are examples of smart grids recently in use; economic challenges of clean energy smart grid projects; economics policies for clean energy renewable smart grids; renewable energy economic barriers and suggested solutions; gap between cost and tariffs of renewable energy sources; and economic competitiveness of wind, biomass and small hydropower.

REENG 409***High Voltage Engineering*****3 Credit Hours**

This covers detailed study of High Voltage. It includes its needs, advantages, its applications, and tests and measurement. Test and Protection Equipment for oil and other insulation are also covered.

REENG 410***Power Generation and Hybrid Systems*****3 Credit Hours**

This course includes the study of the nature of power systems, technologies, and services. Students are exposed to high voltage DC transmission, medium voltage DC lines with Siplink, and flexible AC transmission systems. They are also provided knowledge on power transmission lines, transformers, voltage regulation and stability; solar power solutions; transmission lines faults. Grid access solution for decentralized power generation; power flow in power systems; and protection and maintenance of hybrid systems are also some of the topics covered in this course/

EENG 401***Electronics I (Analog)******2 Credit Hours***

This course introduces to the students the basics of electronics. It covers semi conductor properties and conduction mechanisms; p-n junction operation; I-V characteristics of various devices, transistor biasing and stability; and single-stage amplifiers; analysis of small-signal audio amplifiers, differential amplifiers, multistage amplifiers; feedback, power amplifiers, frequency response, Nyquist, Bode plots, filters and tuned amplifiers, signal generators, and Computer-aided design

EENG 402***Electronics II (Digital)******2 Credit Hours***

This course introduces students to digital systems; number systems, Boolean algebra, leading to two-level logic and minimization/simplification methods, K-map and Quine McCuskey methods, combinatorial and sequential circuit design of digital systems; practical programmable logic devices (PAL, PLA, multiplexers, encoders, ROMS) and basics of sequential logic.

EENG 407***Control Systems I***

Pre-Requisite: MATH 204,205 GENG 205, EENG 302,304, 306

3 Credit Hours

This course covers modeling of physical systems. Its starts with the development of dynamic equation of mechanical, electrical, thermal and fluid flow systems; transfer functions for mechanical, electrical and electromechanical control components; block diagrams, signal flow graphs. It includes the development of characteristic equations, s-plane roots and stability. It includes study of performance criteria, root locus, polar and Bode plots; M- and N- diagrams, inverse Nyquist plots; state space description of control systems and analogue computer simulation of control systems using MATLAB.

GENG 412***Research Methodology******1 Credit Hour***

The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Students use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in informing their understanding of their environment (work, social, local, global). Students learn how to identify problems to study, develop hypotheses and research questions, specify independent and dependent variables; check for the validity and reliability of studies and design research projects. They are exposed to the broad range of designs used in communication research from laboratory and field experiments, surveys, content analysis, focus groups and in-depth interviewing.

REENG 501***Industrial and Maintenance Engineering*****3 Credit Hours**

This course covers maintenance engineering function. It deals with the criteria for satisfactory maintenance, types, planning and installation, cost and benefits. Topics included are cost analysis, justification of study and implementation; recording processes and work measurement.

REENG 502***Hydropower Technology*****3 Credit Hours**

This course introduces students to hydropower, forms, development and purposes of water resources. It includes types of hydro projects, small hydro power (SHP) development and its relevance. Some of the topic includes SHP planning on existing structure, and new sites; different methods for stream gauging, rainfall, runoff and its estimation by different methods, peak flood estimation; flow duration studies, assessment of power potential and determination of installed capacity; topographical, geological and power evacuation survey instruments, site selection for SHP projects; and management of SHP plants and integration to broader energy systems.

REENG 503***Industrial Electronics*****3 Credit Hours**

This is a course that covers basic concept of amplifiers. Among the topics included are: Field-Effect Transistor Amplifiers (FETs), Large Signal (Power) Amplifiers, Quasi-Linear Circuit, basic Programmable Logic Controllers (PLCs), and Ladder Logic Diagrams.

REENG 504***Instrumentation*****3 Credit Hours**

This is a course design to study instrumentation and measurement, automatic control systems, an data acquisition system. It includes classification of instrumentation systems, signal diagram of measuring instruments, sensors and transducers.

REENG 505***Renewable Energy Engineering Project Design*****4 Credit Hours**

This course provides the opportunity to design selected Project Work under the supervision of a Professor.

REENG 506***CSE Seminar*****1 Credit Hour**

Students are provided the knowledge to prepare a research paper on a selected topic and present it at seminar under supervision.

Bachelor of Science in Computer Networks and Security Engineering

Program Description

The Computer Networks and Security Engineering Program are designed to provide the educational requisites in the training of men and women for the degree in Bachelor of Science in Computer Networks and Security Engineering. The courseware focuses in variety of aspects such as communication, network design, and security that will prepare the students to work in the area of network supports wherein the demand is increasing and offers excellent salaries. In addition, the program will assist the students on how to achieve industry certification such as A+, Microsoft, Cisco, etc. that will strengthen their credentials and competencies in the field of networking. It is a five year program with a strong foundation in both theory and practical aspects in the area of networking and security engineering. Graduates can work as a network administrators, network designers, network engineers, computer security experts, etc. In the near future, the program will also cater a post graduate program.

Program Objectives

- To produce a high caliber network engineers that will focus on leading a research, designing, developing, and maintaining projects in different areas of networking
- To practice network professionals ethical and collective aspects dealing with development, design, and usage in networking aspects,, and
- To enhance and update their skills in modern network technologies by engaging in a post graduate degree or equivalent training.

Student Learning Outcomes

Students are able to:

- Apply and demonstrate computer hardware and software in terms of installing, troubleshooting.
- Manage home and small business computer network systems.
- Learn and use suitable IP addressing scheme, hardware, software, design, troubleshoots, and maintenance of computer network infrastructure within a small and medium size organizations.
- Identify different computer network security threats and susceptibilities within a given network.
- Indicate a suitable network security hardware and software within a given security requirements and apply the necessary security capacities to mitigate the risks associated with computer network.

Curriculum Requirements Total Credits 164

General Education - 52 Credits

Engineering Math/Science -23 Credits

General Engineering Courses – 15 Credits

Major - 67 Credits

Concentration -7 Credits

Core Requirements

- Mathematics, Science, Engineering
- Introduction to Cyber Security Engineering, Internetworking Technologies, Network Building, and Network Security, Introduction to Java, Intro to Operating Systems, Web Programming and Development
- Advanced Java Programming, Security Architecture and Managing Security Solution, Cloud Computing, Artificial Intelligence, Firewall and Applications
- Internet Law and Policy, Network Threat Protection, Embedded System Design, Advance, Advance Operating Systems, Cyber Security Law and Policy
- Bandwidth Management, Ethical Hacking, Legal Issues and Global Regulation

Concentration Options

- Software Engineering Comprehensive Practice, Senior System Design Project, Digital Forensics Within a Justice System
- Internship/Coop

Cognate Requirements

- Network Threat Protection
- Computer Forensics
- System Design Practices in Computer Science

Eligibility for Internship

- Completion of at least 103 credit hours of courses including one's major courses.
- Submission of the required internship application and receipt of employment notification

Bachelor of Science in Computer Networks and Security Engineering

First Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG I02	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
CHEM 101	Principles of Chemistry	4	BIO 101	General Biology	4
PHY 101	General Physics	4	PHI 101	Introduction to Philosophy	3
PSY 101	Introduction to Psychology	3	GENG 106	Intro to Engineering Analysis and Design	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	TOTAL	21			20

Second Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
FRE 101/ GLE 101 CHN 101	Introduction to French or Introduction to Glebo Introduction to Chinese	3	FRE 102/ GLE 102 CHN 102	Intermediate French Advanced Glebo Advanced Chinese	3
HIST 102	World History and Western Civilization	3			
MATH 201	Differential Calculus	3	PHY 202	Physics for Engineers II	4
PHY 201	Physics for Engineers I	4	MATH202	Integral Calculus	3
GENG 203	Introduction to Engineering Drawing II	1	MATH 206	Intro to Linear algebra	3
EVS 201	Introduction to Environmental Science	3	GENG 202	Engineering Graphics/ CAD I	3
	TOTAL	20			19

*Qualifying exam must be passed for student to pursue junior year courses

Third Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
CSENG 301	Intro to Cyber Security Engineering	2	CSENG 302	Web Programming and Development	3
CSENG 303	Internetworking Technologies, Network Building and Network Security	3	CSENG 304	Advanced Java Programming	3
CSENG305	Intro to Operating Systems	3	CSENG 306	Security Architecture and Managing Security Solution	3
CSENG 307	Introduction to Java	3	CSENG 308	Cloud Computing	3
CSENG 309	System Design Practices in Computer Science	3	MATH 302	Ordinary Differential Equations	3
MATH 301	Multivariable Calculus	3	EE 302	Entrepreneurship Education II	0
EE 301	Entrepreneurship Education I	0			
	TOTAL	17			15

Semester I			Semester II		
Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
CSENG 401	Artificial Intelligence	3	CNENG 402	VPN, Load Balancing and Failover	3
CNENG 403	Firewall and Firewall Applications	3	CSENG 404	Advance Operating Systems	3
CENG 405	Internet Law and Policy	3	CNENG 406	Cyber Security Law and Policy	3
CNENG 407	Network Threat Protection	3	CNENG 408	Computer Forensics	3
CSENG 409	Embedded System Design	3	GENG 408	Engineering Economics	3
GENG 403	Engineering Management I	3	GENG 404	Engineering Management II	3
			GENG 412	Research Methodology	
	TOTAL	18			19

Summer Internship

Course Code	Course Title	Credit Hours
GENG – 400	Internship	1
TOTAL		1

Fifth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
CNENG 501	Bandwidth Management	3	CNENG 502	Ethical Hacking , Penetration Tests	3
CNENG 503	Digital Forensics Within a Justice System	3	CNENG 504	Legal issues and Global Regulation	3
CNENG 505	Cyber Network Engineering Project Design	4	CNENG 506	CSENG Seminar	1
	TOTAL	18			19
Cumulative Minimum Credits Required For Graduation					163

Course Descriptions***PHY 101******General Physics******4 Credit Hours***

This course introduces basic concepts in Physics. Key topics for this module include units and measurement, scalars and vector quantities, motion and test of motion, equation of linear motion and applications, motion under gravity, projectiles and applications, circular motion and simple harmonic motion (S.H.M), Hooks Law, Electricity and Magnetism, and optics.

GENG 106***Intro to Engineering Analysis and Design******4 Credit Hours***

This course covers an introduction to engineering education and the engineering profession. Engineering ethics, basic concepts and tools are presented. It provides an over view of the engineering problem solving and design process. Techniques and methods used in defining and solving engineering problems are reviewed also design methodologies including analysis, synthesis and creative thinking are presented. Finally the students are provided an opportunity to complete an engineering design project.

GENG 202***Engineering Graphics/CAD I******Pre-Requisite: GENG 102******3 Credit Hours***

The course is a follow up to GENG 102. It starts by introducing students to computer aided drawing using AutoCad software. This first series reviews basic concepts of GEN102, using the computer drawing process, such as 2D drawings, lettering formats, dimensional diagrams, scaling, sketching and geometrical constructions logic, orthographic projections, isometric drawing, sectional views and dimensioning. Details are added using examples from civil, electrical or mechanical engineering design process.

GENG 203***Intro to Engineering Drawing I******3 Credit Hours***

This course is an introduction to drawing for engineering students especially those without previous drawing or drafting experience. It covers the fundamentals of drafting using the manual system approach as compared to computer aided drawing. It covers 2D drawing and views, lettering, dimensional diagrams, free sketching and the use of various drawing scales. This course comes with a free 2.5 hrs practice session.

MATH 201***Calculus I******Pre-Requisite: MATH 102******3 Credit Hours***

This course focuses on differential calculus including the limits and differentiation of all functions, fundamental theorem of the calculus, and introduction to the applications of the derivative.

MATH 202***Calculus II******Pre-Requisite: MATH 201******3 Credit Hours***

This is part two of MATH 201 and it focuses on integration calculus including limits and integration of all functions, fundamental theorem of calculus, introduction of the application of the integral of functions, infinite series, improper integrals, etc.

PHY 201***Physics for Engineers I******Pre-Requisite: MATH 104, MATH201******4 Credit Hours***

This course is enhancement of PHY101. It stresses applications of physical principles in the fields of industry and engineering technology, precision measurement, properties of matter, hydrostatics and hydraulics, laws of mechanics, introduction to vectors analysis, resultant, conditions of equilibrium, statics of structures, trusses; reactions friction, centre of gravity, moment of inertia moments, dynamics, force and motion, rotary motion, energy and momentum, conservation laws. It is a course meant to introduce Engineering students to the concepts of physics centered on calculus mathematics and thus prepare them for engineering mechanics. A weekly 2.5 hour lab provides practical demonstration of the various concepts introduced.

PHY 202***Physics for Engineers II******Pre-Requisite: PHY 201, MATH 20, MATH 202******4 Credit Hours***

This course is an upgrade of PHY 102. It continues on the foundation of PHY 201 with emphasis in waves and electromagnetic energy. Students start with a study of electromagnetic phenomena; including electrostatics; capacitors; resistors and direct-

current circuits; magnetism and magnetic induction; RC, LR, and LRC circuits; waves; electromagnetic waves; and radiation; They are introduced to properties and propagations of sound, wave motion, light, electromagnetic spectrum, the nature of light, speed, emission, absorption of light, reflection, refraction, and diffraction of light plus polarization of light. Finally an overview of the relationship between matter, energy, and light is presented. All presentations emphasize on the concepts and principles centered on calculus mathematics linked to MATH201 & 202. A 2.5 hour lab period demonstrates the practical applications of the various concepts taught.

MATH 206

Intro to Linear Algebra

Pre-Requisite: MATH202

3 Credit Hours

This is an introductory course to linear algebra and its applications. Fundamental theory of matrices, determinants and curve fitting, vector spaces, orthogonality and least squares, eigenvalues and eigenvectors, and linear transformation are covered. This is a required course for all engineers.

CSENG 301

Introduction to Cyber-Security Engineering

2 Credit Hours

This course is an introductory course to cyber-security engineering. It aims to cover topics such as the history of cyber-security and the organizations involved: International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). It also covers Information Security Management System (ISMS); International Standard based on the Systems Security Engineering Capability Maturity Model (SSE-CMM), Standard of Good Practice, North American Electric Reliability Corporation (NERC), National Institute of Standards and Technology (NIST); ISO 15408, Internet Engineering Task Force on Request For Comments (RFC) 2196; International Society for Automation (ISA), International Electrotechnical Commission (IEC) standards; ISA/IEC-62443 (formerly ISA-99); ISA Security Compliance Institute and American National Standards Institute (ANSI), Information Assurance at Small-to-Medium Enterprises (IASME).

CSENG 302

Web Programming and Development

3 Credit Hours

This course provides the students fundamentals in web programming and development that include Internet and World Wide Web Concepts. It covers development of websites and webpages, dynamic and interactive web-based capabilities development, client-side technologies including the privacy and security concerns in the Internet. Basic server-side technologies concept on web programming with the use of modern tools and languages in web development is also studied.

CSENG 303***Internetworking Technologies, Network Building and Network Security******3 Credit Hours***

This course provides the students knowledge on network and communication. Some of the topics include types of media, modes of transmission, systems on different platforms and how they communicate; standardization and standards organizations. It also exposes the student to Open System Interconnection Reference Model (OSI Model), TCP/IP Model and the basics of internetworking; communication protocols, network types. IP addressing and sub-netting, application protocols, intercommunication, network Management, quality of service (QoS) of the existing internetworking Technologies are also covered. In addition, the course exposes students to Network Security and its importance.

CSENG 304***Advanced Java Programming******3 Credit Hours******Pre-Requisite: CSENG 307***

The course is designed to teach the students an advanced knowledge and skills in Java programming that provides a more detailed discussion of different object oriented programming concepts including classes, inheritance, polymorphism, arrays, interfaces, hashing, data structures, collections, nested classes, floating point precision, defensive programming, and depth-first search algorithm.

CSENG 305***Intro to Operating Systems******3 Credit Hours***

The course is designed to teach the fundamentals of engineering operating systems such as virtual memory, kernel and user mode, system calls, threads, context switches, interrupts, inter-process communication, coordination of concurrent activities and the interface between software and hardware. Most importantly, the interactions between these concepts are examined.

CSENG 306***Security Architecture and Managing Security Solution******3 Credit Hours***

This course deals with open security architecture organization, defines IT security architecture as "the design artifacts that describe how the security controls (security countermeasures) are positioned, and how they relate to the overall information technology architecture. It studies controls that serve the purpose of maintaining the system's quality attributes: confidentiality, integrity, availability, accountability and assurance services. It includes that study of the key attributes of security architecture.

CSENG 307***Introduction to Java******3 Credit Hours***

This course provides the students a basic knowledge and skills in Java programming including its concepts. This will mainly focus in developing high quality, working software that solves real problems. It also covers different components of computer, different number system, conversions, and problem solving strategies.

CSENG 308***Cloud Computing******3 Credit Hours***

This course provides the students an overview of cloud computing and its concepts. It also provides a broad knowledge on virtualization, distributed computing, utility computing, networking, cloud computing latest technologies, and the security issues involve in using this technology. The course includes the different cloud computing security techniques that are used today in mitigating and avoiding the risks associated with these technologies.

CSENG 309***System Design Practices in Computer Science******3 Credit Hours***

The course provides basic design methodology and fundamentals to the step by step process in system design. It involves familiarization with software practices, latest tools and techniques in developing software. The course is focused mainly in different practices involving software project design, analysis, implementation, testing, and risk management.

MATH 301***Multivariable Calculus******3 Credit Hours******Pre-Requisite: MATH202, GENG 205***

This course is a continuation of MATH202. It introduces the theory and application of partial differentiations, multiple integrals, and vector calculus. This is a required course for all engineers

MATH 302***Ordinary Differential Equations******3 Credit Hours***

This course includes study of ordinary differential equations, first order equations, homogeneous and non-homogeneous higher constant co-efficient equations, matrix diagramming techniques with applications to systems of first order linear equations, Laplace transform techniques, series solutions of second order linear variable coefficient equations, numerical method, and applications to engineering.

GENG 400
CE Internship
1 Credit Hour

This course prepares engineering students who is ready to go for field experience as future engineers. Department Professors will give a form of tutorial/seminar to students on practical aspects of engineering technology such as analysis, design, maintenance, manufacturing and environmental concerns. Another training scenario would be to expose the students to various current engineering activities on or off campus, thus allowing the student to link technology to field practice. In this course the students are exposed to basic skills associated with co-op engineering work experience, including expectations on the job, how to assess themselves and set goals relative to the needs of their employer.

This is a monitoring course which students register for prior to their field assignment. A final report is expected of each student at the end of their program term along with a letter of recommendation from their sponsor. Extra fees may be attached to this course to facilitate the processing of their assignment. This will be set separately as Internship fees.

CSENG 401
Artificial Intelligence
3 Credit Hours

This course introduces students to the basic knowledge representation, problem solving, and learning methods of artificial intelligence. It teaches them on how to develop intelligent systems by assembling solutions to concrete computational problems; understand the role of knowledge representation, problem solving, and learning in intelligent – system engineering; appreciate the role of problem solving, vision, and language in understanding human intelligence from a computational perspective.

CNENG 402
VPN, Load Balancing and Failover
3 Credit Hours

This course introduces students to the basic knowledge of VPN. It includes detailed exploration of the use of VPN, its advantages, types based on protocols; types based on Tunnels. It also includes study of the need of firewall in VPN; Threat Free Tunneling; VPN Bandwidth Management; Failover; and identity based authentication. It also looks at load balancing and failover, LAN Failsafe, and other related topics.

CNENG 403
Firewall and Firewall Applications
3 Credit Hours

This course exposes students to Firewall. It provides them knowledge of the different types of Firewall; control access; and management of Firewall. Among the topics are NAT, DoS (Denial of Service); Fusion Technology based Unified Control; Firewall - as a single solution to identity, security, connectivity, productivity, and logging, evolution and application of Firewall, as well as file filtering.

CSENG 404***Advanced Operating System******3 Credit Hours******Pre-Requisite: CSENG 305***

The course covers advanced knowledge in operating systems such as layered architecture, interrupt architecture, systems calls, notion of process and threads, synchronizations, protection issues, scheduling, memory management including virtual memory and paging techniques, input-output architecture and device management, file systems, distributed file systems, multitasking, and other current approach in databases. It also includes a case study about various operating systems such as UNIX, Windows based and other modern platform.

CNENG 405***Internet Law and Policy******3 Credit Hours***

This course provides the students an overview about the Internet law and policy across the globe. It also tackles different Internet crimes such as phishing, spoofing, extortion, hacking, etc. and discusses the different offenses accompanied on these crimes. In addition, it gives the students knowledge about the intellectual property rights and its subsidiary.

CNENG 406***Cyber Security Law and Policy******3 Credit Hours***

This course provides students' knowledge about the legal and policy challenges regarding cybersecurity threats locally and internationally. The course covers cybercrime, cyberespionage, and cyberwar including the different ways to mitigate it. It involves legal context particularly in the cybersecurity threats within the nation and other countries.

CNENG 407***Network Threat Protection******3 Credit Hours***

This course provides students knowledge of the functions of Anti-Virus and Anti-Spam. It is a detailed study of the basics of Virus, Spyware, Malware, Phishing, and Pharming; Web/Mail/FTP Anti-Virus; Gateway level Anti-Virus/Anti-Spam; Instant Messaging Anti-Virus. Virus Outbreak Detection; Recurrent Pattern Detection; RBL (Realtime Black List), IP Reputation; Understanding of Intrusion; Signature based detection. Statistical anomaly based detection; Stateful protocol analysis detection; Network Based IPS (NIPS); Wireless Based IPS (WIPS); Network Behaviour Analysis (NBA); Host Based IPS (HIPS) and WAF.

CNENG 408***Computer Forensics******3 Credit Hours***

This course will provide and teach the students an overview about computer forensics such as the role of computer forensics examiners, preservation of digital evidences, and the different use of computer forensics tools. This will also include the study about evidence analysis, chain of custody, and the retrieval of data from both computer software and hardware. In addition, the students will experience the actual laboratory in the collection and preservation of evidence using different forensic tools.

GENG 408***Engineering Economics******3 Credit Hours***

This course looks at the engineering economics alternatives that are involved with capital investments for materials, equipment and labor. The techniques of economic analysis may be used to assist in determining which the best alternative is. It introduces economic terminologies and basic cash flow diagrams, economic factors and their use, nominal and effective interest rates, continuous compounding, the use of multiple economic factors in engineering, present-worth and capitalized cost evaluation, replacement analysis and bonds. Inflation and cost estimation, capital rationing under budget constraints, and engineering decision making for large capital investment are also included.

CSENG 409***Embedded System Design******3 Credit Hours***

This course is an introduction to embedded systems hardware needs. It exposes the students on the following: Interrupt Service Routines (ISR); survey of software architectures; inter task communication; message queue, mailboxes and pipes; timer functions; events interrupt routines in a Real-Time Operating Systems (RTOS) environment; embedded system software design using an Real-Time Operating Systems (RTOS) hard real-time and soft real-time system principles; task division, need of interrupt routines, and shared data. It also provides the students to study embedded software development tools and debugging techniques.

GENG 403***Engineering Management I******3 Credit Hours***

This course covers an overview of engineering management and economic. It focuses on practical analytical skills needed by all engineers to ensure that their various designed interventions are economically prudent and environmentally friendly (ex: elements of projects management, cost benefit analysis, quantity analysis, financial analysis, etc)...elements of entrepreneurship training are included.

GENG 404***Engineering Management II******3 Credit Hours******Pre-Requisite: GENG 303***

This course focuses on legal and ethical matters relating to the engineering profession. It covers engineering ethics, ethical behavior of engineers and their responsibility to the public, the environment and their clients. Codes of conduct for engineers, law of contracts and contractual relationship and obligations are also introduced with application in diverse engineering fields. Elements of entrepreneurship training is included.

GENG 412***Research Methodology******1 Credit Hour***

The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Students use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in informing their understanding of their environment (work, social, local, global). Students learn how to identify problems to study, develop hypotheses and research questions, specify independent and dependent variables; check for the validity and reliability of studies and design research projects. They are exposed to the broad range of designs used in communication research from laboratory and field experiments, surveys, content analysis, focus groups and in-depth interviewing.

CNENG 501***Bandwidth Management******3 Credit Hours***

This course exposes students to what bandwidth management is all about. It also educates students on traffic queuing, traffic prioritization, bandwidth allocation; scheduling, and sharing bandwidth, guaranteed bandwidth, QoS implementation on user, group, firewall, application, and web category.

CNENG 502***Ethical Hacking, Penetration Tests******3 Credit Hours***

This course is designed for students to be aware of ethical hacking. They need to understand the technology used in ethical hacking; and the types of ethical hacks. Cyber law; foot printing, network scanning, DoS, hijacking and viruses are also some of the topics included in this course.

CNENG 503***Digital Forensics within a Justice System******3 Credit Hours***

This course provides the students an overview of the criminal justice system locally and internationally and how digital evidence can be used within the judicial system. The course focuses mainly in the application of judicial system to the acquisition,

preservation, procedures, and presentation of the digital evidence within the court system. In addition, it also provides the latest technologies that are needed in acquiring and preserving the digital evidence.

CNENG 504

Legal issues and Global Regulation

3 Credit Hours

This course gives students knowledge on the legal issues and globalization regulations. It focuses on available standards, issues, and policies established by government and public-private corporations. Some of these includes Cyber Security Act of 2010, International Cybercrime Reporting and Cooperation Act, Protecting Cyberspace as a National Asset Act of 2010, and some other government initiatives provided by Military agencies, Homeland Security, FBI, Department of Justice, USCYBERCOM, FCC, and Computer Emergency Readiness Team. This includes the international actions of many countries.

CNENG 505

Cyber Network Engineering System/Project Design

4 Credit Hours

This course allows and provides opportunity for students to develop their system design project. System and documentation are included on this course. Grouping is recommended for projects. Each group needs to present a completed system design project including its documentation and is required to defend the design within a group of panelist.

CNENG 506

CSE Seminars

1 Credit Hour

Students are required to prepare a research paper on a selected topic and present it at seminar under the supervision of their adviser.

Bachelor of Science in Computer Science and Engineering

Program Description

The Computer Science and Engineering Program are designed to provide the educational requisites in the training of men and women for the degree in Bachelor of Science in Computer Science and Engineering. The courseware focuses on solving problems related to computers that produce each graduate a broad skill in both software and hardware specifically in computing systems. In addition, it is a self-motivated discipline across different fields in mathematics, science, and engineering that provides a foundation and dedicated knowledge that is needed to scrutinize, design, and gauge system software, and utility programs. This will also allow students to solve and develop a hardware and software solutions in different areas of application provided with different methodologies and techniques on how information is derived, stored, operated, and linked. Students will experience to gain access in different resources plus the real scenario approach on their hands-on exercises in the laboratory. BSc in Computer Science and Engineering is a five year program and considered as one of the exciting fields of study today due to rapid growth and changes in technology including a demand for a computing experts locally and internationally. At the same time, the students will be encouraged to take a variety of industry certification such as A+, Microsoft, Cisco, etc. to strengthen their credentials. In the near future, this program will also cater a post graduate degree.

Program Objectives

- To produce a high caliber computing professionals that will focus on leading a research, designing, developing, and maintaining projects in different areas of computing,
- To practice computing professionals ethical and collective aspects dealing with development, design, and usage of variety of computing pieces, and
- To enhance and update their skills in modern computing technologies by engaging in a post graduate degree or equivalent training.

Student Learning Outcomes

Students are able to:

- Apply and demonstrate knowledge and skills in computing, mathematics, science, and engineering to the discipline.
- Analyze, identify, design, implement, and evaluate computing based projects.
- Understand the professional, proper, lawful, safety, common issues, and accountabilities.
- Use modern approach, tools, and skills in computing and participate in professional development for continuous education.
- Apply mathematical fundamentals, algorithm philosophies, and computer science model in developing a project.

- Provide a variety of hardware and software systems and analyze the global impact of computing in individuals.

Curriculum Requirements Total Credits 167

General Education - 52 Credits
 Engineering Math/Science -23 Credits
 General Engineering Courses – 15 Credits
 Major - 72 Credits
 Concentration -5 Credits

Core Requirements

- Mathematics, Science, Engineering
- Introduction to Computer Science and Engineering, Java Programming, Intro to Operating Systems, Web Programming and Development
- Advanced Java Programming, Introduction to Software Engineering, Introduction to Databases, Artificial Intelligence,
- Algorithm Analysis and Design, Relational Database Management System, Embedded System Design
- Data Communications and Networking I and II

Concentration Options

- Software Engineering Comprehensive Practice, Senior System Design Project
- Internship/Coop

Cognate Requirements

- Advanced Operating System, Digital Computer Circuits
- System Design Practices in Computer Science,
- Digital Signal and Image Processing
- Network Principles and Computer Security, Digital Hardware Design, Compiler Design

Eligibility for Internship

- Completion of at least 103 credit hours of courses including one's major courses.
- Submission of the required internship application and receipt of employment notification

Bachelor of Science in Computer Science and Engineering

First Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
CHEM 101	Principles of Chemistry	4	BIO 101	General Biology	4
PHY 101	General Physics	4	PHI 101	Introduction to Philosophy	3
PSY 101	Introduction to Psychology	3	GENG 106	Intro to Engineering Analysis and Design	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	TOTAL	21			20

Second Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
FRE 101/ GLE 101 CHN 101	Introduction to French or Introduction to Glebo Introduction to Chinese	3	FRE 102/ GLE 102 CHN 102	Intermediate French Advanced Glebo Advanced Chinese	3
HIST 102	World History and Western Civilization	3	PHY 202	Physics for Engineers II	4
MATH 201	Differential Calculus	3	MATH202	Integral Calculus	3
PHY 201	Physics for Engineers I	4	MATH 206	Intro to Linear algebra	3
GENG 203	Introduction to Engineering Drawing II	1	GENG 202	Engineering Graphics/ CAD I	3
EVS 201	Introduction to Environmental Science	3			
	TOTAL	20			19

*Qualifying exam must be passed for student to pursue junior year courses

Third Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
CSENG 301	Introduction to Computer Science and Engineering	3	CSENG 302	Web Programming and Development	3
CSENG 303	File Organization and Processing	3	CSENG 304	Advanced Java Programming	3
CSENG 305	Introduction to Operating Systems	3	CSENG 306	Computer Science Professional Ethics	3
CSENG 307	Introduction to Java Programming	3	CSENG 308	Introduction to Software Engineering	3
CSENG 309	System Design Practices in Computer Science	3	CSENG 310	Introduction to Databases	3
MATH 301	Multivariable Calculus	3	MATH-302	Ordinary Differential Equations	3
EE-301	Entrepreneurship Education I		EE-302	Entrepreneurship Education II	
	TOTAL	18			18

Fourth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
CSENG 401	Artificial Intelligence	3	CSENG 402	Software Engineering Comprehensive Practice	3
CSENG 403	Algorithm Analysis and Design	3	CSENG 404	Advanced Operating System	3
CSENG 405	Principles of Programming Languages	3	CSENG 406	Digital Computer Circuits	3
CSENG 407	Relational Database Management System	3	CSENG 408	Data Communications and Networking 1	3
CSENG 409	Embedded System Design	3	CSENG 410	Network Principles and Computer Security	3
GENG 403	Engineering Management I	3	GENG-408	Engineering Economics	3
			GENG 412	Research Methodology	1
	TOTAL	18			19

Summer Internship

Course Code	Course Title	Credit Hours
GENG – 400	Internship	1
TOTAL		1

Fifth Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
CSENG 501	Digital Signal and Image Processing	3	CSENG 502	Data Communications and Networking 2	3
CSENG 503	Digital Hardware Design	3	CSENG 504	Compiler Design	3
CSENG 505	Computer Science Engineering System/ Project Design	4	CSENG 506	CSE Seminar	1
	TOTAL	10			7
Cumulative Minimum Credits Required for Graduation					167

Course Descriptions***PHY 101******General Physics******4 Credit Hours***

This course introduces basic concepts in Physics. Key topics for this module include units and measurement, scalars and vector quantities, motion and test of motion, equation of linear motion and applications, motion under gravity, projectiles and applications, circular motion and simple harmonic motion (S.H.M), Hooks Law, Electricity and Magnetism, and optics.

GENG 106***Intro to Engineering Analysis and Design******4 Credit Hours***

This course covers an introduction to engineering education and the engineering profession. Engineering ethics, basic concepts and tools are presented. It provides an over view of the engineering problem solving and design process. Techniques and methods used in defining and solving engineering problems are reviewed also design methodologies including analysis, synthesis and creative thinking are presented. Finally the students are provided an opportunity to complete an engineering design project.

GENG 202***Engineering graphics/CAD I******Pre-Requisite: GENG 102******3 Credit Hours***

The course is a follow up to GENG 102. It starts by introducing students to computer aided drawing using AutoCad software. This first series reviews basic concepts of GEN102, using the computer drawing process, such as 2D drawings, lettering formats, dimensional diagrams, scaling, sketching and geometrical constructions logic, orthographic projections, isometric drawing, sectional views and dimensioning. Details are added using examples from civil, electrical or mechanical engineering design process.

GENG 203***Intro to Engineering Drawing I******3 Credit Hours***

This course is an introduction to drawing for engineering students especially those without previous drawing or drafting experience. It covers the fundamentals of drafting using the manual system approach as compared to computer aided drawing. It covers 2D drawing and views, lettering, dimensional diagrams, free sketching and the use of various drawing scales. This course comes with a free 2.5 hrs practice session.

MATH 201***Calculus I******Pre-Requisite: MATH 102******3 Credit Hours***

This course focuses on differential calculus including the limits and differentiation of all functions, fundamental theorem of the calculus, and introduction to the applications of the derivative.

MATH 202***Calculus II******Pre-Requisite: MATH 201******3 Credit Hours***

This is part two of MATH 201 and it focuses on integration calculus including limits and integration of all functions, fundamental theorem of calculus, introduction of the application of the integral of functions, infinite series, improper integrals, etc.

PHY 201***Physics for Engineers I******Pre-Requisite: MATH 104, MATH201******4 Credit Hours***

This course is enhancement of PHY101. It stresses applications of physical principles in the fields of industry and engineering technology, precision measurement, properties of matter, hydrostatics and hydraulics, laws of mechanics, introduction to vectors analysis, resultant, conditions of equilibrium, statics of structures, trusses; reactions friction, centre of gravity, moment of inertia moments, dynamics, force and motion, rotary motion, energy and momentum, conservation laws. It is a course meant to introduce Engineering students to the concepts of physics centered on calculus mathematics and thus prepare them for engineering mechanics. A weekly 2.5 hour lab provides practical demonstration of the various concepts introduced.

PHY 202***Physics for Engineers II******Pre-Requisite: PHY 201, MATH 20, MATH 202******4 Credit Hours***

This course is an upgrade of PHY 102. It continues on the foundation of PHY 201 with emphasis in waves and electromagnetic energy. Students start with a study of

electromagnetic phenomena; including electrostatics; capacitors; resistors and direct-current circuits; magnetism and magnetic induction; RC, LR, and LRC circuits; waves; electromagnetic waves; and radiation; They are introduced to properties and propagations of sound, wave motion, light, electromagnetic spectrum, the nature of light, speed, emission, absorption of light, reflection, refraction, and diffraction of light plus polarization of light. Finally an overview of the relationship between matter, energy, and light is presented. All presentations emphasize on the concepts and principles centered on calculus mathematics linked to MATH201 & 202. A 2.5 hour lab period demonstrates the practical applications of the various concepts taught.

MATH 206

Intro to Linear Algebra

Pre-Requisite: MATH202

3 Credit Hours

This is an introductory course to linear algebra and its applications. Fundamental theory of matrices, determinants and curve fitting, vector spaces, orthogonality and least squares, eigenvalues and eigenvectors, and linear transformation are covered. This is a required course for all engineers.

CSENG 301

Introduction to Cyber-Security Engineering

2 Credit Hours

This course is an introductory course to cyber-security engineering. It aims to cover topics such as the history of cyber-security and the organizations involved: International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). It also covers Information Security Management System (ISMS); International Standard based on the Systems Security Engineering Capability Maturity Model (SSE-CMM), Standard of Good Practice, North American Electric Reliability Corporation (NERC), National Institute of Standards and Technology (NIST); ISO 15408, Internet Engineering Task Force on Request For Comments (RFC) 2196; International Society for Automation (ISA), International Electrotechnical Commission (IEC) standards; ISA/IEC-62443 (formerly ISA-99); ISA Security Compliance Institute and American National Standards Institute (ANSI), Information Assurance at Small-to-Medium Enterprises (IASME).

CSENG 302

Web Programming and Development

3 Credit Hours

This course provides the students fundamentals in web programming and development that include Internet and World Wide Web Concepts. It covers development of websites and webpages, dynamic and interactive web-based capabilities development, client-side technologies including the privacy and security concerns in the Internet. Basic server-side technologies concept on web programming with the use of modern tools and languages in web development is also studied.

CSENG 303***Internetworking Technologies, Network Building and Network Security******3 Credit Hours***

This course provides the students knowledge on network and communication. Some of the topics include types of media, modes of transmission, systems on different platforms and how they communicate; standardization and standards organizations. It also exposes the student to Open System Interconnection Reference Model (OSI Model), TCP/IP Model and the basics of internetworking; communication protocols, network types. IP addressing and sub-netting, application protocols, intercommunication, network Management, quality of service (QoS) of the existing internetworking Technologies are also covered. In addition, the course exposes students to Network Security and its importance.

CSENG 304***Advanced Java Programming******3 Credit Hours******Pre-Requisite: CSENG 307***

The course is designed to teach the students an advanced knowledge and skills in Java programming that provides a more detailed discussion of different object oriented programming concepts including classes, inheritance, polymorphism, arrays, interfaces, hashing, data structures, collections, nested classes, floating point precision, defensive programming, and depth-first search algorithm.

CSENG 305***Intro to Operating Systems******3 Credit Hours***

The course is designed to teach the fundamentals of engineering operating systems such as virtual memory, kernel and user mode, system calls, threads, context switches, interrupts, inter-process communication, coordination of concurrent activities and the interface between software and hardware. Most importantly, the interactions between these concepts are examined.

CSENG 306***Security Architecture and Managing Security Solution******3 Credit Hours***

This course deals with open security architecture organization, defines IT security architecture as "the design artifacts that describe how the security controls (security countermeasures) are positioned, and how they relate to the overall information technology architecture. It studies controls that serve the purpose of maintaining the system's quality attributes: confidentiality, integrity, availability, accountability and assurance services. It includes that study of the key attributes of security architecture.

CSENG 307***Introduction to Java******3 Credit Hours***

This course provides the students a basic knowledge and skills in Java programming including its concepts. This will mainly focus in developing high quality, working software that solves real problems. It also covers different components of computer, different number system, conversions, and problem solving strategies.

CSENG 308***Cloud Computing******3 Credit Hours***

This course provides the students an overview of cloud computing and its concepts. It also provides a broad knowledge on virtualization, distributed computing, utility computing, networking, cloud computing latest technologies, and the security issues involve in using this technology. The course includes the different cloud computing security techniques that are used today in mitigating and avoiding the risks associated with these technologies.

CSENG 309***System Design Practices in Computer Science******3 Credit Hours***

The course provides basic design methodology and fundamentals to the step by step process in system design. It involves familiarization with software practices, latest tools and techniques in developing software. The course is focused mainly in different practices involving software project design, analysis, implementation, testing, and risk management.

CSENG 310***Introduction to Databases******3 Credit Hours***

This course will gives the students a basic knowledge and skills in databases such as database system foundations, relational algebra and data model, schema normalization, query optimization, and transactions. The course is designed for those students who have little or no background at all about databases.

MATH 301***Multivariable Calculus******3 Credit Hours******Pre-Requisites: MATH202, GENG 205***

This course is a continuation of MATH202. It introduces the theory and application of partial differentiations, multiple integrals, and vector calculus. This is a required course for all engineers

MATH 302***Ordinary Differential Equations******3 Credit Hours***

This course includes study of ordinary differential equations, first order equations, homogeneous and non-homogeneous higher constant coefficient equations, matrix diagramming techniques with applications to systems of first order linear equations, Laplace transform techniques, series solutions of second order linear variable coefficient equations, numerical method, and applications to engineering.

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CSENG 401

Artificial Intelligence

3 Credit Hours

This course introduces students to the basic knowledge representation, problem solving, and learning methods of artificial intelligence. In addition, this will teach the students on how to develop intelligent systems by assembling solutions to concrete computational problems; understand the role of knowledge representation, problem solving, and learning in intelligent – system engineering; and appreciate the role of problem solving, vision, and language in understanding human intelligence from a computational perspective.

CSENG 402

Software Engineering Comprehensive Practice

3 Credit Hours

Pre-Requisite: CSENG 308

The course provides the opportunity for students to create their own software projects that meet the standards in software engineering. Students are required to choose their desired design, programming language, methods, tools, and other techniques in software development. The finish software product are evaluated by the assigned panelist.

CSENG 403

Algorithm Analysis and Design

3 Credit Hours

This course teaches students techniques for the design and analysis of efficient algorithms, emphasizing methods useful in practice. It includes sorting techniques such as search trees, heaps, and hashing; divide-and-conquer; dynamic programming, greedy algorithms; amortized analysis; graph algorithms; and shortest paths. In addition, it also includes advanced topics such as network flow, computational geometry, number-theoretic algorithms, polynomial and matrix calculations, caching, and parallel computing.

CSENG 404***Advanced Operating System******3 Credit Hours******Pre-Requisite: CSENG 305***

The course covers advanced knowledge in operating systems such as layered architecture, interrupt architecture, systems calls, notion of process and threads, synchronizations, protection issues, scheduling, memory management including virtual memory and paging techniques, input-output architecture and device management, file systems, distributed file systems, multitasking, and other current approach in databases. It also includes a case study about various operating systems such as UNIX, Windows based and other modern platform.

CSENG 405***Principles of Programming Languages******3 Credit Hours***

This course teaches students the principles of functional, imperative, and logic programming languages. It also includes meta-circular interpreters, semantics both operational and denotation, type systems such as polymorphism, inference, and abstract data types, object oriented programming, modules, and multiprocessing.

CSENG 406***Digital Computer Circuits******3 Credit Hours***

The course covers topics such as network theorems to Alternating Current (AC) networks, trees, two-port networks, multiport networks and two-port devices. It also covers thermionic emission, semiconductor device, and junction transistor fabrication.

CSENG 407***Relational Database Management System******3 Credit Hours******Pre-Requisite: CSENG 310***

This course provides students advanced topic in databases such as the Entity Relational (E-R) model, database models, representation and evaluation of relationship, relational database model, functional dependencies, multi-valued and joint dependency, normalization theory, concurrency control in relational databases, object-oriented data models, and database language Structured Query Language (SQL). It also includes topics such as constraints and triggers in Structured Query Language (SQL), system aspects of Structured Query Language (SQL), and object-oriented query languages and Extensible Markup Language (XML) databases.

CSENG 408***Data Communications and Networking 1*****3 Credit Hours**

This course provides knowledge of hardware and software that are required to be able to communicate over a network. It provides opportunity for the student to develop their mathematical skills such as number systems, application and meaning of bandwidth, comparison of OSI model and TCP/IP model, properties and standards associated with copper and optical media used in networks, installation of simple wireless LAN, different topologies and physical issues associated with cabling common LANs. It also covers the fundamentals of Ethernet media access, collision detection, concepts of switching, comparison of collision and broadcast domains, IP addressing, packet switching, and routing protocols.

CSENG 409***Embedded System Design*****3 Credit Hours**

This course is an introduction to embedded systems hardware needs. It exposes the students on the following: Interrupt Service Routines (ISR); survey of software architectures; inter task communication; message queue, mailboxes and pipes; timer functions; events interrupt routines in a Real-Time Operating Systems (RTOS) environment; embedded system software design using an Real-Time Operating Systems (RTOS) hard real-time and soft real-time system principles; task division, need of interrupt routines, and shared data. It also provides the students to study embedded software development tools and debugging techniques.

CSENG 410***Network Principles and Computer Security*****3 Credit Hours**

This course covers the fundamentals of computer network programming, client-server programming, concepts of computer network programming including the RPC procedure call, Common Object Request Broker Architecture (CORBA), multicasts, and broadcasts, overview of computer network theory and practice from a systems perspective: network infrastructure, local area network (LAN) protocols, wide area network (WAN) protocols, switching technologies, Internet Protocol (IP), Transmission Control Protocol (TCP), network security, and network configuration, design, and performance, Element of information security, security issues and control, and cryptography methods of information security.

GENG 403***Engineering Management I*****3 Credit Hours**

This course covers an overview of engineering management and economic. It focuses on practical analytical skills needed by all engineers to ensure that their various designed interventions are economically prudent and environmentally friendly (ex: elements of projects management, cost benefit analysis, quantity analysis, financial analysis, etc)...elements of entrepreneurship training are included.

GENG 404***Engineering Management II*****3 Credit Hours*****Pre-Requisite: GENG 303***

This course focuses on legal and ethical matters relating to the engineering profession. It covers engineering ethics, ethical behavior of engineers and their responsibility to the public, the environment and their clients. Codes of conduct for engineers, law of contracts and contractual relationship and obligations are also introduced with application in diverse engineering fields. Elements of entrepreneurship training is included.

GENG 412***Research Methodology*****1 Credit Hour**

The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Students use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in informing their understanding of their environment (work, social, local, global). Students learn how to identify problems to study, develop hypotheses and research questions, specify independent and dependent variables; check for the validity and reliability of studies and design research projects. They are exposed to the broad range of designs used in communication research from laboratory and field experiments, surveys, content analysis, focus groups and in-depth interviewing.

CSENG 501***Digital Signals and Image Processing*****3 Credit Hours**

The course provides knowledge and skills of signal representation in time domain, Fourier transform, sampling theorem, linear time-invariant system, discrete convolution, z-transform, discrete Fourier transform, and discrete filter design. It also involves introduction to digital image fundamentals, image transforms, image enhancement, image restoration, image compression, image segmentation, representation and description, and recognition and interpretation.

CSENG 502***Data Communications and Networking 2*****3 Credit Hours*****Pre-Requisite: CSENG 408***

The course covers WAN configurations and technologies, internal and external component of a router, proper connections of router fast Ethernet, serial WAN, and console ports, router configurations, and management of system image and device configuration files. It also includes topics such as static and default routes, characteristics of routing protocols, distance vector routing protocols, ICMP operations, and IOS software.

CSENG 503***Digital Hardware Design*****3 Credit Hours**

The course provides overview and concepts of logical systems design; arithmetic units; conventional and micro-programmed control; stores; input/output devices and programming, memory organization. pipeline and vector processing, multiprocessors; bus structures; cases studies in computer architecture, combinational circuit design using Medium Scale Integration/Large Scale Integration (MSI/LSI) and programmable logic modules. It includes study of iterative and tree networks, sequential circuit design and implementation, algorithmic state machine design, asynchronous and pulse mode circuit design, hardware description language and synthesis, micro-program control design, testing of digital systems, and hardware-software co-design.

CSENG 504***Compiler Design*****3 Credit Hours**

The course introduces topics such as compilers and translators, lexical and syntactic analysis: top-down and bottom up parsing techniques, internal form of source programs, semantic analysis, symbol tables, error detection and recovery, code generation and optimization, type checking and static analysis, algorithms and implementation techniques for type-checking code generation and optimization. Students are provided the skills to design and implement translators, static analysis, type-checking and optimization.

CSENG 505***Computer Science Engineering System/Project Design*****4 Credit Hours**

This course allows and provides opportunity for students to develop their system design project. System and documentation are included on this course. Grouping is recommended for projects. Each group needs to present a completed system design /project including its documentation and is required to defend the design within a group of panelist.

CSENG 506***CSE Seminars*****1 Credit Hour**

Students prepare a research paper on a selected topic and present it at seminar under supervision.

COLLEGE OF HEALTH SCIENCES

The College of Health Sciences values integrity, advocacy, excellence, lifelong learning, respect for others, and competence. Within such context, it draws upon the insights and experiences that its students, faculty, staff and community. It offers two degree programs:

- *Bachelor of Science in Nursing* –Students are admitted to the Nursing Program after completing required pre-requisite course work in social, behavioral, health and natural sciences as well as in the humanities. Clinical practice for students is done in conjunction with classroom instruction and involves placements in local, regional, national, and international based agencies including hospitals, public health arenas, private homes, schools, clinics, and other agencies.
- *Bachelor of Science in Public Health* - develops and prepare students to apply knowledge from multiple disciplines for the promotion and protection of the health of human population, giving due consideration to principles of human rights, cultural and ethnic perspectives that abound in Maryland County, in the region, in the whole nation, and in the in the world . Students are admitted to the program of specialization after completing required pre-requisite course work in the social, behavioral, natural sciences and in the humanities.

Vision

Under auspices of the University, the College of Health Sciences strives to be that conduit for the best educated compassionate and caring healthcare professionals in the county, the region, the nation and globally by fostering intellect, creativity and character in an active student-centered learning community.

Mission

To provide a foundation for a lifetime of learning the College's is committed to develop and maintain high quality, professional, career-oriented undergraduate degree programs in the context of a liberal education as well as nurturing intellectual growth and character development in students, to this end its mission comprises three elements:

- ***Teaching-Learning***
 - Prepare students from culturally and diverse backgrounds to assume leadership roles in clinical practices, leadership, teaching, health policy, and research.
 - Encourage and support personalized student-centered learning
 - Promote academic excellence in the teaching-learning process
 - Provide education and research training in the social, behavioral, and biological sciences that focuses on health, illness, and healthcare.

- **Practice**
 - Promote and demonstrate excellence in professional healthcare services and delivery practices.
 - Benefit the public, the profession (s), and the University through active individual and group involvement in service activities.
- **Research**
 - Advance knowledge and theory through research.
 - Design and evaluate the organization, financing, and delivery of health care.
 - Generate and test innovative professional educational models.
 - We value integrity, advocacy, excellence, lifelong learning, respect for others, and competence. Within this context, the College of Health Sciences draws upon the insights and experiences that its students, faculty, staff and community have to offer. All members of the College community are encouraged to achieve excellence in their chosen fields and to share citizenship and service in the national and global community.

Core Set of Curriculum Harmonizing Competencies

The curriculum of all programs in the College of Health Sciences (CHS) is harmonized around eight core set of competencies that are in line with the mission, vision and core principles of the College and the University. Given the needs of Liberia and to prepare students to take their rightful place in 21st century, these core sets of competencies cut across all professional disciplines within CHS and are to be considered as a guide for all current and future CHS programs. They are:

- Critical Literacy - written communication, critical reading, and critical thinking
- Quantitative Reasoning
- Oral Communication
- Research and Information Literacy
- Technological Literacy
- Cultural Competence
- Specialized Knowledge
- Continuous Development Behavior (Life Long Learning)

A competence based curriculum will help with the evaluation of the teaching-learning process base on students achieving certain milestone as they progress in their chosen curriculum

Definitions of Core Competencies

Critical Literacy - written communication, critical reading and critical thinking

Critical Literacy is the ability to write, read, and think about texts in a reflective manner. Developing critical literacy skills allows students to understand and think about the world around them and encourages them to investigate and interrogate societal institutions and issues.

Quantitative Reasoning

Quantitative Reasoning is the ability to apply mathematical concepts to real-life problem solving. Developing quantitative reasoning skills allows students to read charts, and graphs, and use that data to consider real-life questions.

Oral Communication

Oral Communication is the effective interpretation, composition, and presentation of information, ideas, and values verbally. Developing oral communications skills allows students to become effective in their communications on-campus, in the work place and in their communities.

Research and Information Literacy

Research and Information Literacy is the ability to recognize when information is needed and to locate, evaluate, and use it effectively. Developing research and information literacy skills allows students to understand how to get information and how to use the information they find in responsible and effective ways.

Technological Literacy

Technological Literacy is the ability to understand and responsibly use technology. Developing technological literacy skills allows students to use technology for a variety of academic and personal purposes.

Cultural Competence

Cultural Competence is the ability to interact effectively with people of different cultures. Cultural competence comprises four components: (a) Awareness of one's own cultural worldview, (b) Attitude towards cultural differences, (c) Knowledge of different cultural practices and worldviews, and (d) cross-cultural skills. Developing cultural competence results in students having the ability to understand, communicate with, and effectively interact with people across culture and ethnicity in the workplace and their communities.

Specialized Knowledge

Specialized knowledge is the knowledge gained which is independent of the vocabularies, theories and skills of particular fields, and is what students in any specialization should demonstrate with respect to that specialization itself. Students developing specialized knowledge in his or her chosen profession provide for safe and effective practice in the workplace and the community.

Continuous Development Behavior

Continuous development behavior is the integration of formal, non-formal and informal learning opportunities so as to create the ability for continuous lifelong development. Learning is therefore part of one's life which takes place at all times and in all places. Developing a continuous development behavior provides students with the ability throughout his or her life to strive for the knowledge and skills needed for personal fulfillment and development, active citizenship, social inclusion and employment.

Overview Of College Of Health Sciences Curricula General Education Requirement

The general education (GE) requirements and the Baccalaureate Nursing Program afford students the opportunities to develop qualities and skills that will serve them throughout their lives as well as meet the general education requirements of the national commission on higher education. This broad general education is the foundation in providing student with knowledge essential to the understanding of individuals, families, communities and society within the context of healthcare delivery. Thus students are encouraged via the GE to:

- Build self-awareness, self-respect, and self-confidence
- Recognize and respect the beliefs, traditions, abilities, and customs of all people and all cultures
- Consider the local, global, and environmental impacts of personal, professional, and social decisions and actions
- Access, evaluate, analyze, synthesize, and use information wisely
- Communicate effectively personally, socially, and professionally
- Think critically, make informed decisions, solve problems, and implement decisions
- Consider the ethical implications of their choices
- Value the learning process throughout their lives
- Integrate and connect ideas and events in a historical perspective, and see relationships among the past, the present, and the future
- Develop a personal sense of aesthetics
- Use technological resources appropriately and productively
- Work cooperatively and respectfully with others to serve their communities

NURSING PROGRAM

Mission

The mission of the University is to provide quality educational experiences that transform the lives of individual for worthy service. The College of Health Sciences mission is to develop and maintain high quality, professional, career-oriented undergraduate degree programs in the context of a liberal education as well as nurturing intellectual growth and character development in all students. Within the above context, the mission of the Baccalaureate Nursing Program can be shown to be consistent with the mission of William V.S. Tubman University and the College of Health Sciences. The Program strives to educate individuals as nurses who will be able to function effectively in the southeast region, nationally and globally in the following roles:

- Direct Provider of patience care in rural and urban setting within acute, chronic, extended care and community-based facilities using the nursing process to aid clients, families and communities with a variety of health problems, who are at any point along the wellness-illness continuum.
- Manager of patient care within structure health care settings and in communities, serving as liaison between clients and other health care providers.
- Member within the discipline of nursing demonstrating accountability for professional registered nursing practice within the profession's ethical and legal framework.

The educational cadre will focus on the provision of services in the rural areas, which are usually underserved nationally. The academic rigor of our programs, the extraordinary nursing scholarship of our faculty, and our reputation for shaping nursing graduates who are leaders in their profession, position us as one of the top nursing schools in Liberia. Our strengths lie in the strategic creation of an environment that embodies our goals:

- Excellence in research, teaching, and practice.
- Values of respect, diversity, integrity, and accountability.
- Global perspectives and leadership in nursing and health care.
- Growth that is planned, innovative, and financially sound.

Values

Excellence : We strive to do our best and meet the highest standards.

Respect : We treat all people with dignity, open-mindedness, and esteem.

Diversity : We appreciate and acknowledge our differences.

Integrity : We behave ethically, honestly, and fairly.

Accountability: We take responsibility for our actions.

Program Philosophy

The Department of Nursing (DON) at William V.S Tubman University is committed to the university's broad mission of teaching and service, research excellence, and

intellectual interaction and creativity included in the full range of programs offered through the Department of Nursing.

The philosophy of the Department of Nursing is derived from a synthesis of beliefs and values shared by faculty, staff, students, alumni and clinical agencies, and community stakeholders concerning nursing, nursing education, nursing students and the university. This philosophy and purpose stems from the mission, vision, and core values of the department. The mission and vision speak to collaboration, innovation, and excellence. The core values are caring, excellence, integrity, knowledge, and respect. The mission, vision, and core values are holistic and express faculty beliefs about the relationship of person, health, environment, and nursing.

Professional nursing is both an art and a science, entrusted by society to provide services to promote, maintain and restore the health and well-being of individuals, families and communities from diverse backgrounds. Nursing is grounded in theory and research that directs and validates clinical practice decisions and actions and generates knowledge for practice. Nursing as a profession derives its authentic authority over nursing education, research, practice and service from a social and ethical contract with the public. This contract mandates that the profession act responsibly in promoting person-centered, safe, evidence-based collaborative care and utilizing informatics with a focus on quality improvement for public's health and well-being.

The faculty recognizes that student-centered learning is an interrelation of theory, practice and research. The Department of Nursing faculty believes that baccalaureate nursing education builds on a liberal arts and natural science education, in order to prepare generalists to practice safe, ethical, and excellent nursing. Successful baccalaureate nursing students are expected to learn, to lead, and to transform the community by fulfilling leadership roles and providing evidence-based nursing practice. Graduate nursing education builds upon the baccalaureate curriculum to prepare nursing students for advanced nursing roles by promoting the development of advanced knowledge, concepts and skills.

Conceptual Framework

The conceptual framework of the nursing curriculum at WVSTU is Caring and Health Promotion throughout Life. Concepts found in the philosophy of the BSN Completion Program at WVSTU form the basis for the conceptual framework and curriculum design. Emphasis within the program is placed on nursing, person, health, and environment, as well as, the Essentials of Baccalaureate Education for Professional Nursing Practice.

The person is a developing holistic being with intrinsic value and worth that interacts continuously with the environment. Each person has similar needs including physiological, safety and security, and psychosocial within a cultural context. A person's needs vary, as does his/her ability to meet these needs. Persons from diverse backgrounds are able to choose among alternative outcomes, set goals, and make decision based on needs and developmental level. Persons may be categorized as

individuals, families, groups, communities and populations. Maslow's hierarchy of needs provides the theoretical basis for defining the basic needs common to all people. Lastly, Erikson's eight stages of development provide the framework for assessing the client as they progress along the life continuum.

Health is a dynamic phenomenon, experienced in a unique way by each individual, family, group, community and population. It can best be viewed on a wellness/illness continuum in which adjustments are made in order to maintain the relative constancy called homeostasis. Homeostasis is the ability of the person to maintain a state of balance or equilibrium while interacting with the environment. Wellness is a state of health in which basic needs are being met and homeostasis is maintained. A health problem can be any actual or potential concern or condition which must be resolved or prevented to maintain optimal health of the individual. If unresolved, the problem will result in illness or death, an alteration in the state of health in which there is an inability to meet basic needs and maintain homeostasis.

The environment includes all internal and external physical, safety and security, and psychosocial conditions affecting individuals, families, groups, communities and populations. Unique responses by the individuals, families, groups, communities or populations to constant interaction with the environment result in varying degrees of health. A focus of nursing is to optimize the environment, in diverse health care settings in order to prevent illness; promote, maintain or restore health; or provide end of life care.

Nursing is the art and science of assisting clients, significant support persons, groups and/or populations to maximize health outcomes. Nursing is involved in assisting clients with health promotion, disease prevention, attaining or maintaining optimal health and/or dying with peace and dignity. Nursing functions independently, dependently, and in collaboration with other health care providers to achieve the above goals. Knowledge, theory and research from nursing and related disciplines are utilized for nursing practice. Nursing uses the nursing process to assess and meet the needs of clients. Roles that nursing assumes are provider of care, manager of care and member within the discipline of nursing. Along with the nursing roles, the BSN Completion Program, incorporates the Essentials of Baccalaureate Education for Professional Nursing Practice. Nursing entails ethical and legal accountability and responsibility to self, individuals and society.

The professional role set, Baccalaureate Generalist Nursing Practice, include provider of care, manager/coordinator of care, and member of a profession. In the role of provider of care emphasis is placed on holistic provision of health care to an increasingly diverse population across all environments. Through partnerships with clients and multidisciplinary teams, nurses serve as advocates and educators to deliver high quality care, evaluate care outcomes, and provide leadership in improving care of the individual, family, group, community, and population.

In the role of manager/coordinator of care, the nurse is responsible for providing

leadership and management in diverse health care settings to promote high quality, cost-effective outcomes. The nurse manages information, designs, and coordinates health care in diverse settings, delegates, and evaluates nursing care, and supervises other health care personnel in implementing care.

In the role of the member of a profession, the nurse develops and exhibits professional values, embraces lifelong learning and incorporates professionalism into practice. The values inherent in caring as a professional nurse are autonomy, human dignity, and diversity. In addition, critical reasoning, evidence based practice, communication, collaboration, and technology are required to practice professional nursing.

Professionalism is defined as the consistent demonstration of core values evidenced by nurses working with other professionals to achieve optimal health and wellness outcomes in individuals, families, groups, communities, and populations. Professionals also involve accountability for one's self and nursing practice, including continuous professional engagement and lifelong learning.

Critical reasoning, the nursing process, along with evidence based practice, is the process of purposeful, outcome directed thinking in exploring a situation, along with translation of current evidence into one's practice. Critical reasoning includes questioning, analysis, synthesis, interpretation, inference, inductive and deductive reasoning, intuition, application, and creativity. With the application of the nursing process, evidence based practice is the foundation used to provide current, safe and professional care to the client.

Health promotion, risk management, and disease prevention are necessary to improve overall health of a society. These concepts are important throughout the lifespan and include assisting individuals, families, groups, communities, and populations to prepare for and minimize health consequences.

Organizational and systems leadership, quality improvement, and safety are critical to promoting high quality patient care. Leadership skills are essential to the overall success of the nursing profession. Leadership skills are needed that emphasize ethical and critical reasoning, initiating and maintaining effective working relationships, using mutually respectful communication and collaboration with professional teams, care coordination, delegation, and developing conflict resolution strategies.

Knowledge and skills in information and patient care technology are critical in performing in a clinical setting. A nurse must have basic competence in technical skills, which includes the use of computers, as well as, the application of patient care technologies such as monitors, data gathering devices and other technological supports for patient care interventions.

Healthcare policies, including financial and regulatory policies, directly and indirectly, influence nursing practice, as well as, the nature and functioning of the healthcare system. These policies shape responses to organization, local, national, and global issues of equity, access, affordability and social justice in health care

Program Goal

To educate professional nurses who will function independently and collaboratively within their scope of practice and deliver evidence-based nursing care to individuals, families, and community.

Program Educational Objectives

Providing a clear statement of expected results, the program educational outcomes reflect the vision of the program's philosophy. Upon successful completion of the Baccalaureate Nursing Program, graduates as provider of care, manager of patient care, communicator and member within the discipline of nursing will be able use critical thinking, therapeutic interventions, and communication skills to:

- Apply analytical reasoning and critical thinking skills in the incorporation of knowledge synthesized from nursing, humanities, the biological and social science into professional nursing practice.
- Provide competent direct patient care for all assigned clients/patients in a legal, ethical and compassionate manner in a variety of settings.
- Effectively function within a culturally diverse society in a caring manner, utilizing the nursing process to provide culturally competent care to persons across the lifespan.
- Utilize information technology to include traditional and developing methods of discovering, retrieving and using information in nursing practice.
- Collaborate with significant support people and members of the health care team to assist varied individuals, families and communities under his or her care to achieve identified goals.
- Assume clinical leadership role within the scope of professional nursing practice.
- Participate in research that focuses on evidence-based practice and use findings to support clinical decision making in the delivery of patient care.
- Incorporate professional nursing standards and accountability into practice.
- Recognize the impact of economic, political, social and demographic forces affecting the delivery of regional, national and global health care.
- Demonstrate a commitment to lifelong learning, personal and professional development through continuing education and participation in professional organizations.

Program Outcomes

Program effectiveness is measured by the following outcomes:

- The annual pass rate of graduates on their first attempt at taking the Nursing Board examination will meet or exceed the standard set by the Board.
- At least 95% of the graduates will be employed as professional registered nurses providing direct patient care within a variety of clinical practice arena within one year of graduation.
- Graduates who are employed are able to manage the delivery of patient care with 85-95% proficiency

- At least 40% of graduates would consider and seek employment in rural settings of Liberia.

Individual Student Learning Outcomes

Nursing students are expected to demonstrate the following core competencies as defined by the nursing faculty. These competencies are assessed in the clinical courses. Student perception of these competencies will also be assessed using an end-of-program survey.

Caring:

As the essence of nursing, professional nurse caring embraces the nurse's empathy for and connection with the patient, family, and the community, and must originate from a foundation of knowledge, competency and confidence.

Therapeutic Nursing Intervention:

The capability to integrate, synthesize, and transfer theoretical knowledge and learned skills into caring behaviors, actions, and activities that are deliberately directed toward assisting, supporting, and enabling individuals, families, or communities with actual or anticipated needs to improve or adapt to a human condition.

Communication:

A dynamic, ongoing process that allows persons to establish, maintain, and improve contact with each other. In its positive state, it is goal-directed, facilitative, and meaningful to those persons regardless of age, culture, consciousness, gender, environment, or setting; in one-on-one, within groups, and among groups; including verbal, nonverbal, written, and technological modalities

Critical Thinking:

A complex cognitive process that is disciplined and self directed. The process of critical thinking involves the ability to analyze, explain, evaluate, interpret, draw inferences, and self-regulate by imposing intellectual standards on thinking.

Leadership:

The ability to influence individuals and groups to collaboratively move beyond self-interest in the achievement of a goal or goals. Leadership involves encouraging participation, sharing information, making decisions, responding to change, and fostering strengths of others. Leadership evolves within interpersonal relationships and occurs in diverse settings.

Professionalism:

This is the extent to which an individual identifies with nursing as profession; adheres to its standards; and possesses characteristics of competence, caring autonomy, commitment, responsibility, and personal integrity.

Core Competencies for Registered Nurses:

The following essential competencies for Registered Nurses (RN) were adapted/developed using the following documents: ICN Regulation series; Nursing care continuum Framework and competencies; Australian Nursing and Midwifery council: National Competency Standards for the Registered Nurses and Core competencies for the Nurse; and Practical Nurse and Nursing Assistive Personal, developed by the Oregon Nurse Leadership Council Education Committee.

The Liberian Board of Nursing and Midwifery (LBNM), The Liberian Nurses Association(LNA) and the Nursing and Midwifery Division/MOHSW acknowledges that this is the beginning and that the content, methods and process of further identification and developing/adapting of core competencies for RNs will be reviewed within a maximum of two years.

The core competencies are based on the following critical factors: nursing care, like all healthcare, should be dynamic and responsive to societal needs and changes; nursing continually evolves with advances in nursing knowledge and technology; and RNs must fulfill multiple roles. These core competencies describe the values, vision, strategies and actions used by those who provide nursing education and services to the population of Liberia. These competencies are integrated into four primary domains to reflect the ICN 17 core competencies areas. They are the following:

- Professional, legal and ethical practice competencies, which relates to accountability and functioning morally in accordance with legislation affecting nursing and health care
- Provision and coordination of care competencies involves the provision of nursing care, including planning assessment, evaluation and health promotion, as well as the establishment, maintenance and termination of therapeutic communication and communication
- Critical thinking and analysis competencies, including leadership and management skills of delegation and supervision, ensuring a safe environment and inter professional health care
- Professional, personal and quality development competencies for the enhancement of nursing through continuing education with values on evidence and research for quality improvement

Core Competencies:

Professional, Legal and Ethical Practice:

- Accepts accountability for own professional judgment, actions, outcomes of care and continued competence in accordance with scope of practice, increased responsibility, legislative acts and regulations
- Recognizes the limits of scope of practice and own competence and performs nursing interventions in accordance with recognized standards of practice
- Seeks guidance from appropriate persons when encountering situations beyond own knowledge, competence or scope of practice
- Recognizes and respects the different levels of accountability for the range of available personnel and participates in activities related to improving access to the range of services required for effective health services
- Practices in accordance with the nursing profession's codes of ethics and employer's code of conduct with acceptance and respect of individuals/groups regardless of race, culture, religion, age, gender, sexual preference, physical or mental state, and ensures that personal values and attitudes are not imposed on others
- Engages in effective ethical decision-making with respect to own professional responsibilities or where ethical issues affect the broader health care team
- Maintains confidentiality and security of written, verbal and electronic information acquired in a professional capacity, and respects the client's right to privacy, dignity, right to information, choice and self-determination in nursing and health care while continuously identifying and challenging behaviour and health care practices that could compromise the client's safety, privacy or dignity
- Practices in accordance with professional, relevant civil legislation and regulations, jurisdictional and local policies, and procedural guidelines
- Practices within a professional and ethical nursing framework in accordance with legislation affecting nursing practice and health care by complying with relevant legislation and common law governing nursing practice
- Formulates documentation according to legal and professional guidelines according to legal requirements that is contemporaneous, comprehensive, logical, legible, clear, concise and accurate, and that identifies the midwife and title designation

Provision and Coordination of Care:

- Conducts a comprehensive and systematic nursing assessment using a range of nursing and other data gathering techniques and knowledge from nursing, health and other disciplines combined with best available evidence to analyze and interpret assessment accurately
- Applies contemporary knowledge from different sources and the best available evidence to plan nursing care in consultation with individuals/groups, significant

others and the health care team in determining priorities, expected achievements within a time frame, interventions to achieve expected outcomes and continuity of care

- Delivers comprehensive, safe and effective evidence-based nursing care consistent with professional and organizational standards, policies, protocols and procedures in a recognizable and culturally sensitive approach with effectiveness and efficiency in a manner consistent with nursing principles; confidently and safely, according to the documented care of treatment and management
- Applies advocacy skills to assist clients who are unable to represent or speak for themselves
- Acts as an information and education resource and for clients seeking to improve life styles, adopt illness/injury prevention activities, and cope with changes in health, disability and death
- Provides guidance/instruction in the development and/or maintenance of independent living skills and promotes patient control over their lives
- Recognizes opportunities and provides guidance/education to individuals, families and communities to encourage adoption of illness prevention activities and maintenance health lifestyles
- Selects teaching/learning strategies appropriate to the needs and characteristics of the individual or group and evaluates learning outcomes, modifying teaching/learning approaches and content accordingly
- Evaluates progress towards expected individual outcomes and responds effectively to rapid changing or unexpected situations with self-control, applying appropriate emergency evidence-based interventions as needed, revising plans and determining further outcomes in accordance with evaluation and intervene appropriately
- Documents interventions and client responses accurately and in a timely manner and uses data to plan continuing care
- Ensures the safe and proper storage, administration and recording of therapeutic substances, and administers and records medication, assesses side-effects and titrates dosages in accordance with authorized prescriptions
- Complies with infection prevention procedures and challenges breaches in other practitioners' practice
- Establishes, maintains and appropriately concludes therapeutic relationships that are goal directed and recognizes professional boundaries while demonstrating empathy, trust and respect for the dignity and potential of the individual/group
- Uses a range of effective communication techniques and language appropriate to the context, both written and verbal; communicates effectively with individuals/groups to facilitate provision of care, using an interpreter where appropriate

Critical Thinking and Analysis:

- Advocates for and acts within span of control to create a positive working environment, especially on delegating aspects of care to others, activities according to ability, level of preparation, proficiency and legal scope of practice, while making sure to supervise staff and monitor tasks delegated and keeping in mind personal responsibility and accountability
- Adapts leadership style and approaches to different situations; prioritizes workload and manages time effectively and uses health care resources effectively and efficiently to promote quality health and nursing care
- Confronts conflicts in a non-judgmental manner, making effective use of communication skills and existing mechanisms to achieve resolution
- Contributes to team leadership by reinforcing goals to promote respect and confidence amongst the team and be able to articulate own leadership contributions, support and expectations of team members
- Contributes to the review and modification of current organizational and practice policies and provides feedback; offers suggestions for changes and deals effectively with the impact of change in own practice or in the organization
- Uses appropriate assessment tools to identify actual and potential risks to safety, and reports concerns to the relevant authority
- Takes timely action through the use of quality improvement risk management strategies to create and maintain safe care environment; meets national legislations and workplace health and safety requirements, policies and procedures
- Accepts delegated activities in line with personal level of proficiency and legal scope of practice and contributes to policy and protocol development that relates to delegation of clinical responsibilities
- Utilizes knowledge of effective inter-and intra-professional working practices for working collaboratively with other professionals in health care while understanding and valuing, roles, knowledge and skills of members of the health team in relation to own responsibilities in enhancing nursing and other health services being accessed by clients
- Presents and supports the views of clients, families and/or care-givers during decision-making by the inter-professional team and refers clients to ensure patients/clients have access to best available interventions

Professional, Personal and Quality Development:

- Promotes and maintains a positive image of nursing while practicing within an evidence-based framework and identifying the relevance of research to improving individual/group health outcomes
- Uses best available relevant literature, research findings evidence, nursing expertise and respect for the values and beliefs of individuals/groups in the provision of nursing care to improve current practice
- Participates in ongoing professional development of self and others using best available evidence, standards and guidelines to evaluate nursing performance; and maintains records of involvement in professional development, which includes both formal and informal activities
- Contributes to education and professional development of students and colleagues in the work place, as well as monitors and uses a range of supportive strategies including precepting and being an effective role model for students and a resource for students within the care team
- Values research in contributing to developments in nursing, participates in quality improvement and quality assurance procedures, and uses findings as a means to improving standards of care while promoting, disseminating, using, monitoring and reviewing professional standards and best practice guidelines
- Follows evidence-based and best practices guidelines in the delivery of nursing practice, and engages in advocacy activities through the professional organization to influence health and social care service policies and access to services
- Takes opportunities to learn with others contributing to health care by undertaking regular review of own practice by engaging in reflection, critical examination and evaluation, and seeking peer review, assumes responsibility for lifelong learning, own professional development and maintenance of competence.

Admission & Progression Criteria

Overall Criteria

- The program objectives and outcomes is the critical guide to progression and completion of the nursing program.
- All students who are desirous of seeking admission to the Nursing Program must sit, pass and meet all Tubman University and College of Health Sciences entrance and admission criteria as identified by the University and the College.
- All students are first admitted into the University and are required to take 52 credits of general education courses in the College of Arts & Sciences, as well as health-related course from the College Health Sciences for the major of nursing. Pre-nursing courses of study provide a broad general education foundation derived from the Natural Sciences, the Humanities and Health Sciences.

- Student would declare intention to progress to clinical phase with an understanding that all pre-clinical required courses must be completed with a grade of “C” or better (this is equivalent to numerical grade of 70 or above).
- Progression into clinical phase of the program is competitive. A minimum cumulative grade point index of 2.5 is required for progression or entry to nursing major (clinical) sequence of courses.
- The key to successful entrance into clinical phase is based on the student achieving a minimum of 2.5 GPA in all the university require courses excluding the grades of the remedial program
- The candidate must write a formal letter of application to the Department of Nursing upon the completion of his/her university required courses.
- The candidate must sit and pass an interview conducted by the faculty and staff of the Department of Nursing.
- If the student(s) failed to meet up with the DEAD LINES dates set by the Department of each of the admission activities, documentation etc. the student(s) will be denied entry into the nursing program.
- Once the student is admitted in the Department of Nursing, the student must maintain the 2.5 GPA for all academic semesters until graduation
- Student progression through each nursing course will be outlined in depth in each course module and syllabus.
- To receive a satisfactory “C” or better grade in nursing course, the student must meet objectives of the theory class, seminar, campus laboratory and clinical laboratory learning experiences.
- A student is placed on probation if the student failed to earn a 2.5 semester GPA and or failed to pass ALL nursing courses taking during the semester.
- If the student on probation failed to earn 2.5 semesters GPA the next semester, the student will be suspended for one semester. A repetition after returning from suspension will require the student to change their major.
- A student MUST pass ALL nursing courses taken during a semester before progressing to the next semester. Any student who failed a nursing course
- Students must successfully complete all core requisites nursing courses for the semester in which they have enrolled before progressing into the next semester of the clinical program.
- A student will also be asked to leave the program if the student behavior of professional misconduct (academic/clinical) is proven.

Program Structure

The program is an eight semester program inclusive of a one-semester-clinical/internship.

Program Timescale

The program is a four-year program inclusive of a 6-8 week clinical/internship.

Academic Advisement

Nursing students are assigned to a faculty advisor upon matriculation into the clinical phase of the program. A student who wishes to change advisor should first meet with the

Chairperson of the Nursing Program. The Chairperson gives approval for the student to speak with a prospective advisor and the current advisor. When both faculty members agree to the change, the faculty notifies the Chairperson for the Nursing program who in turn notifies the Dean of the College of Health Sciences.

BSN Program Overview

The purpose of the baccalaureate program is to prepare a professional nurse whose practice is based upon nursing science, related sciences, leadership and management and the arts in order to promote, restore, and maintain the health of human beings. Graduates of the program are generalists with the necessary base for graduate education and continuing professional development.

High school graduates are directly admitted to the WVSTU. Promotion and retention in the four-year, full-time pre licensure baccalaureate nursing program will required a semester GPA of 2.5 or better and the student will write an essay and sit an interview before admission into the nursing program. WVSTU students may apply for internal transfer to the Department of Nursing. Students who are enrolled in other colleges and universities may apply for external transfer to the Department of Nursing with a minimum cumulative GPA of 2.5 and a grade of 'C' or better in courses taken.

Education for the practice of professional nursing demands a substantial knowledge of nursing, using the behavioral and biological sciences as a theoretical base. Throughout the program, nursing courses are taken concurrently with courses in the College of Arts and Sciences, contributing to the development of the liberally educated practitioner.

The year students are admitted in the Department of Nursing establishes the foundation for the study of nursing with an introduction to concepts and theories related to understanding nursing practice. Clinical study is introduced in the sophomore year with the focus on health promotion and identification of risk factors. Clinical nursing skills are practiced first in the School's Skills Laboratory before relating theory to practice in subsequent semesters.

Clinical experiences take place in a variety of settings such as schools, clinics, health centers, and long term, acute care facilities etc. Junior year nursing courses focus on the care of individuals and families of all ages who are experiencing the stress of illness. Clinical experiences take place in acute care settings. During the third year, student clinical experiences are planned to encourage synthesis of knowledge gained in preceding years and focus on individuals, families, and communities. Students provide care to those experiencing more complex illnesses and problems.

Professional role behaviors that are introduced in the freshman year and augmented during the years of subsequent study are expanded during the senior year. During the senior year, students have a culminating clinical course that provides a transition into clinical practice. Students have an opportunity to work on faculty research projects and begin administrative roles and responsibilities that prepares them for internship (Capstone) in the last semester of the senior year.

The program provides a foundation for graduate education in nursing and serves as a stimulus for continuing professional development. Students who successfully complete the undergraduate BSN curriculum plan of studies (includes a Comprehension Exam) will be eligible to take the Liberian Board for Nursing and Midwifery licensure Exam to

become RN's. Registered nurses, who are graduates of diploma or associate degree programs in nursing, may choose to enroll in the RN-BSN program.

Bachelor of Science in Nursing

First Year

FIRST SEMESTER			SECOND SEMESTER		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	English Grammar & Phonetics	3	ENG I02	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
CHEM 101	Principles of Chemistry	4	BIO101	General Biology	4
PSY 101	Introduction to Psychology	3	HIST 101	Liberian History and Society	3
CSE 101	Introduction to Computers	3	CSE 102	Computer Literacy	3
BIO 101	General Biology	4	SSCI101	Liberian Society, Issues and Problems	3
PED 101	Physical Fitness I	1	PED 102	Physical Fitness II	1
Total		21			20

VACATION CLASS		
Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3
BIO 206	Fundamentals of Microbiology	4
Total		7

Second Year

	FIRST SEMESTER			SECOND SEMESTER	
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
FRE 101 GLE 101 CHI 101	Introduction to French Introduction to Glebo Introduction to Chinese	3	ENG 204	Introduction to Literature	3
ENV 202	Introduction to Environmental Science	3	FRE 102 GLE 102 CHI 102	Intermediate French Advanced Glebo Advanced Chinese	3
BIO 201	Human Anatomy & Physiology	4	NUR 200	Health Assessment with Lab	3
NUR201	Fundamental of Nursing: Foundations of Caring I with Lab	4	NUR 202	Fundamental of Nursing II With Lab & Clinical	4
HSC 203	Principle of Human Nutrition	3	NUR 204	Clinical Pharmacology with Lab	3
HSC 205	Primary Health Care Concepts	2	BIO 202:	Human Anatomy and Physiology II	4
			NUR 206	Ethics and Professional Adjustment	1
Total		19			21

VACATION CLASS		
Course Code	Course Title	Credit Hours
CHEM 102	Organic and Bio-Chemistry	4
PSY 102	Developmental Psychology	3
Total		7

Third Year

	FIRST SEMESTER			SECOND SEMESTER	
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
NUR 301	Medical –Surgical Nursing I	4	HSC 202	Tropical & Communicable Diseases	3
NUR 303	Psychiatric-Mental Health Nursing I	4	NUR 302	Medical –Surgical Nursing II	3
NUR 305	Obstetric-Maternity Nursing I	3	NUR 304	Psychiatric-Mental Health Nursing II	3
NUR 307	Pediatric Nursing I	3	NUR 306	Obstetric-Maternity Nursing II	4
HSC 309	Principles of Epidemiology	3	NUR 308	Pediatric Nursing II with Clinical	4
Total		17			17

Fourth Year

FIRST SEMESTER			SECOND SEMESTER		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
NUR 401	Community Health Nursing: With Clinical	3	NUR 406	Nursing Research II	3
NUR 403	Nursing Leadership & Management	3	NUR408	Nursing Capstone Clinical	4
NUR 405	Nursing Research I	3			
NUR407	Nursing Education	2			
Total		11			7

Please note: this curriculum guide may be subject to change. Please contact your BSN Academic Adviser for questions regarding course planning: Total Cr 140

Course Descriptions***NUR 201******FUNDAMENTALS OF NURSING I******4 Credit Hours******Pre-Requisite: BIO 104***

This course deals with conceptual and philosophical foundations of professional nursing. It provides students with the historical foundation for professional nursing practice in Liberia as well as internationally. Opportunity to explore the nature and interrelationship of components of nursing as it relates environment, nurse, person, and health from both a legal and ethical perspectives is provided. Exploration of various nursing theoretical models are presented and discussed. Students are introduced to Jean Watson's Caring Model, the nursing process and Maslow's Hierarchy of Basic Human Needs as conceptual framework that guide the delivery of nursing care in the curriculum. The role of the professional nurse as provider of care, educator, evidence-based practitioner, manager and advocate is explored.

Fundamentals of Nursing: Clinical Description

During the clinical component of Fundamentals, the student begins to learn basic skills and progress to more complex skills. The course equips the learner with knowledge, skills and attitudes required to provide comprehensive nursing care to individuals, families and communities. The theory obtained is applied in the clinical settings in the process of developing the required skills.

BIO 201***Human Anatomy and Physiology I******4 Credit Hours******Pre-Requisite: BIO 101***

The study of Anatomy and Physiology focuses on the structures of the human body and how those structures work together. This course introduces the student to human anatomy and physiology, focusing on the gross and microscopic structure and function of the human body. It provides students with understanding of organization of the human body,

the anatomy and function of the skin, skeletal-muscular, nervous, sensory and endocrine systems of the human body. The course involves laboratory experiences.

BIO 202

Human Anatomy and Physiology II

4 Credit Hours

Pre-Requisite: BIO 103

The study of Anatomy and Physiology focuses on the structures of the human body and how those structures work together. This course focuses on the gross and microscopic structure and function of the human body and is a continuation of Anatomy and Physiology I. It provides students with understanding of the role and function of the digestive, urinary, reproductive, nervous and hormonal systems as well structure and function of eye, nose, ear, sinuses and mouth of the human body. The course involves laboratory experiences.

HSC 205

Primary Health Care Concepts

3 Credit Hours

Pre-Requisite: All Gen-Ed

This course introduces principles and strategies of primary health care (PHC), with emphasis on community involvement and the use of locally available resources in order to promote health and welfare of communities in Liberia as well as globally. It presents parameters, which must be assessed to determine the health status of a community and the community's ability to deal with its own health problems. Guided fieldwork in the community is correlated with classroom instruction.

Primary Health Care (CLINICAL)

Clinical Description: The practicum provides an opportunity for learners to carry out client assessments in a variety of community-based settings so as to develop relevant and appropriate interventions to promote health and prevent diseases amongst individual, families and communities. The practicum allows for collaboration, consultation and forging of partnerships with various stakeholders, referral and continuity of care.

NUR 200

Health Assessment

3Credit Hours

Pre-Requisite: BIO 201, NUR 201

This course provides the theoretical foundations and lab experiences necessary for performing holistic health and physical assessment. Health assessment skills and techniques for the conduct of a comprehensive health history and physical exam are developed for general nursing practice. Students critically analyze interview data and assessment findings that relate to the specific needs of individuals concerning age and culture. The normal parameters of health are used to compare and contrast the findings. Discussions include health screening across the life span and associated health promotion practices as outlined and recommended by MOHSW. NUR 100 & NUR 101

Health Assessment: Clinical

This clinical course provides the learner with an opportunity to enhance their basic nursing skills. The clinical gives the learner an opportunity to carry out assessment on patients and models in a hospital, clinical setting on the wards and outpatient department to develop relevant skills. The practicum allows for collaboration and consultations with members of the health team.

HSC 203***Principles of Human Nutrition******3 Credit Hours***

This course is a study of normal nutrition as well as psychosocial, cultural and economic needs of clients and families. Emphasis is placed on maintenance of nutrition, prevention of diseases as well as care of persons with pathology due to a problem in nutrition during the life span: mothers, newborn, children, adolescents, adults and aged persons. Special attention is given to cultural nutritional habits or taboos that affect the health of the family and community growth and development as well as to food production, storage, marketing and family use of food.

NUR 202***Fundamentals of Nursing II******4 Credit Hours******Pre-Requisite: All Nursing Courses Year II, Sem. 1***

Using the framework of Watson's caring model, this course introduces the student to professional nursing practice. Emphasis is on learning how the nursing process can be used to meet the client's human needs, primarily survival and functional needs. Students learn consideration of the client's social, cultural and spiritual values within the health-illness-healing experience. In the campus lab: Focus is on technical proficiency in basic patient care techniques and skills. **Clinical:** In the clinical laboratory, students apply advance technical proficiency in patient care techniques and skills needed for nursing care in community, chronic care and acute settings.

Fundamentals of Nursing II Clinical Course Description

The clinical component of this course is intended to continue providing opportunities for the student to gain competency in providing care for patients. The student progresses to more complex skills than was experienced in Fundamentals of Nursing I.

NUR 204***Clinical Pharmacology******3 Credit Hours******Pre-Requisite: All Nursing Courses Year II, Sem. 1***

This course introduces the theoretical background that enables students to provide safe and effective care related to drugs and natural products to persons throughout the lifespan. Students learn to make selected clinical decisions regarding using current, reliable sources of information, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drugs and natural products, intervening to increase therapeutic benefits and reduce

potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. Drugs are studied by therapeutic or pharmacological class using an organized framework.

NUR 307

Pediatric Nursing I

3 Credit Hours

Pre-Requisite: All Nursing Courses Year II, Sem. II

This course utilizes the Watson Model of Caring and explores the concept of family-centered care of children. It provides opportunities for the student to explore the various methods of health promotion and health maintenance of children. It prepares the students to meet the developmental needs of childhood, management of medical-surgical conditions and the care. Emphasize is placed on meeting the nursing needs of pediatric and adolescent clients with simple, complex and critical health care problems. Pharmacological needs associated with childhood health problems are addressed in this course.

Pediatric Nursing Clinical Description

This course helps learners enhance the skills and knowledge drawn from Fundamentals of nursing clinical experiences while working with sick/well children and their families in the hospital and community setting.

NUR 308

Pediatric Nursing II

4 Credit Hours

Pre-Requisite: All Nursing Courses Year III, Sem. I

This course is a continuation of NURS 107. Evidence based nursing and pharmacological cares associated with pediatric and adolescent clients with selected health problems are addressed in this course. Emphasize is placed on meeting the nursing needs of pediatric and adolescent clients with simple, complex and critical health care problems. **Clinical:** Guided clinical experience in a variety of settings that serve pediatric and adolescent patients is correlated with the required didactic instruction.

Pediatric Nursing Clinical Description:

This course helps the learners enhance the skills and knowledge drawn from Fundamentals of Nursing clinical experiences while working with sick/well children and their families in the hospital and community setting.

NUR 303***Psychiatric- Mental Health Nursing I******3 Credit Hours******Pre-Requisite: All Nursing Courses Year II, Sem. 2***

The course provides students with theoretical foundations specific to the promotion of mental health across the lifespan. **It** focuses on the nursing care needs of persons experiencing alterations in social and psychological functioning. Students examine theoretical and research findings as well as issues and trends that influences the planning and delivery of nursing care for persons with common mental health needs and disorder across the lifespan. They integrate mental health concepts, principles of human relationships and interpersonal skills in caring for selected clients in a therapeutic environment within the context of Watson's Caring Model and nursing process as a framework for providing and managing nursing care.

Psychiatric- Mental Health Nursing I: Clinical Course Description:

This clinical course enables the learners to apply theoretical knowledge and develop skills and competencies in assessment and management of individuals with mental health/psychiatric problems using appropriate interventions. They are expected to collaborate with multi-disciplinary and multi-sectorial teams.

NUR 304***Psychiatric- Mental Health Nursing II******4 Credit Hours******Pre-Requisite: All Nursing Courses Year III, Sem. 1***

The course provides students with theoretical and clinical foundations specific to the promotion of mental health across the lifespan. It is a continuation of NUR 104 and focuses on the nursing care needs of persons experiencing alterations in social and psychological functioning. Emphasis is on applying the nursing process to the care of clients with affective, thought, anxiety, personality and addictive disorders; and children with psycho-social disorders. Students apply theoretical and research findings as well as integrate mental health concepts, principles of human relationships and interpersonal skills learned in NURS 10 in the planning and delivery of nursing care for persons across the lifespan with common mental health needs and disorders.

Psychiatric- Mental Health Nursing II: Clinical Course Description:

This clinical course enables learners apply theoretical knowledge and develop skills and competencies in assessment and management of individuals with mental health/psychiatric problems using appropriate interventions. They are expected to collaborate with multi-disciplinary and multi-sectorial teams.

NUR 305**Obstetric-Maternity NUR I****3 Credit Hours****Pre-Requisite: All Nursing Courses Year II, Sem. 1**

The focus of this course is on the childbearing client and family needs from conception through the post-partum period. Alterations in health during the reproductive cycle are addressed. Emphasis is placed on health promotion and the prevention of illness during the childbearing phase of life. Upon completion, students are able to utilize the nursing process to deliver nursing care to mothers, infants, children, and families.

Clinical: The nursing care of women, children and families in various clinical settings is the focus of this clinical.

Obstetric-Maternity NUR I: Clinical Description

This course is an introductory experience in the provision of comprehensive medical care and counselling services to the elderly, adult and adolescent female patients. Obstetrical conditions and gynaecological problems commonly encountered are the focus of this clinical experience.

NUR 306**Obstetric-Maternity NUR II****4 Credit Hours****Pre-Requisite: NUR 306**

In this course students are expected to perform fieldwork in normal and abnormal delivery as well as the management of obstetric emergency. Conducting a minimum of ten normal deliveries, five abnormal deliveries and managing at least five obstetric emergencies. The course is a guided independent study course and builds on what the students learned and performed in NURS 305. **Clinical:** Student/midwife dyads provide students with a vantage point to participate in the deliveries and in the management of obstetric emergencies in both urban and rural communities.

Obstetric-Maternity NUR II: Clinical Course Description

Comprehensive medical care and counseling services to the elderly, adult and adolescent female patients obstetrical conditions and gynecological problems commonly encountered will be the focus of this clinical experience.

NUR 301**Medical/ Surgical Nursing I****4 Credit Hours****Pre-Requisite: All Nursing Courses Year II, Sem. 2**

This course builds on the knowledge and skills attained by the students in NUR 101. Strategies to implement the student's role as provider of care are utilized as well as opportunity to explore the nature and interrelationship of components of nursing: environment, nurse, person, and health are provided. Using Watson's caring model, the students learn to apply the nursing process in acute care settings to meet the needs of clients experiencing common alterations in human functional needs. Theory includes

conditions that interfere with integument, mobility, sensory, endocrine functioning and urinary elimination in various age groups.

Medical/ Surgical Nursing I: Clinical Course Description

This clinical course provides the learner the opportunity to develop skill and competences necessary for nursing care and management of the adult patient with medical diseases and conditions. Students are able to apply the knowledge of the nursing process essential health package within the context of primary health care approach in the provision of care to adult patients with medical diseases and conditions.

NUR 302

Medical/ Surgical Nursing II

4 Credit Hours

Pre-Requisite: All Nursing Courses Year III, Sem. 1

This course builds on the knowledge and skills attained in the previous nursing courses. The students learn to apply the nursing process in acute care settings to meet the needs of clients experiencing common alterations in human survival needs. Theory includes conditions that interfere with fluid and electrolyte balance, nutrition and oxygenation. Pathophysiology processes of all body systems are discussed focusing on evidence based nursing interventions in the variety care settings. Application of the nursing process in an interdisciplinary practice to prevent, promote, maintain and restore health across the lifespan is emphasized. **Clinical:** The clinical practicum focuses on intermediate nursing care and critical thinking within a collaborative practice setting. Emphasis is placed on the integration of evidence-based nursing interventions with the goal of meeting the diverse health needs of vulnerable adult patients from young adulthood to older adults.

Medical/ Surgical Nursing II: Clinical Course Description

The clinical provides the students the opportunity to develop skills and competences necessary for managing adult patients with surgical conditions/disorders of systems of the body. They utilize the human needs theory primary health care approach and the nursing process in the provision of care to adult patients with surgical conditions and their families.

HSC 202

Tropical & Communicable Diseases

3 Credit Hours

Pre-Requisite: All Nursing Courses Year II, Sem. 2

This course is designed to present the disease patterns, treatment and methods of prevention of communicable and tropical diseases which affect both adults and children. It is expected that students apply knowledge gained in basic science to understand the content of this course. Guided practicum in the community is correlated with classroom instruction.

NUR 405***Nursing Research I******2 Credit Hours******Pre-Requisite: All Nursing Courses Year III, Sem. 2***

In this course the steps of the research process are presented which provide the framework for critiquing research that used both qualitative and quantitative methods. Students develop skills to critically read, analyze, and use knowledge gained from reported research findings for evidence-based practice. They conduct review of the nursing literature and critique selections of nursing research articles that focus on clinical nursing research. Students formulate research problem and apply the elements of the research process in a hypothetical study. The ethical issues involved in nursing research, theoretical frameworks for nursing research, and the nurse's role as a member of a research team to forward research dissemination are discussed.

NUR 406***Nursing Research******1 Credit Hour***

Nursing Research provides the undergraduate student with a basic understanding of the research process and its application to nursing and nursing practice. Various types of research and research methods as well as statistical methods are discussed, with particular emphasis developing and writing a research paper. Beginning with Jean Watson theoretical framework, various nursing theories are explored to serve as frameworks for nursing research.

NUR 403***Nursing Leadership and Management******3 Credit Hours******Pre-Requisite: All Nursing Courses Year III, Sem. 2***

This course introduces students to concepts of leadership and management for application in practice settings. Principles of time management, leadership styles, budgeting, staffing patterns, personnel evaluations, delegation, and the steps of discipline, and healthcare accreditation criteria are discussed and analyzed across diverse practice settings. Students use variety of professional tools such as in-class forums to debate relevant health care issues, the resume, a portfolio, and template for a project proposal for enhancement of professional development. Clinical: Student/nurse manager dyads provide students with a vantage point to observe nurse manager role, responsibilities, and associated demonstrated interventions that effect positive client outcomes, staff satisfaction and professional growth.

Nursing Leadership and Management: Clinical Course Description

This course is designed to enable students to acquire attitudes and skills necessary for health services management. The focus is on developing competencies in problem-solving, decision-making, resource management, policy analysis and interpretation, change initiation, performance appraisal and quality improvement. This course also helps the student to monitor and evaluate nursing practice.

NUR 407***Nursing Education******3 Credit Hours******Pre-Requisite: All Nursing Courses Year III, Sem. 2***

This course introduces students to the concepts, principles and theories of curriculum development, teaching strategies, the evaluation of learning as well as educational programs in nursing. Students teach health promotion behaviors to individuals, families, groups and communities using appropriate teaching-learning techniques and strategies. Students engage in the teaching learning process by providing teaching in hospital, health center, and community as well as grade school settings. The course further exposes students to the role of nurses as educators in the clinical practice arena and in schools of nursing.

NUR 408***Nursing Capstone (2 months)******4 Credit Hours******Pre-Requisite: All Nursing Courses Year IV, Sem. 1***

This course is designed to equip the students with the continuous process of acquiring new knowledge and skills that relate to the nursing courses taken in the previous semesters and facilitates transition from student nurse to a Registered Nurse.

PUBLIC HEALTH PROGRAM

The Public Health Program provides opportunity for students to enter a discipline that strive to improve human health through the development and application of knowledge that prevents disease, protects the public from harm, and promotes health throughout the county, the nation, and the world. The practice of public health requires a substantial amount of scientific knowledge and technical skills as well as leadership and managerial abilities. There are core areas of knowledge considered critical for all public health students. These areas have been delineated by the Ministry of Health & Social Welfare (MOHSW), Department of Public Health, World Health Organization (WHO) and the International Council on Education for Public Health. These areas are: Biostatistics, Epidemiology, Environmental Health Sciences, Health Services Administration, and Community Health.

A student majoring in public health will develop and apply knowledge from multiple disciplines for the promotion and protection of the health of the human population, giving due consideration to principles of human rights, cultural and ethnic perspectives that abound in Maryland County, regionally, nationally and globally. Therefore, students are admitted to the major after completing required pre-requisite course work in the social, behavioral, natural sciences as well as in the humanities.

Program Objectives

Upon completion of the Public Health Program, graduates will be able to:

- Apply analytical reasoning and critical thinking skills in the incorporation of knowledge synthesized from the discipline of public health, the humanities, the biological and social science into professional public health practice.
- Utilize information technology to include traditional and developing methods of discovering, retrieving and using information relevant to the practice of public health.
- Effectively communicate with culturally diverse persons and other health care disciplines in a caring, compassionate manner, using a variety of strategies.
- Utilize the principles of epidemiology to provide culturally competent public health care to persons and communities.
- Collaborate with members of the public health care team to assist individuals, families and communities to achieve identified goals.
- Assume a leadership role within the scope of public health practice.
- Participate in research that focuses on evidence-based practice and use findings to support practice decision making and the delivery of care.
- Incorporate professional standards and accountability into the practice of public health.
- Recognize the impact of economic, political, social and demographic forces affecting the delivery of regional, national and global public health care.
- Demonstrate a commitment to lifelong learning, personal and professional development through continuing education and participation in professional organizations.

The Public Health discipline seeks to improve human health through the development and application of knowledge that prevents disease, protects the public from harm, and promotes health throughout the county or state, the nation, and the world. Students in the public health major will develop and apply knowledge from multiple disciplines for the prevention of diseases, protection and promotion of the health of the human population, giving due consideration to principles of human rights and cultural perspectives that abound in our multicultural country and world. The CHS offers eight concentrations or disciplines in Public Health. For brevity all health administration options are combined into simply health administration; and Epidemiology and Infectious Diseases combined into Epidemiology for a total of five main concentrations.

Concentration in Health Administration

This Discipline combines the courses of general education and relevant sciences with skills to develop the student for careers in all facets of health care management. The BSHA curriculum is designed to integrate variety of facts known and available in the provision of health services like accounting, legal, finance, ethics, health and disease factors, human and information technologies.

Concentration in Epidemiology (EPI)

This Discipline offers training of students who are interested in careers of public health with concentration in epidemiology which is a study of disease origin and spread including the pattern of disease development. The EPI curriculum combines courses in public health, biology, chemistry and physics, psychology, statistics and anthropology to determining the scientific and medical transmission of disease in a population.

Concentration in Community Health Promotions (CHP)

This Discipline offers training of students who are interested in careers of public health with emphasis on community health education and human development involving use of known and innovative principles of theories and practices of education, knowledge and instruction. The CHEHD focuses on processes that lead to positive health behavioral change in persons toward community benefits. The CHEHD curriculum combines courses in public health, sociology, health behavioral models, psychology, communications, biological sciences, health and medicine,

Concentration in Environmental Health Sciences (EHS)

This Discipline offers training of students who are interested in careers of public health with emphasis in environmental health sciences which deal specifically with the studies of the natural environment, including land, ocean, and air and impact of interaction by human beings, and other living organisms. The EHS explore the various perspectives of scientific, economic, aesthetic and societal impact on environmental issues as to actions, motives, characteristics and consequences. The EHS curriculum combines courses in public health, ethics, biology, chemistry, pharmacology and toxicology and engineering to determining the health status of the environment and inhabitants.

Concentration in Biostatistics (BIOST)

This Discipline offers training of students who are interested in careers of public health with interest in biostatistics, a discipline that is dedicated to both quantitative and qualitative analysis of biological systems and organisms. The BIOST curriculum combines courses in public health, mathematics, computations, and algebra, calculus, biology, chemistry, biostatistics and computer sciences.,

Bachelor of Science in Public Health***Freshman Year***

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry and Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY 101	Introduction to Psychology	3	PHI 101	Introduction to Philosophy	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness II	1
	Total	17		Total	17

Sophomore Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
FRE 101/ GLE 101	Introduction to French or Introduction to Glebo	3	FRE 101/ GLE 101	Introduction to French or Introduction to Glebo	3
HIST 102	World History and Western Civilization	3	BIO 202	Human Anatomy & Physiology II with Lab	4
EVS 201	Introduction to Environmental Science	3	HSC 202	Tropical & Communicable Diseases	3
BIO 201	Human Anatomy & Physiology I with Lab	4	HSC 204	Primary Health Care & Concepts	2
BIO 203	Microbiology with Lab	4	PH202	Introduction to Epidemiology & Liberian Health Care System	3
	TOTAL	20			18

Vacation School		
Course Code	Course Title	Credit Hours
CHEM 102	Principles of Organic and Biochemistry with Lab	4
HSC 203	Principles of Human Nutrition	3
	TOTAL	7

Third Year

Semester I			Semester II		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
PH 301	Intro to Public & Community Health Theory & Practice	4	PH 306	Intro to Environmental & Occupational Health	3
PH 309	Research Methodology and Proposal Development	3	PH (See below)	PH CONCENTRATION	3
PH (See below)	PH CONCENTRATION	3	HSC 308	National & Global Health	3
PH 307	Foundation of Family, Maternal & Child Health	3	PH 312	Intro to Health Policy & Management	3
PH 305	Intro to Biostatistics I	3	PH 310	Intro to Biostatistics II	3
	Total	16		Total	15

Fourth Year

Semester I			Semester II			
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours	
PH 401	Special Topics in Public Health	2	PH 408	PH Internship	4	
PH (See below)	PH CONCENTRATION	3	PH 406	Senior Seminar	4	
PH (See below)	PH CONCENTRATION	3				
PH 403	Data collection , Analysis and Oral Defense	3				
PH (See below)	PH CONCENTRATION	3				
PH 401	Special Topics in Public Health	2				
	TOTAL	16			8	
			GRAND TOTAL			136

AREAS OF CONCENTRATION

Biostatistics Concentration =12 Credits

<i>COURSE CODE</i>	<i>COURSE TITLE</i>	<i>CREDIT HOURS</i>
<i>PH 314</i>	<i>Analysis of Environmental Data</i>	<i>3</i>
<i>PH 419</i>	<i>Statistical Computing in Public Health</i>	<i>3</i>
<i>PH 310</i>	<i>Biostatistics II</i>	<i>3</i>
<i>PH 421</i>	<i>Advanced Survey Research Methods in Public Health</i>	<i>3</i>

Community Health Promotion =12 Credits

<i>COURSE CODE</i>	<i>COURSE TITLE</i>	<i>CREDIT HOURS</i>
<i>PH 416</i>	<i>Gender, Race and Ethnicity</i>	<i>3</i>
<i>PH 417</i>	<i>Healthy People</i>	<i>3</i>
<i>PH 411</i>	<i>Health Behavior and Risk Reduction</i>	<i>3</i>
<i>PH 415</i>	<i>Program Planning and Evaluation in Public Health</i>	<i>3</i>

Environmental Health Science =12 Credits

<i>COURSE CODE</i>	<i>COURSE TITLE</i>	<i>CREDIT HOURS</i>
<i>PH 302</i>	<i>Environmental Microbiology 3</i>	<i>3</i>
<i>PH 418</i>	<i>Emergency and Disaster and Preparedness</i>	<i>3</i>
<i>PH 411</i>	<i>Environmental Policy</i>	<i>3</i>
<i>PH 413</i>	<i>Water Pollution, Control and Treatment</i>	<i>3</i>

Epidemiology =12 Credits

<i>COURSE CODE</i>	<i>COURSE TITLE</i>	<i>CREDIT HOURS</i>
<i>PH 304</i>	<i>Analytical Epidemiology</i>	<i>3</i>
<i>PH 409</i>	<i>Data Collection, Analysis and Interpretation</i>	<i>4</i>
<i>PH 423</i>	<i>Applied Epidemiology and Statistics</i>	<i>5</i>

Health Administration =12 Credits

<i>COURSE CODE</i>	<i>COURSE TITLE</i>	<i>CREDIT HOURS</i>
<i>PH 320</i>	<i>Sex, Public Policy, & the Law</i>	<i>3</i>
<i>PH 407</i>	<i>Health Information Systems</i>	<i>3</i>
<i>PH 405</i>	<i>Health Policy, Social Welfare Policy & Management</i>	<i>3</i>
<i>PH 414</i>	<i>Health Economics</i>	<i>3</i>

Course Description

HSC 202

Tropical and Communicable Disease

3 Credit Hours

This course is designed to discuss the causes, treatment and preventive measures of selected tropical and communicable diseases and diseases of public health importance and epidemic potential in tropical settings.

BIO 201

Human Anatomy and Physiology I (for Health Science Students)

Pre-Requisite BIO101

4 Credit Hours

The study of Anatomy and Physiology focuses on the human body and how these structures work together. This course introduces the student to human anatomy and physiology, focusing on the gross and microscopic structures and function of the human body. It provides students with the understanding of the organization of the human body, the anatomy and function of the skin, skeletal muscular, nervous, sensory and endocrine systems. The course involves laboratory experiences. Part II of this course is offered in subsequent semester.

HSC 205

Primary Healthcare & Concepts

2 Credit Hours

This course discusses the 8 elements of primary health care; emphasis is placed on community mobilization, participation on their own health care and immunization. Particular references to be made to Liberia's Expanded Programs on Immunization and the immunization policies. Field activities include visits to various levels of the Liberian Health Care Systems starting with the community level up to the level of the regional hospital to observe activities at each level. Here, students observe and participate in immunization sessions.

HSC 308***National & Global Health******3 Credit Hours***

This course provides an overview of basic frameworks for understanding national and global health issues and the improvement of health at a population level. This includes cross-cutting issues underlying the strategies and organization for delivery of health care and population health services regionally, nationally and globally. Approaches to regional and global cooperation to address health issues that cross national borders and/or require consistent multinational approaches for successful intervention are identified. It also contains health issues that are of national and international concerns such as viral hemorrhagic fever (yellow fever, Lassa fever, Ebola) cholera, Guinea worm, Polo, Buruli ulcer, etc.

BIO 202***Human Anatomy and Physiology II (for Health Science Students)******Pre-Requisite: BIO 201******4 Credit Hours***

As sequel to BIO201, the course focuses on the human body and how these structures work together. This course continues with more in-depth of the human anatomy and physiology, focusing on the gross and microscopic structures and function of the human body. It provides students with the understanding of the organization of the human body, the anatomy and function of the skin, skeletal muscular, nervous, sensory and endocrine system of the human body. The course involves laboratory experiences.

HSC 203***Principles of Nutrition******3 Credit Hours***

This course introduces the basic concepts of food and nutrition to highlight ways that students can integrate good nutrition into their lifestyles. Principles of digestion and absorption, the function of nutrients, lifecycle nutritive needs, disease prevention, diet modifications, and weight management are covered. Practical application of these principles to the students' lives is emphasized.

Bio 203***Microbiology (with Lab)******3 Credit Hours***

This course is designed to introduce undergraduate students to the basic theories and skills of epidemiologic principles within the public health context. Using a broad multi-disciplinary perspective, the course examines selected health topics that have great effects to individual and group behaviors and their implication in epidemiological studies personal health.

Public Health Core Courses

PH 301

Intro to Public & Community Health Theory & Practice

3 Credit Hours

This course sets the tone for all concentrations. The course introduces students to the various disciplines and professionals of public health. Topics covered by the course include: history of public health, the modern public health, core functions and tools of public health, organization and legal basis of public health at the local level, state or county level, national level, sub-continental and continental level and WHO, and then public health ethics as applied in the policies and practice. The course includes field work projects and trips to expose students to public health settings that they face and work in their daily functions as public health professionals after graduation. This course also introduces community health and the determinant of health and diseases. It introduces PH first as a theoretical science and second as a practical science. Question to be answered will include: what makes others vulnerable and other resilient to certain kinds of diseases? The concept of a community entry and how a community should be involved in community activities such as health matters and taking charge of its own health are presented and covered.

PH 309

Research Methodology & Proposal Development

3 Credit Hours

In this course, students are taught the basic concepts and principles, methods and techniques of research that enable them to understand the research process. This puts them at a position where they would be ready to participate in research or carry out their own research. As part of the course requirements, students, with the help of the course instructor /professor select a research topic as a prerequisite to research proposal development in the first semester of the final year. The second part, Data Collection, Analysis and Oral Defense is taught in subsequent semester. Ethical issues in general research are also covered in this course.

PH 202

Introduction to Epidemiology and the Liberian Health Care System

3 Credit Hours

This is an integrated course of introduction to the Liberian health care system, population's issues in public health and epidemiological concepts (description epidemiology). The first component of this course focuses on the various levels of the Liberian Health Care Delivery System and the services that are provided at each levels; the second component focuses on population issues such as the reference population, estimating community population between census, rates, epidemiological health information, surveillance, epidemic investigation and control. This course provides an overview of epidemiologic methods used in research studies that address disease patterns in community and clinic-based populations. If an outbreak occurs students should participate in the investigations as a learning experience.

PH 307***Foundation of Family, Maternal & Child Health******3 Credit Hours***

The course consists of maternal and reproductive health, child health and family planning. It focuses on these three related areas. The health of the mother, including issues related to reproduction, health of the child including nutrition, nutrition and traditional malpractices, breastfeeding, hygiene, family planning, child spacing, and having children when parents are prepared to receive them are all covered. Students are required to visit Antenatal Clinic (ANC), family planning clinics and children clinics to participate in growth monitoring activities.

PH 305***Introduction to Biostatistics I******3 Credit Hours***

Students are introduced to the concepts and methods of bio-statistical data analysis. Topics include descriptive statistics, probability, standard probability distributions, sampling distributions, point and confidence interval estimation, hypothesis testing, power and sample size estimation, one- and two-sample parametric and non-parametric methods for analyzing continuous or discrete data, and simple linear regression.

PH 306***Introduction to Environmental & Occupational Health******3 Credit Hours***

This course involves a survey of major topics of environmental health: sources, routes, media, and health outcomes associated with biological, chemical, physical agents in the environment, effects of agents on disease, issues related to water quality, sanitary disposal of human excreta, proper siting of wells and latrines (i.e. is how far should a well be from a latrine, vice versa), students should be able to determine how much water in the well to determine how much chlorine to put in that well, air quality, food safety, and land resources. Current legal framework, policies, and practices associated with environmental health and intended to improve public health are discussed.

PH 312***Introduction to Health Policy and Management******3 Credit Hours***

This is an introductory course on healthcare policy and management. It covers the regulatory framework concerning health and healthcare on a national level. Students gain understanding of how governing bodies of international healthcare systems work, and will be able to compare and contrast such systems. Policies on national health, pharmacy, the establishment of medicine and clinics and the primary implementers of these policies are of concern.

PH 310***Intro to Biostatistics II******3 Credit Hours***

This course covers simple and multiple linear regressions, ANOVA (Analysis of Variance), ANCOVA (Analysis of Covariance), model building procedure and diagnostics with applications in health research.

PH 401***Special Topics in Public Health******2 Credit Hours***

This course looks at the integration of trending public health topics and issues. The topics discussed here are of national and international concerns; the list is dynamic and may vary from time to time. The list may include: psychological behaviors (alcoholism, drug abuse, violence, etc) and social issues, issues of defaulter in TB and HIV treatment courses, challenges of malaria control in Liberia, issues of safe domestic water and good sanitation systems, rape, Ebola, etc.

PH 403***Data Collection, Analysis and Oral Defense******3 Credit Hours***

This course introduces the students who had done Research Methodology and Proposal Development, the basic steps in collecting, analyzing and interpreting data. During this course, with the help of the assigned research supervisor, students are able to structure questionnaires and/or other instruments used in the collection; analysis and interpretation of data. The application of ethical consideration in the collection, analysis and interpretation of data involving animals and human subjects is maintained. Finally, an oral defense is made in front of fellow specialists and academicians thus completing the research work.

PH 408***PH Internship******4 Credit Hours***

This course comprises field work at approved PH establishment sites for at least a period of 8 weeks. Focus on strengthening competence in general public health skills through practical experiences. The concepts presented via coursework are integrated and assimilated through an internship, which provides an opportunity for each student to apply his or her knowledge in a practice setting. A wide range of settings and opportunities may be suitable for an internship. Internships are individually tailored to assure competence in general and to meet student goals and the needs of the agencies involved. The internship is completed in the student's final semester in the program, and always includes a special project that serves as the basis for a final written and oral report. This two month period is used to collect data using the research proposal developed in *PH 403*. Each student is to be visited at least twice during the 8 weeks of field activities. The internship and the special project must be approved by the student's assigned faculty prior to registering. The students are to report to their supervisors weekly to assess progress on data collection, analysis and interpretation. This course requires the

student to complete a special project which serves as the foundation for a major paper presentation.

PH 406

Senior Seminar

4 Credit Hours

Project reports are prepared and presented to the Public Health Faculty at a seminar. These reports are completed during the last four weeks of the semester. The report which is entitled a Senior Seminar Project/Paper should contain the following: a cover page, declaration from research supervisor, an abstract, introduction, literature review, study methods, findings, conclusions and recommendations. (Use the APA style and include all segments)

Public Health Concentrations:

EPIDEMIOLOGY

PH 304

Analytic Epidemiology (Epidemiological Study Designs)

3 Credit Hours

This course is designed to cover the important concepts in epidemiology and their application in epidemiological research. The emphases are on measures and quantitative techniques, proper interpretation, and explanation of quantitative measures and results. The course covers screening and diagnostic test and epidemiologic study designs. In screening and diagnostic tests, the validity, sensitivity, specificity, predictive values of screening tests are presented and under epidemiologic study designs observational cohorts studies, cross-sectional studies, and case-control studies and clinical trials are discussed. Ethical issues related to epidemiological study designs are also included in the course. If there are surveys or other epidemiological studies going on in the country, students should be encouraged to visit and or participate.

PH 409

Data Collection, Analysis and Interpretation

4 Credit Hours

The course introduces students to Liberia's health information system, here students collect, analyze and interpret available data at the county level and learn how to put epidemiological health information into its proper context. Diseases that have high frequency and are severe and which are preventable or controllable are given priority.

PH 423

Applied Epidemiology and Statistics

5 Credit Hours

In this course, students learn how to use the computer to analyze epidemiological data. Commonly used software such as the District Health information system (DHIS) statistical packages for the social scientists (SPSS) and EPI INFO will be introduced.

HEALTH ADMINISTRATION

PH 320

Public Policy: Sex, Reproduction, and the Law

3 Credit Hours

The course focuses on how the public policy concerning medical care and public health is developed and by whom. It explores the theoretical approaches to policy making. The contextual factors (i.e., political, socioeconomic, ideology, culture, and history) and how they influence the structure of and changes to a national health system are discussed. The formulation and implementation of health policy, the international organizations impact on national health policies. Finally, the design and implementation of health care reform and some country experiences are discussed. The foci of the course is on Sex and Reproduction and the Law in Liberia and West Africa.

PH 407

Health Information Systems

3 Credit Hours

The course introduces students to health information system, its structure, components, and uses in decision making, policy and planning. It concentrates on health information systems and subsystems, data resources, and common problems related to health information systems. It explores information needs and selection of proper indicator and ways to enhance their use in decision-making and planning. It examines routine and non-routine data collection methods and introduces the advantages of available software possibilities to support management activities.

PH 405

Health Policy, Social Welfare Policy, and Management

3 Credit Hours

The course focuses on ethical issues in healthcare policy and management as well as the regulatory framework concerning social welfare policy and management in the country. Topics include patient informed consent, privacy, medical malpractice, resource allocation at the national, ministry and county levels (equity) and control of health hazards. The course also examines legal environment concerning the establishment and control over health care facilities, licensure of health professionals, drug production and administration.

PH 414

Health Economics

3 Credit Hours

This course covers microeconomic and macro analyses of the structure of healthcare and economic incentives facing healthcare providers, patients, and hospitals. Emphasis is placed upon efficiency goals of healthcare policy, and the use of economic analysis in the design of such policies. It is divided into modules for efficiency and effectiveness of materials and topics presentation: Module 1: The foundation of economics; Module 2: Introduction to health economics Module 3: Major tasks of economics and health;

Module 4: Health economics in Liberia and Module 5: Application of health economics to access issues in Liberia

ENVIRONMENTAL HEALTH SCIENCE

PH 302

Environmental Microbiology

3 Credit Hours

An overview of contemporary microbiology as it relates to microorganisms in the environment and clinical disease. The structure, physiology, molecular genetics, taxonomy, immunological and clinical aspects, and public health implications of microorganisms will be covered.

PH 418

Emergency and Disaster Preparedness

3 Credit Hours

This course provides an overview to preparedness strategies, emergency planning, and assessment of hazards and resources. Studies include in-depth planning and analytical framework, hazard/vulnerability analysis, and management.

PH 411

Environmental Policy

3 Credit Hours

This course provides a review and analysis of the EPA and federal laws and regulations in relation to the pollution, regulation and protection of the air, water and environment issues in general.

PH 413

Water Pollution Control and Treatment

3 Credit Hours

This course studies the treatment technologies for water and wastewater. Emphasis is given to treatment technologies appropriate for developing countries.

COMMUNITY HEALTH PROMOTION

PH 416

Gender, Race, and Ethnicity in PH

3 Credit Hours

This course examines gender, racial, and ethnic inequities in society. It also examines the factors contributing to said inequities, which are associated with demographic, scientific, clinical, economic, social, political, ethical, and legal issues.

PH 417***Healthy People******3 Credit Hours***

The course is designed to introduce lower division students to the basic theories and skills of personal and community health promotion within a public health context. Using a broad multi-disciplinary perspective, the course examines selected health topics (including stress, nutrition, self-esteem, substance abuse, violence and sexuality) with particular attention to individual and group behaviors and their implications for personal and community health. This course also discusses the legal rights of all individuals as it relates to their health and welfare.

PH 411***Health Behavior and Risk Reduction******3 Credit Hours***

This course is designed to provide students with an overview of the contributions of the social and behavioral sciences to public health. Topics include identification of major behavioral, psychosocial, and cultural factors that influence public health; discussion of leading social and behavioral theories used to understand and to modify these underlying factors, and the basic processes involved in planning, implementing, evaluating, and disseminating effective prevention programs. This course addresses behavioral change at the various stages, involvement with counseling, mediation, prayers, spirituality, and traditional practices, etc.

PH 415***Program Planning and Evaluation in Public Health******3 Credit Hours***

This course covers the life stage of community-based programs from inception, implementation, and sustainability. It applies theoretical concepts from the social and behavioral sciences, health education, and health communication to the planning, design, and evaluation of community-based interventions. Characteristics of theory-based interventions are discussed, critiqued, and assessed for relevance to the needs of the students who will have the opportunity to apply these ideas to their own work.

BIOSTATISTICS***PH 314******Analysis of Environmental Data******3 Credit Hours***

This course considers relationship between environmental factors and the occurrences of disease in human populations, and provides an overview of the collection, monitoring, and interpretation of such environmental data.

PH 419***Statistical Computing in Public Health******5 Credit Hours***

This course covers essential computer-based techniques for a public health researcher, including data entry, editing, management, sub-sample selection, data encryption, and an introduction to SPSS and/or SAS will be covered.

PH 421***Survey Research Methods in Public******3 Credit Hours***

This course provides advanced level to the design, analysis, and interpretation of sample surveys. Types of sampling covered include simple random sampling, stratified random sampling, systematic sampling, cluster sampling, and multi-stage sampling. Methods of estimation are described to estimate means, totals, ratios, and proportions. Development of sampling designs combining a variety of types of sampling and methods of estimation, and detailed description of sample size determinations to achieve goals of desired precision at least cost will be covered.

HEALTH SCIENCES COURSES***HSC 201******Principles of Human Nutrition******3 Credit Hours***

This course focuses on human nutrition and its importance in health promotion and maintenance. It is a study of normal nutrition as well as psychosocial, cultural and economic needs of clients and families. Emphasis is placed on maintenance of nutrition, prevention of diseases as well as care of persons with pathology due to a problem in nutrition during the life span: mothers, newborn, children, adolescents, adults and aged persons. Special attention is given to cultural nutritional habits or taboos that affect the health of the family and community growth and development as well as to food production, storage, marketing and family use of food.

HSC 202***Primary Health Care Concepts******3 Credit Hours***

The course focuses on the basic principles and strategies of primary health care within community focused settings. This requires 3 lecture hour per week and fieldwork as assigned. It introduces principles and strategies of primary health care (PHC), with emphasis on community involvement and the use of locally available resources in order to promote health and welfare of communities in Liberia as well as globally. It presents parameters, which must be assessed to determine the health status of a community and the community's ability to deal with its own health problems. Guided fieldwork in the community is correlated with classroom instruction.

HSC 204***Tropical & Communicable Diseases******3 Credit Hours******Requires 3 lecture hours per week***

This course is designed to present the disease patterns, treatment and methods of prevention of communicable and tropical diseases which affect both adults and children. Students apply knowledge gained in basic science to understand the content of this course. Guided practicum in the community is correlated with classroom instruction.

HSC 301***Clinical Pharmacology and Drug Calculation******3 Credit Hours***

The relationship of drugs and their physiological effects on the human body is the focus of this course. It requires 2 lecture hours with 3 lab per week. It deals with the exploration of the bioavailability of drugs as well as the assessment of their use in each body system. Action, side action, contraindication, adverse reactions, generic and trade names as well as socio-cultural economic use of drugs are explored. Assessment is also made on the bioavailability of drugs during the life span: newborn, mothers, children; adolescents, adults and aged. Pharmaco-therapeutics with consideration to legal, ethical, economic, and technological factors are emphasized.

HSC 306***Epidemiology in Health Care Delivery******3 Credit Hours***

This course provides greater understanding of the use of epidemiology in health care delivery. Topics covered include: basic principles and uses of epidemiology in public health; epidemiologic terms used to describe rates of disease, assessment of disease occurrence in communities, concepts important in understanding screening programs, establishing and monitoring an effective disease surveillance system, and presenting public health data. Course examples are focused on chronic or noninfectious diseases of significance to public health in Liberia. An interactive problem-solving approach using case studies and facilitated small group discussion is used where applicable.

HSC 307***Principles of Epidemiology******3 Credit Hours***

The course focuses on epidemiological principles and concepts for non-epidemiologists who need to understand or use data on health and disease. It provides an overview of epidemiology methods used in research studies that address disease patterns in community and clinic-based populations. This includes distribution and determinants of health-related states or events in specific populations and application to control of health problems.

HSC 308***Introduction to Health Information System******2 Credit Hours***

The course provides exposure to health information systems ability to help effectively manage the delivery of healthcare. It introduces students to health information system, its structure, components, and uses in decision making, policy and planning. It concentrates on health information systems and subsystems, data resources, and common problems related to health information systems. It explores the information needs and the selection of proper indicator and ways to enhance their use in decision-making and planning. It examines routine and non-routine data collection methods and introduces the advantages of available software possibilities to support management activities

HSC 309***Medical Terminology in Healthcare Delivery******3 Credit Hours***

This course is the study of medical terminology, the language of healthcare delivery, focusing on prefixes, suffixes, word roots and their combining forms by review of each body system and specialty area. It also emphasizes word construction, spelling, usage, comprehension, and pronunciation.

HSC 310***Group Dynamics in Health Care Delivery******3 Credit Hours***

This course provides an orientation to group dynamics and group leadership in health care delivery. Various kinds of groups, group leadership styles, and basic skills for group leaders are studied, with special attention given to group intervention strategies for the beginning stage, the middle stage, and the closing stage of a group. Emphasis is on helpful skills and strategies for dealing with problem group situations and group work with specific populations.

HSC 311***Emergency and Disaster Preparedness******3 Credit Hours***

This course provides an overview to preparedness strategies, emergency planning, and assessment of hazards and resources. Studies include in-depth planning and analytical framework, hazard/vulnerability analysis, and management.

PH 301***Introduction to Public Health******3 Credit Hours***

This course introduces students to the various disciplines and provides the context and scope of public health, including history, philosophy, literature, essential services, ethics, and applications to current events as well as Liberian public health system placed in historical and modern perspective. Discussion is focused on core functions of public health, measurements of health, principles of communicable and non-communicable disease control, the Liberian public health care system, social determinants of health,

mental health, environmental and occupational health and ethics of public health. An overview of health population health tools as well a special public health education focus areas such as morbidity and mortality determinants, burdens, and interventions take place in this course.

PH 302

Introduction to Liberia Health Care System

3 Credit Hours

This course is a core course for all public health students. This course introduces the student to Liberia health care system post-conflict country after fifteen years of civil war. It focuses on tasks of rebuilding health care infrastructure to meet the needs of a nation constrained by limited resources. Review of the health care system as it relates to the nation effort in poverty reduction, peace reconciliation and national development efforts. A complete overview of the nation situational report and its prescribed programs, and services as presented by the Ministry of Health and Social Welfare is done in this course.

PH 303

Introduction to Community Health

3 Credit Hours

This course outlines the history, evolution and status of the practice of health education among groups of people who define themselves as a community. There is a focus on health behaviors, environmental influences, health policy, and economic and health care system issues in health promotion and disease prevention.

PH 304

Introduction to Health Policy and Management

3 Credit Hours

The course focuses on ethical theory and ethical issues in health care, policy and management as well as the regulatory framework concerning health and health care in the country. Topics include patient informed consent, privacy, medical malpractice, resources allocation (equity) and control of health hazards. The course examines legal environment concerning the establishment and control over health care facilities, licensure of health professionals, drug production and administration

PH 305

Survey of Human Diseases

3 Credit Hours

The course provides an overview of major diseases, their classification, causes, diagnosis and treatment from a public health perspective.

PH 308

National and Global Health Issues

3 Credit Hours

This course provides an overview of basic frameworks for understanding national and global health issues and the improvement of health at a population level. This includes cross-cutting issues underlying the strategies and organization for delivery of health care and population health services regionally, nationally and globally, Approaches to

regional and global cooperation to address health issues that cross national borders and/or require consistent multinational approaches for successful intervention will be identify.

PH 401

Psychological, Behavioral, and Social Issues in Public Health

3 Credit Hours

The course focuses on health behavior from an ecological perspective; includes primary, secondary and tertiary prevention across a variety of settings; incorporates behavioral science theory and methods.

PH 402

Seminar in Contemporary Public Health Issues

3 Credit Hours

The course is an integration of public health topics, issues, and skills into a culminating experience for the BS program. This course requires a final paper and oral presentation. Student must register concurrently for PHI.

PH 403

Foundation of Maternal & Child Health

3 Credit Hours

This is an introductory course on healthcare policy and management. It covers the regulatory framework concerning health and healthcare on a national level. Students also gain understanding of how governing bodies of international healthcare systems work, and will be able to compare and contrast such systems.

PH 405

Health Economics

3 Credit Hours

This is a course that deals with microeconomic analysis of the structure of healthcare and economic incentives facing healthcare providers, patients, and hospitals. Emphasis is placed upon efficiency goals of healthcare policy, and the use of economic analysis in the design of such.

PH 408

PH Internship

4 Credit Hours

This course involves fieldwork at approved sites which focus on strengthening the competence of students in general public health skills through practical work experiences. The concepts presented via coursework are integrated and assimilated through an internship, which provides an opportunity for each student to apply his or her knowledge in a practice setting. Internships are individually tailored to assure competence in general as to meet student goals and the needs of the agencies involved. The internship is completed in the student's final semester in the program, a special project that serves as the basis for a final oral and major written report that is presented in PH 405. The internship and the special project must be approved by course assigned faculty prior to registering. Students must register concurrently with PH 405. This internship carries a pass or fail grade.

PH 410***Research and Data Utilization in Public Health******3 Credit Hours***

This course provides an introduction to the design, analysis, and interpretation of sample surveys. Types of sampling covered include simple random sampling, stratified random sampling, systematic sampling, cluster sampling, and multi-stage sampling. Methods of estimation are described to estimate means, totals, ratios, and proportions. Development of sampling designs combining a variety of types of sampling and methods of estimation, and detailed description of sample size determinations to achieve goals of desired precision at least cost will be covered.

PH 411***Healthy People******3 Credit Hours***

This course is designed to introduce students to the basic theories and skills of personal and community health promotion within a public health context. Using a broad multi-disciplinary perspective, the course examines selected health topics (including stress, nutrition, self esteem, substance abuse and sexuality) with particular attention to individual and group behaviors and their implications for personal and community health.

PH 412***Survey Research Methods in Public Health******3 Credit Hours***

This course provides an introduction to the design, analysis, and interpretation of sample surveys. Types of sampling covered include simple random sampling, stratified random sampling, systematic sampling, cluster sampling, and multi-stage sampling. Methods of estimation are described to estimate means, totals, ratios, and proportions. Development of sampling designs combining a variety of types of sampling and methods of estimation, and detailed description of sample size determinations to achieve goals of desired precision at least cost will be covered.

PH 413***Environmental Health Policy******3 Credit Hours***

This course provides a review and analysis of the EPA and federal laws and regulations in relation to the pollution, regulation and protection of the air, water and environment issues in general.

PH 414***Statistical Computing in Public Health******3 Credit Hours***

This course covers essential computer-based techniques for a public health researcher, including data entry, editing, management, sub-sample selection, data encryption, and an introduction to SPSS and/or SAS will be covered.

PH 415

Water Pollution Control and Treatment

3 Credit Hours

This course is a study of treatment technologies for water and wastewater. The emphasis is given to treatment technologies appropriate for developing countries.

PH 416

Analysis of Environmental Data

3 Credit Hours

This course considers the relationship between environmental factors and the occurrence of disease in human populations, and provides an overview of the collection, bio-monitoring, and interpretation of such environmental data.

PH 419

Environmental Microbiology

3 Credit Hours

This course is an overview of contemporary microbiology as it relates to microorganisms in the environment and clinical disease. The structure, physiology, molecular genetics, taxonomy, immunological and clinical aspects, and public health implications of microorganisms are covered

PH 420

Analytic Epidemiology

3 Credit Hours

This course is designed to cover the important concepts in epidemiology and their application in epidemiological research. Emphasis is on measures and quantitative techniques, proper interpretation, and explanation of quantitative measures and results.

PH 421

Health Behavior and Risk Reduction

3 Credit Hours

This course is designed to provide students an overview of the contributions of the social and behavioral sciences to public health. Topics include identification of major behavioral, psychosocial, and cultural factors that influence public health; discussion of leading social and behavioral theories used to understand and to modify these underlying factors, and the basic processes involved in planning, implementing, evaluating, and disseminating effective prevention programs.

PH 422

Descriptive Epidemiology: Infectious Disease

3 Credit Hours

The course helps students to understand epidemiological patterns, etiology and risk factors of infectious diseases as they occur in populations, rather than in individual patients. Familiarity with epidemiological terminology and biostatistics is required.

PH 423***Program Planning and Evaluation in Public Health******3 Credit Hours***

This course covers the life stage of community-based programs from inception, implementation, and sustainability. The course applies theoretical concepts from the social and behavioral sciences, health education, and health communication to the planning, design, and evaluation of community-based interventions. Characteristics of theory-based interventions are discussed, critiqued, and assessed for relevance to the needs of the students who will have the opportunity to apply these ideas to their own work.

PH 424***Descriptive Epidemiology: Reproductive Health******3 Credit Hours***

This course is an introduction to reproductive/prenatal epidemiology and its application in maternal and child health. It examines prenatal and family planning issues, and emphasizes factors that affect reproductive, pregnancy, and infant health outcomes on a national and global level.

PH 425***Gender, Race, and Ethnicity in Public Health******3 Credit Hours***

This course examines gender, racial, and ethnic inequities in society. It also examines the factors contributing to said inequities, which are associated with demographic, scientific, clinical, economic, social, political, ethical, and legal issues.

PH 426***Descriptive Epidemiology: Nutrition******3 Credit Hours***

The course helps students to understand epidemiological patterns, etiology and risk factors of various nutritional anomalies and deficiencies as they occur in populations, rather than in individual patients. Familiarity with epidemiological terminology and biostatistics is required.

PH 427***Genetics and Society******3 Credit Hours***

This course examines: the patterns of inheritance of genes, including those associated with genetic diseases, the sequence and content of the human genome, how genes function, how the physical and biochemical characteristics of the body are produced, and why there are differences between individuals and between populations. Finally, it explores some of the issues surrounding research into genes, from biological, medical, and ethical points of view. The course equips students with sufficient background to understand these issues and to engage with discussions presented in newspapers and popular scientific journals. As well as some of the biology of genes, students learn biology that they can apply to other situations. Students are also engaged in key issues of concern to health professionals.

PH 428

Health Policy, Social Welfare Policy, and Management

3 Credit Hours

The course focuses on ethical issues in healthcare policy and management as well as the regulatory framework concerning social welfare policy and management in the country. Topics include patient informed consent, privacy, medical malpractice, resources allocation (equity) and control of health hazards. The course also examined legal environment concerning the establishment and control over health care facilities, licensure of health professionals, drug production and administration.

PH 430

Public Policy: Sex, Reproduction, and the Law

3 Credit Hours

The course focuses on how the public policy concerning medical care and public health is developed and by whom. It explores the theoretical approaches to policy making. The contextual factors (i.e., political, socioeconomic, ideology, culture, and history) and how they influence the structure of and changes to a national health system are discussed. The formulation and implementation of health policy, the international organizations impact on national health policies and finally, the design and implementation of health care reform and some country experiences are discussed. The focus of the course is on Sex and Reproduction and the Law in Liberia and West Africa.

PH 432

Public Policy: Drugs, Tobacco, and Alcohol Policy

3 Credit Hours

The course focuses on how the public policy concerning medical care and public health is developed and by whom. It explores the theoretical approaches to policy making. The contextual factors (i.e., political, socioeconomic, ideology, culture, and history) and how they influence the structure of and changes to a national health system are discussed. The formulation and implementation of health policy, the international organizations impact on national health policies and finally, the design and implementation of health care reform and some country experiences are discussed. The focus of the course is on drugs, tobacco and alcohol policy.

PH 434

Health Information Systems

3 Credit Hours

The course introduces students to health information system, its structure, components, and uses in decision making, policy and planning. It concentrates on health information systems and subsystems, data resources, and common problems related to health information systems. It explores the information needs and the selection of proper indicator and ways to enhance their use in decision-making and planning. It examines routine and non-routine data collection methods and introduces the advantages of available software possibilities to support management activities

COLLEGE OF MANAGEMENT AND ADMINISTRATION

The College of Management and Administration offers six (6) four year degree-awarding programs including Accounting, Banking and Finance, Business Administration, Economics, Management, and Public Administration. It provides a curriculum that incorporates general education, specific college required courses, and professional courses as well as electives that fulfill the requirements for the students to qualify for a degree.

Vision

College of Management and Administration aspires to be an excellent entity that utilizes innovative approaches in the integration of research, outreach, and direct involvement in project preparation, evaluation, and management.

Mission

The College aims to produce graduates who may work as an entry level employee in any available business and administration positions in Liberia and around the globe. It also provides opportunity for the students who may opt to pursue graduate studies, specialized training, and advanced studies in order to acquire skills in quantification and financial analysis for business and other management decision-making and research purposes to have better job opportunities or positions in a wider variety of government and private sector organizations.

Description of Programs

The college has a competence-based learning curriculum which includes *core requirements* comprising of TU general education courses and the college specific required courses to be offered in the first four semesters of enrollment, *concentration requirements* comprising of professional courses leading to the award of specific degrees, and *elective requirements* which are courses taken by the student as minor based on the student's career interest, done in the last four semesters of enrollment.

These courses are taught in ways and manners which involve exposures and special coaching on the requirements for qualifying examinations of graduate level education (Graduate Education Examination); the special examinations administered by the Liberian Institute of Certified Public Accountants (LICPA) after a brief period of work experience; and the examinations for professional designation of Registered Representative for the money and capital markets Industries.

Bachelor of Business Administration (BBA) – Accounting

Program Description

The BBA Degree in Accounting promotes identification with, and orientation to, the accounting profession and is designed to provide knowledge, skills and attitudes necessary to an accounting career. In addition to the key accounting course work at the introductory and intermediate levels, students are also exposed to varied business disciplines including economics, statistics, business law, corporate finance, management and administration to provide the general business overview and context necessary for accounting studies. The importance of ethics and professional values, international issues, communication and leadership skills, strategic and critical thinking skills, technology skills required of professional accounting environment, and International Financial Reporting Standards (IFRS) are emphasized throughout the curriculum, along with the Generally Accepted Accounting Principles (GAAP).

Program Objectives

- To produce accounting professionals to work in the fields of Accounting, business management in the public or private sectors.
- To produce accounting professionals who desire to pursue further studies in Accounting or other related fields.

Student Learning Outcomes

At the conclusion of the program, graduates are able to:

- Apply financial accounting principles to record and communicate business activities to stakeholders;
- Analyze accounting financial statements to support effective fiscal decision making;
- Evaluate various accounting activities in relation to ethical, legal, and professional standards.
- Demonstrate an understanding of issues in areas of government and not-for-profit accounting, international transactions, taxation, and auditing.
- Demonstrate competency in managing and applying accounting functions in business.

Curriculum Requirements

Candidates enrolling for the Bachelor of Business Administration (BBA) degree program are to fulfill the below course requirements to be eligible for graduation.

➤ TU General Education Courses (20)	52 credits
➤ College Specific required Courses (7)	21 credits
➤ Professional Courses (18)	54credits
➤ Elective Courses (at least 2)	6 credits
➤ Total	133 Credits

Core Requirements

- *General Education* (52 Credit Hours)
- ACCT 201 *Principles of Accounting I*
- ACCT 202 *Principles of Accounting II*
- ECON 201 *Principles of Economics I*
- ECON 202 *Principle of Economics II*
- ECON 203 *Quantitative Techniques for Business and Economics Analysis*
- BUS 202 *Principles of Management*
- PADM 202 *Introduction to Public Administration*
- EED 301 *Entrepreneurship Education I*
- EED 302 *Entrepreneurship Education II*

Concentration Requirements

- BUS 301 *Organization Behavior*
- BUS 307 *Principles of Business Law*
- BFN 301 *Financial Management*
- EC 313 & 314 *Economics and Business Statistics I&II*
- BUS 302 *Human Resource Management*
- BUS 304 *Marketing Management*
- BUS 314 *Operation Research*
- BUS 401 *Business Policy and Strategy*
- BUS 407 *Production and Operation*
- BUS 409 *Advertising and Sales Promotion*
- BUS 413 *Retail Management*
- BUS 420 *Purchasing Administration and Material Management*
- BUS 408 *International Marketing*
- BUS 400 *Business Ethics*
- BUS 429 *Business Administration Internship*
- BUS 430 *Project Writing*

Electives

(in selection of a minor specialization)

- ACCT 301 & 302 *Intermediate Accounting I & II*
- ACCT 303 & 304 *Cost Accounting I & II*
- ECON 311 *Money, Banking and Monetary theory*
- ECON 315 *Managerial Economics*
- BFN 303 *Investment Theory and Analysis*
- ECON 301 *Intermediate Microeconomic Analysis I*
- ECON 302 *Intermediate Microeconomic Analysis II*
- ECON 303 *Intermediate Macroeconomic Analysis I*
- ECON 304 *Intermediate Macroeconomic Analysis II*
- BUS 301 *Organization Behavior*
- BUS 302 *Human Resource Management*

- *BUS 304* *Marketing Management*
- *BUS 314* *Operation Research*
- *BFN 312* *Financial Institutions and Markets*
- *ACCT 411* *Not- for-Profit Accounting*
- *BFN 406* *Financial Engineering*
- *ECON 403* *Development Economics I*
- *ECON 404* *Development Economics II*
- *BFN 403* *Management of Financial Institutions*
- *ACCT 408* *Accounting theory*
- *BFN 412* *International Business Finance*
- *BFN 401* *Advanced Corporate Finance*

Bachelor of Business Administration- Accounting

Freshman

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	College Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry & Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY101	Introduction to Psychology	3	PHIL 101	Introduction to Philosophy	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness	1
TOTAL		17			17

Sophomore

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
EVS 201	Intro to Environmental Science.	3	FRE 102 GLE 102 CHN102	Intermediate French Advanced Glebo Advanced Chinese	3
FRE 101 GLE 101 CHN101	Introduction to French Introduction to Glebo Introduction to Chinese	3	ACCT 202	Principles of Accounting	3
HIST 102	World History and Western Civilization	3	ECON 202	Principles of Economics II	3
ACCT 201	Principles of Accounting I	3	BUS 202	Principles of Management	3
ECON 201	Principles of Economics I	3	PADM 202	Introduction to Public Administration and Political Science	3
ECON 203	Quantitative Techniques for Business	3			
TOTAL		21			18

Junior

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ACCT 301	Intermediate Accounting I	3	ACCT 302	Intermediate Accounting II	3
ACCT 303	Cost Accounting I	3	ECON 308	Research Methodology	3
ECON 313	Business & Econ. Statistics I	3	ECON 314	Business & Econ. Statistics II	3
BUS 307	Principles of Business Law	3	ACCT 314	Managerial Accounting	3
BFN 301	Financial Management	3	EED 302	Entrepreneurship Education II	
EED 301	Entrepreneurship Education I		ACCT 302	Cost Accounting II	3
TOTAL		15			15

Senior

SEMESTER 1			SEMESTER 2			
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours	
ACCT 401	Advanced Accounting I	3	ACCT 402	Advanced Accounting II	3	
ACCT 403	Auditing I	3	ACCT 403	Auditing II	3	
ACCT 405	Accounting System and control	3	ACCT 410	Public Budgeting and Taxation	3	
ACCT 429	Internship	3	ACCT 430	Project Writing	3	
	Elective	3		Elective	3	
TOTAL		15			15	
			GRAND TOTAL			133

Course Descriptions

ACCT 201

Principles of Accounting I

3 Credit Hours

The course introduces the students to bookkeeping and continues with the basic concepts of financial accounting, principles and practices of accounting, merchandise enterprises, system and controls, receivables, payables and inventory, deferrals, accruals, plant assets and intangible assets, payroll system and concepts and principles are included. Prerequisite: Sophomore standing.

ACCT 202

Principles of Accounting II

Pre-Requisite: ACCT 201

3 Credit Hours

This course is in continuation of ACCT 201. It embodies capital stock transaction, financial system analysis, partnership and corporation accounting, financial statement analysis, introduction to standard cost accounting, cost-volume-profit analysis process and job order costing..

ACCT 301

Intermediate Accounting I

Pre-Requisite: ACCT 202

3 Credit Hours

The course covers in greater depth the accounting concepts and principles introduced in ACCT 201 and theory, principles and problems; cash flow and income measurement, inventory cost, inventory evaluation, depletion and intangible assets.

ACCT 302

Intermediate Accounting II

Pre-Requisite: ACCT 301

3 Credit Hours

The course covers conceptual viewpoint of current liabilities, intangible assets, long-term liabilities, fixed assets acquisition, utilization and retirement, ratio and analysis of financial statements.

ACCT 303

Cost Accounting I

Pre-Requisite: ACCT 202

3 Credit Hours

This course studies the basic principles and procedures in the field of cost accounting. Areas covered include manufacturing accounting, unit cost determination under job order and process costing system. Materials, labor and indirect manufacturing cost of multiple cost systems, Direct and indirect costing form an integral part of this course

ACCT 304**Cost Accounting II****Pre-Requisite: ACCT 303****3 Credit Hours**

The course is about managerial application of accounting data and quantitative methods in planning and control for the core of this course. Topics such as cost behavior, cost-volume-profit analysis, profit performance evaluation, decision making, and cost and capital expenditure decision are critically evaluated. Cost accounting for standard costing and variance analysis is also discussed.

ACCT 314**Managerial Accounting****Pre-Requisite: ACCT 303****3 Credit Hours**

This course focuses on the analysis of an organization financial statement for managerial decision-making, determination of reference operating ratios and emphasizing special problem of the development of nations. The course explores responsibility accounting issues, managerial application of accounting data as well as quantitative methods in planning & control. Topics such as cost-volume profit analysis, performance evaluation and capital budgeting decisions are critically evaluated.

ACCT 401**Advanced Accounting I****Pre-Requisite: ACCT 302 and 303****3 Credit Hours**

This course examines various aspects of partnership formation and operation, dissolution and liquidation, installment sales consignments, home and branch accounting and various mergers and consolidations.

ACCT 402**Advanced Accounting II****Pre-Requisite: ACCT 401****3 Credit Hours**

This course begins where AC401 level off. It covers investments carried by the cost and equity methods, foreign branch and subsidiaries, receivership accounting, estates and trust and not-for-profit service organization.

ACCT 403**Auditing I****Pre-Requisite: ACCT 302 & 303****3 Credit Hours**

The course examines the role of the independent and internal auditors, professional ethics, legal liabilities of the auditor, planning and audits application of accounting theory and principles of internal controls, evidential matters, statistical sampling and its working papers and examination of records.

ACCT 404***Auditing II******Pre-Requisite: ACCT 403***

Auditing II concentrates on the specific area of auditing such as cash, securities and other investments, receivables and payable, inventories and cost of sales, property, plant and equipment, prepaid expenses, deferred changes and intangible assets and owner equity. Student's internship with reputable auditing firm so as to gain practical insight into the field of auditing is highly recommended.

ACCT 405***Accounting System and Controls******Pre-Requisite: AC 302 & 303******3 Credit Hours***

This course is primarily devoted to the basic concept of accounting system in operation within an organization. It is also designed to provide students with the methods or procedures that form the complete internal control system of an organization. Students will gain valuable knowledge in system compliance with policies and procedures as well as protecting organization assets and preparing timely reports.

ACCT 408***Accounting Theory******Pre-Requisite: AC 302 & 303******3 Credit Hours***

The course accounting theory continues to expose the students to various issues in Accounting. It examines the various postulates and concepts underlying the generally accepted accounting principles (GAAP) and surveys current accounting literature.

ACCT 410***Public Budgeting and Taxation******Pre-Requisite: ACCT 302 & 303******3 Credit Hours***

Public Budgeting & Taxation is an intensive study of the institutions, processes, politics and socio-economic impact of Governmental Budgeting, Public Taxation and Expenditures. The class explores historical & contemporary issues surrounding Governmental spending and taxation policies at the various levels of government. Legal provisions regarding governmental policies on taxation and public budgeting are discussed. The class also looks at the practical effect of public policies enacted in Government & their impact on present day fiscal challenges in Government,

ACCT 411***Not-for-Profit Accounting******Pre-Requisite: ACCT 201******3 Credit Hours***

This course introduces the students to the not-for-profit accounting. Application of the theories for recording and reporting in non-corporate forms of organization as applied to government and NGOs.

ACCT 429***Internship in Accounting******Pre-Requisite: Senior Standing******3 Credit Hours***

This course provides an opportunity for senior students in accounting to gain relevant knowledge and skills in various accounting systems in operation at an assigned institution that provides accounting, auditing and other financial services. Details of the internship assignment are worked out in consultation with the College Field Placement Officer. Students are required to provide a detailed report on his/her experience from the internship.

ACCT 430***Accounting Project Writing******Pre-Requisite: ACCT 302, 303 & ECON 314.******3 Credit Hours***

This course allows graduating senior students of accounting to carry out independent academic research in his/her profession on any approved topic in accounting but under the close supervision of an assigned professor from the department.

Note: Internship for all discipline to be done during the vacation after the student shall have completed the Junior year, Semester II

Bachelor in Business Administration-Banking and Finance

Program Description

The BBA Banking and Finance degree program is intended to train professionals for the storing and protecting of money, the creating and maintaining of wealth, and the receiving, distributing and overall managing of money that is crucial to the success of every business. As a very broad discipline, banking and finance professionals can be found in every industry helping businesses as well as individuals.

People entering these fields have to be knowledgeable of methods of deposit and withdrawals, loans, interest rates, budgets and financing, stocks, bonds, credits, investments, monetary systems, and financial institutions. Skills for success include the aptitude for analyzing, organizing and interpreting numerical data, ability to explain financial terms and transactions to others, strong ethics, analytical & precise, computer skills, ability to handle money, strong written and oral communication skills, ability to communicate with a diversity of people, and attention to detail.

In terms of employment, the program prepares students for superb job opportunities in treasury management, banking, portfolio management, investment banking, investment advising, financial planning, and financial analysis amongst others. Students may also work towards obtaining chartered financial analyst (CFA) certificate; the most prestigious professional certificate you can obtain in the finance career recognized worldwide.

Program Objectives

1. To produce finance professionals to work in the fields of finance or business management.
2. To develop students capable of taking on postgraduate studies and research.

Student Learning Outcomes

Students will be able to:

- Demonstrate knowledge of the principles of finance and banking as they relate to various business fields.
- Apply sound financial and banking principles and laws appropriately.
- Critically analyze a business firm and determine the intrinsic value of the business through fundamental analysis..

Curriculum Requirements

Candidates enrolling for the Tubman University BBA Banking and Finance degree program are expected to meet the following course requirements to be eligible for graduation:

- | | |
|---|------------|
| ➤ TU General Education courses (18) | 52credits |
| ➤ College Specific required courses (7) | 21 credits |
| ➤ Elective courses (at least 2) | 6 credits |

➤ Professional Courses (18)

54credits

➤ **Total**

133 credits

Core Requirements:

- *General Education (52 Credit Hours)*
- *ACCT 201 Principles of Accounting I*
- *ACCT 202 Principles of Accounting II*
- *ECON 201 Principles of Economics I*
- *ECON 202 Principle of Economics II*
- *ECON 203 Quantitative Techniques for Business and Economics Analysis*
- *BUS 202 Principles of Management*
- *PADM 202 Introduction to Public Administration*
- *EED 301 Entrepreneurship Education I*
- *EED 302 Entrepreneurship Education II*

Concentration Requirements

- BFN 301 *Financial Management*
- BFN 303 *Investment Theory and Analysis*
- BFN 311 *Money, Banking and Monetary Theory*
- ECON 313 & 314 *Business and Economics Statistics I & II*
- ECON 308 *Research Methodology*
- BFN 302 *Corporate Finance*
- BFN 304 *Portfolio Theory and Management*
- BFN 312 *Financial Institutions and Markets*
- BUS 314 *Operations Research*
- BFN 401 *Advanced Corporate Finance*
- BFN 403 *Management of Financial Institutions*
- BFN 405 *Financial Engineering and Risk Management*
- BFN 402 *Financial Planning and Control*
- BFN 404 *Treasury Management*
- BFN 412 *International Banking and Finance*
- BFN 429 *Internship in Banking and Finance*
- BFN 430 *Project Writing*

Electives

- ECON 301 & 302 *Intermediate Microeconomic Analysis I & II*
- ECON 401 & 402 *Intermediate Macroeconomic Analysis I & II*
- ECON 315 *Managerial Economics*
- BUS 301 *Organization Behavior*
- BUS 307 *Principles of Business Law*
- ACCT 301 & 302 *Intermediate Accounting I& II*
- ACCT 303 & 304 *Cost Accounting I& II*
- ECCT 408 *Econometrics and Time Series*
- ECCT 412 *International Economics Analysis*
- BFN 327 *Real Estate Investment*
- ECON 407 *Introduction to Econometrics*
- BUS 400 *Business Ethics*
- BUS 304 *Marketing Management*
- BUS 401 *Business Policy and Strategy*
- BUS 408 *International Marketing*
- BUS 409 *Advertising & Sales Promotion*
- BUS 413 *Retail Management*
- BUS 411 *Entrepreneurship and Small Business Management*
- BUS 408 *Principles of Insurance*
- BFN 420 *Small Business and Entrepreneurial Finance*

Bachelor of Business Administration (BBA) – Banking and Finance

Freshman

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	College Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry & Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY101	Introduction to Psychology	3	PHIL 101	Introduction to Philosophy	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness	1
TOTAL		17			17

Sophomore

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
EVS 201	Intro to Environmental Science.	3	FRE 102 GLE 102 CHN102	Intermediate French Advanced Glebo Advanced Chinese	3
FRE 101 GLE 101 CHN101	Introduction to French Introduction to Glebo Introduction to Chinese	3	ACCT 202	Principles of Acct. II	3
HIST 102	World History and Western Civilization	3	ECON 202	Principles of Econ. II	3
ACCT 201	Principles of Acct. I	3	BUS 202	Principles of Management	3
ECON 201	Principles of Econ. I	3	PADM 202	Introduction to Public Admin. And Political science	3
ECON 203	Quantitative Techniques for Business & Econ.	3			
TOTAL		21			18

Junior

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
BFN 301	Financial Management	3	BFN 302	Corporate Finance	3
BFN 303	Investment Theory & Analysis	3	BFN 304	Portfolio Theory & Management	3
BFN 311	Money, Banking & Monetary Theory	3	ECON 308	Research Methodology	3
ECON 313	Business & Econ. Statistics I	3	ECONS 314	Business & Econ. Statistics II	3
EED 301	Entrepreneurship Education I		EED 302	Entrepreneurship Education II	
	Elective	3	BUS 314	Operation Research	3
			BFN 312	Financial Institutions & Markets	3
TOTAL		15			18

Senior

SEMESTER 1			SEMESTER 2			
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours	
BFN 402	Advanced Corporate Finance	3	BFN 402	Financial Planning & Control	3	
BFN 403	Management of Financial Institutions	3	BFN 404	Treasury Management	3	
BFN 405	Financial Engineering & Risk Management	3	BFN 412	International Banking & Finance	3	
BFN 429	Internship in Banking & Finance	3	BFN 430	Project Writing	3	
	Elective	3				
TOTAL		15			12	
			GRAND TOTAL			133

Course Description

BFN 301

Financial Management

Pre-Requisite: ACCT 201

3 Credit Hours

This course introduces the students to financial management in both private and public organizations. Major topics to cover include the meaning and functions of financial management, the distinction between financial management and accounting, financial system and instruments, time value of money, and financial performance analysis. It also deals with a firm's need for funds, the institutions, instruments, and markets concerned with raising funds, and the techniques of analysis used to determine how effectively these funds once raised are invested within the firm.

BFN 302

Corporate Finance

Pre-Requisite: BFN 301

3 Credit Hours

This course is a continuation of BF301. It focuses on financial decision making in the modern corporation. The basic issues include capital budgeting/corporate investment, capital structure, corporate sources of funding, dividend policy and corporate contingent claims, and financial risk management. Course concepts are integrated into the standard theories of risk and return, valuation of assets, and market structure (i.e., the concepts developed in the Financial Management course, will be heavily utilized).

BFN 303

Investment Theory and Analysis

Pre-Requisite: ACCT 201

3 Credit Hours

This course introduces the students to the concept of investment and seeks to develop their skills in investment management. Topics covered include overview of the concept of investment and investment vehicles, risk and return in investment decisions, financial analysis of debt and equity instruments available on organized exchanges and in less tangible over-the-counter markets, as well as bonds valuation. Techniques of such analysis are presented in context with economic and management circumstances within the company, industry, and economy.

BFN 304

Portfolio Theory and Management

Pre-Requisite: BFN 303

3 Credit Hours

This course aims to focus on the application of financial theory to the issues and problems of investment management. Topics include portfolio optimization and asset allocation, the basics of bond pricing and debt portfolio management, the theory of asset pricing models and their implications for investment as well as techniques for evaluating

investment management performance. The course builds upon the analytical skills developed in Financial Management.

BFN 311

Money, Banking and Monetary Theory

Pre-Requisite: ECON 202

3 Credit Hours

This course provides a framework for studying the structure of the banking system and the role of money in the economy. Topics such as commercial banking, central banking, non-banking financial institutions, balance sheets of banking institutions, high- power money, monetary policy, international monetary system, Liberian monetary system, money and capital markets are covered. It also includes interest rate determination, monetary theory, and the conduct of monetary policy.

BFN 312

Financial Institutions and Markets

Pre-Requisite: ECON 202

3 Credit Hours

The theory of financial intermediation is discussed in the context of commercial banks, investment banks, insurance companies, pension funds and other non-bank financial intermediaries. A comparison is made between financing through financial markets and through financial institutions.

BFN 327

Real Estate Investments

Pre-Requisite: Senior Standing

3 Credit Hours

As an introduction to the real estate industry, the course explores all aspects of acquisition, development and disposal of property. Topics include legal requirements of contracts, property rights, valuation and appraisal techniques, marketing, brokerage operations and practices, mortgage financing, leasing, and property management.

BFN 401

Advanced Corporate Finance

Pre-Requisite: BFN 302

3 Credit Hours

This course deals with in-depth analysis of issues in corporate finance. Topics include financial asset pricing, risk and return, short-term and long-term investment decisions, the choice of capital structure, dividend policy, and mergers and acquisitions. Financial statements, taxes, cash flow, and time value of money, discounted cash flow valuation, interest rates, bond valuation, equity markets, stock valuation, and cost of capital, leverage are also discussed. Students are required to practice a computer-based application and present a short research paper on a relevant topic in connection with this course.

BFN 402***Financial Planning and Control******Pre-Requisite: ACCT 202******3 Credit Hours***

This course emphasizes basic concepts and analytical tools essential for financial decision-making and in understanding the market environment in which firms operate. Possible topics include the concept of organizational goals and the selection and preparation of information essential to financial planning and control of firm's separations such as cost estimation and analysis, cost-volume-profit analysis, budgetary control, variance analysis and cost allocation.

BFN 403***Management of Financial Institutions******Pre-Requisite: BFN 311 & 312******3 Credit Hours***

The course looks at asset and liability management in the context of risk, liquidity, and profitability in the Financial Services Industry. The issues of organizational structure and corporate governance are studied.

BFN 404***Treasury Management******Pre-Requisite: Senior Standing******3 Credit Hours***

The focus of this course is the role cash management plays in corporate finance. Topics include cash collection and payment systems, forecasting cash flows, working capital management, electronic fund transfers, check processing, international cash management, and managing bank relationships. Along with other finance courses, this class prepares students for careers in the treasury departments of major companies or with service providers such as banks.

BFN 405***Financial Engineering and Risk Management******Pre-Requisite: BFN 311 & 312******3 Credit Hours***

The course focuses on the analysis and management of various forms of risks associated with the financial services industry, especially banking. It looks at common risks faced by financial institutions including market risk, credit risk, liquidity risk, foreign exchange risk, operational risk, and settlement risk, and as well provides a set of financial innovation techniques usually employed to reduce or eliminate some of these risks. Specifically, the creation of new financial instruments traded in equity markets to hedge against risks, derivative securities such as forwards, futures, swaps, and options are extensively explored alongside the Basel Accord on risk management in banking.

BFN 412***International Banking and Finance******Prerequisite: Senior Standing******3 Credit Hours***

In this course, students get a systematic framework for understanding core issues in international finance. The course examines main issues in international finance, such as the balance of payments, foreign exchange rates and foreign exchange markets, foreign exchange rate determination, international parity conditions, foreign exchange risk and exposure, international capital flow, and financial crises. The course also explores other topics like international banking operations. With this, students become familiar with the international financial environment for doing business

BFN 408***Principles of Insurance******Prerequisite: Senior Standing******3 Credit Hours***

This is a survey course intended to introduce students to the basic concepts of insurance. Topics include the nature of risks, types of insurance carriers and markets, insurance contracts and policies, property and casualty coverage, life and health insurance, and government regulations. The functions of underwriting, setting premiums, risk analysis, loss prevention, and financial administration of carriers are emphasized.

BFN 420***Small Business and Entrepreneurial Finance******Pre-Requisite: Senior Standing******3 Credit Hours***

The course applies theories and concepts of financial issues within the framework of small business and entrepreneurship. Topics include financial analysis and forecasting, valuations, investment and growth strategies.

BFN 429***Internship in Banking and Finance******Pre-Requisite: BFN 303 & Senior Standing******3 Credit Hours***

The course provides experiential learning opportunities for senior students in the banking and finance profession. In addition, it provides practical experience for students wishing to become stock analysts for national brokerage firms and the investment industry. Each student has primary responsibility over one corporation or company in Liberia. The student is expected to become an expert on this company, its products, its financial condition and performance, competitors, and the industry as a whole. This level of expertise is developed by visiting the company's facilities, interviewing executives, analyzing financial statements, and reading relevant research reports, including current business periodicals. Each student is required to prepare a comprehensive written report on his or her assigned company in addition to his/her internship experience with the institution he/she was placed.

BFN 430

Project Writing

3 Credit Hours

The student is expected to conduct, under the supervision of a faculty, an independent research on any chosen topic in finance and economics.

Note: Internship for all courses to be done during the vacation after the student shall have completed the Junior Year, semester II.

Bachelor of Business Administration (BBA)

Program Description

The BBA Business Administration degree program is designed to prepare graduates for employment in the business industry as business managers and executives. The program provides broad based knowledge, skills attitudes for its students in areas such as economics, finance, human resources and marketing; with emphasis on the management of manufacturing and service operations, project management, supply chain analysis, inventory management, logistics planning, advertising and public relations, decision science, and management strategies. The program aims at preparing individuals for the rapid change that characterizes the 21st century business world.

Program Objectives

This program seeks to

- Produce graduates with strong quantitative and research foundations as the next generation of strategic business leaders.
- 1. Produce administrators who could work in all areas of management, whether positioned as strategic, tactical, or operational managers, or entrepreneurs.
- 2. Produce administrators who will be able to pursue continuing education.

Student Learning Outcomes

At a successful completion of the program, students will be able to:

- Identify and communicate the variety of risks and opportunities of doing business in the globally competitive market space.
- Demonstrate knowledge of the principles of management in administering the affairs of a business.
- Demonstrate knowledge of technological and analytical tools used to aid decision making and solving complex problems in organizations.
- Identify and evaluate ethical issues arising from business operations and articulate defensible resolution for practical situations involving financial, human resources and marketing managements.
- Demonstrate competency in managing and applying business principles and strategies to various types of business in various conditions.
- Demonstrate skills and teamwork in a variety of domains.

Curriculum Requirements

Candidates enrolling for the Bachelor of Science (B.Sc.) degree program in Business Administration are expected to successfully complete the course requirements below to be eligible for graduation.

➤ TU General Education Courses (18)	52 credits
➤ College Specific required Courses (7)	21 credits
➤ Elective courses (at least 1)	3 credits
➤ Professional Courses (19)	57 <u>credits</u>
➤ Total	133 credits

Core Requirements:

- *General Education* 52 Credit Hours
- ACCT 201 *Principles of Accounting I*
- ACCT 202 *Principles of Accounting II*
- ECON 201 *Principles of Economics I*
- ECON 202 *Principle of Economics II*
- ECON 203 *Quantitative Techniques for Business and Economics Analysis*
- BUS 202 *Principles of Management*
- PADM 202 *Introduction to Public Administration*
- EED 301 *Entrepreneurship Education I*
- EED 302 *Entrepreneurship Education II*

Concentration Requirements

- BUS 301 *Organization Behavior*
- BUS 307 *Principles of Business Law I*
- BUS 308 *Principles of Business Law II*
- BFN 301 *Financial Management*
- ECON 313 *Economics and Business Statistics I*
- ECON 314 *Economics and Business Statistics II*
- BUS 302 *Human Resource Management*
- BUS 304 *Marketing Management*
- BUS 314 *Operation Research*
- BUS 401 *Business Policy and Strategy*
- BUS 407 *Production & Operation Management*
- BUS 409 *Advertising & sales Promotion*
- BUS 413 *Retail Management*
- BUS 420 *Purchasing Administration & Material Management*
- BUS 408 *International Marketing*
- BUS 300 *Business Ethics*
- BUS 422 *Quality Management*

- BUS 429 *Business Management/Administration Internship*
- BUS 430 *Project Writing*

Electives

- ACCT 301 *Intermediate Accounting I*
- ACCT 302 *Intermediate Accounting II*
- ACCT 303 *Cost Accounting I*
- ACCT 304 *Cost Accounting II*
- ECON 311 *Money, Banking and Monetary Theory*
- ECON 315 *Managerial Economics*
- BFN 303 *Investment Theory and Analysis*
- BFN 304 *Investment Theory and Analysis*
- ACCT 314 *Managerial Accounting*
- ECCT 301 *Intermediate Microeconomic Analysis I*
- ECON 302 *Intermediate Microeconomic Analysis II*
- ECON 303 *Intermediate Macroeconomic Analysis I*
- ECON 304 *Intermediate Macroeconomic Analysis II*
- BUS 306 *Introduction to Electronic Data Processing*
- ACCT 401 *Advanced Accounting I*
- ACCT 402 *Advance Accounting II*
- ACCT 403 *Auditing I*
- ACCT 404 *Auditing II*
- BFN 401 *Advanced Corporate Finance*
- ECON 403 *Advanced Macroeconomic Analysis I*
- ECON 404 *Advanced Macroeconomic Analysis II*
- BUS 413 *Retail Management*
- BUS 411 *Entrepreneurship and Small Business Management*
- BUS 409 *Advertising & Sales Promotion*
- BUS 407 *Manpower Planning*
- BUS 413 *Retail Management*
- BFN 404 *Treasury Management*
- BUS 416 *Project Management*

Bachelor of Business Administration (BBA)

Freshman

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	College Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry & Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY101	Introduction to Psychology	3	PHIL 101	Introduction to Philosophy	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness	1
TOTAL		17			17

Sophomore

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
EVS 201	Intro to Environmental Science.	3	FRE 102 GLE 102 CHN102	Intermediate French Advanced Glebo Advanced Chinese	3
FRE 101 GLE 101 CHN101	Introduction to French Introduction to Glebo Introduction to Chinese	3	ACCT 202	Principles of Acct. II	3
HIST 102	World History and Western Civilization	3	ECON 202	Principles of Econ. II	3
ACCT 201	Principles of Acct. I	3	BUS 202	Principles of Management	3
ECON 201	Principles of Econ. I	3	PADM 202	Introduction to Public Admin. And Political science	3
ECON 203	Quantitative Techniques for Business & Econ.	3			
TOTAL		21			18

Junior

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
BUS 301	Organizational Behavior	3	BUS 302	Human Resource Management	3
BUS 307	Principles of Business Law	3	ECON 308	Research Methodology	3
BFN 301	Financial Management	3	BUS 304	Marketing and Sales Production	3
ECON 313	Business & Econ. Statistics I	3	BUS 314	Operation Research	3
EED 301	Entrepreneurship Education I		EED 302	Entrepreneurship Education II	
	Elective	3	ECON 314	Business & Econ. Statistics II	3
TOTAL		15			15

Senior

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
BUS 401	Business policy & Strategy	3	BUS 400	Business Ethics	3
BUS 407	Production & Operation Management	3	BUS 406	International Marketing	3
BUS 413	Retail Management	3	BUS 420	Purchasing Admin. & Material Management.	3
BUS 429	Business Internship	3	BUS 422	Quality Management	3
BUS 415	Wages and Salary Administration	3	BUS 430	Project Writing	3
	Total	15			15
			GRAND TOTAL		
					133

Course Descriptions

BUS 202

Principles of Management

3 Credit Hours

The course provides the students with an understanding of the theoretical concept of management process and assist in the recognition, understanding and appraisal of the characteristics of a competent manager- planning, organizing, staffing, directing and controlling. It also explores the behavioral aspects of management with emphasis on leadership and motivational theories.

BUS 301

Organization Behavior

Pre-Requisite: BA 202

3 Credit Hours

This course analyzes the characteristics and dynamics of organizational components- inter-personal dynamics, group dynamics, structural design, leadership styles and the effects they have in determining organizational efficiency and effectiveness.

BUS 302

Human Resource Management

3 Credit Hours

This is a course that deals with survey of the personnel functions, recruitment, selection and training, wage and salary administration, job evaluation and employee appraisal. Personnel functions and its relationship to the effective functioning of an organization are discussed along with labor laws, grievance handling and contract negotiation

BUS 304

Marketing Management

3 Credit Hours

The course introduces the students to marketing, some of its basic principles and functional dimension as well as its role in society. It focuses on the firm's analysis, planning and control of policies and strategies of marketing as it relates to market segmentation and measurement, product development, pricing, promotion and distribution. Text cases and class projects are utilized. The course also focuses on the planning, organization, and the control of advertising and sales promotion with the firm. It goes on to examine concepts and theories from behavioral sciences, useful for the understanding and prediction of market place behavior and demand analysis. Topics include objectives setting, copy decisions media decisions. Other topics are socio-economic issues of advertising and sales promotion

BUS 307***Principles of Business Law******3 Credit Hours***

This course introduces the students to the relationship between the business world and the legal community. It shows how the business world would not exist without the legal framework which provides guidance for the law, the constitution, litigation, and the nature of torts and crimes, methods of resolving conflict, principles of the Law of Contracts, sales contracts, the nature and scope of commercial papers of business organizations, the law of agency as applied to business operations, the types of business organizations, the types of partnership and corporation laws.

BUS 314***Operation Research******Pre-Requisite: ECON 203******3 Credit Hours***

The course explores quantitative techniques used to arrive at strategic business decisions. Topics include the methodology of decision-making, Markov chain analysis, transportation model, game theory, linear programming, network model, queuing theory and inventory model.

BUS 400***Business Ethics******3 Credit Hours***

This course is about ethical, legal and human relations dimensions of the business and not-profit environment.

BUS 401***Business Policy and Strategy******3 Credit Hours***

This course gives an overview of strategies engaged by management in decision-making and policy-making. It includes a study and discussion of the cases relating to policy formulation at the top managerial level. Basic economic, industrial and competitive considerations affecting policy implementation strategy in corporation long range development will be explored. Practice in analyzing companies, evaluating problems and making decisions.

BUS 407***Production and Operations Management******Pre-Requisite: BUS 314******3 Credit Hours***

This course is a study of the principles of production management as they relate to product research and development, product design, facility design and layout, capacity planning, worker health and safety, inventory planning and control systems, cost control. Emphasis is placed on the methodologies and techniques of production and operations planning.

BUS 406***International Marketing******3 Credit Hours***

International marketing planning: market selection, demand analysis, product planning and adoptions, channel selection, pricing and promotion, cultural, political, economic and legal environment of international markets: export transaction, activities of multinational corporations are among the topic included in this course.

BUS 415***Wages and Salary Administration******Pre-Requisite: BUS 302******3 Credit Hours***

This course focuses on the basic principles governing the management of efficient and effective wages and salary administration. It examines the framework of job and employee evaluation, the basic systems and plans of compensating, managerial employees and the administrative controls of wages and salaries.

BUS 411***Small Business and Entrepreneurial Management******3 Credit Hours***

This integrative course is geared towards motivating and assisting the students to bring to bear all the skills acquired in other disciplines to start and successfully manage their own business. Main features of the course include analysis of the characteristics of entrepreneurs, analysis of key sources of business of business opportunities. It assesses feasibilities of ventures, sources of seed capital for small business and the critical problems and opportunities in successfully managing a small business.

BUS 413***Retail Management******Prerequisite: BUS 304******3 Credit Hours***

The course is an analytical study involving cases of retailing, stressing managerial functions, retail organization, location, layout, and policies, pricing, brands, credits, records, purchasing, personnel administration, and the administration of retail store.

BUS 420***Purchasing Administration and Material Management******Pre-Requisite: BUS 407******3 Credit Hours***

This course explores the fundamentals of purchasing and materials management, inventory and material control, specifications and standards, pricing policies, quality control, value analysis, layout and location system, storage and preservation methods.

BUS 422

Quality Management

Pre-Requisite: BUS 407

3 Credit Hours

The course is an integrated study of quality issues in the entire supply chain. The course will emphasize the continuous improvement of business processes, as well as the design, establishment, evaluation, and improvement of quality systems in the supply chain. Issues on quality system certification to meet industry and international standards are addressed.

BUS 430

Research

Pre-Requisite: ECON 314.

3 Credit Hours

An independent research conducted under close supervision of one of the faculty staff of the Department in partial fulfillment of the requirements for successful graduation.

Note: Internship for all courses to be done during the vacation after the student shall have completed the Junior Year, Semester II

Bachelor of Arts (BA) – Economics

Program Description

Economics is the study of how society, businesses, organizations and individuals, produce, exchange, buy and sell goods and services. The BA Economics degree program hosted in the College of Management and Administration is designed to provide the students with a solid grasp of economic theory, philosophy, applied economics, research and statistical techniques that would help develop their minds to critical thinking on economic issues as well as policy formulation, and management. The program offers ideal preparation for employment in all areas of graduate work. Students completing the program are expected to be fully equipped with the requisite knowledge, skills and attitudes to both be able to create and make use of job opportunities in the private and public space, in business, finance, government and international affairs as well as other endeavors of life. We are keen to producing students who would meet the requirements for postgraduate studies in economics and related fields. The program has Akron advantage in that it culminates in a senior project where you will demonstrate your abilities and apply what you have learned, both analytically and quantitatively.

Program Objectives

- To produce economy minded students with analytical skills who will work in the fields of economic research and policy development as well as the management of private and public institutions.
- To produce economy minded students that would meet the requirements to pursue higher learning in the field of economics and related fields.

Student Learning Outcomes

- Demonstrate knowledge of the principles of economics and economic models as they apply to various business fields.
- Ability to apply principles and data collection and analyses techniques appropriately.
- Demonstrate competency in applying economics principles to manage various types of business entities.

Curriculum Requirements

Candidates enrolling for the Bachelor of Arts (BA) degree program in Economics are to meet the following four year course requirements to be eligible for graduation.

➤ TU General Education Courses (20)	52 credits
➤ College specific Required Courses (7)	21 credits
➤ Elective Courses (at least 2)	6 credits
➤ Professional Courses (19)	<u>57 credits</u>
➤ Total	136 credits

Core Requirements

- *General Education* *52 Credit Hours*
- *ACCT 201* *Principles of Accounting I*
- *ACCT 202* *Principles of Accounting II*
- *ECON 201* *Principles of Economics I*
- *ECON 202* *Principle of Economics II*
- *ECON 203* *Quantitative Techniques for Business and Economics Analysis*
- *BUS 202* *Principles of Management*
- *PADM 202* *Introduction to Public Administration*
- *EED 301* *Entrepreneurship Education I*
- *EED 302* *Entrepreneurship Education II*

Concentration Requirements

- *ECON 301 & 302* *Intermediate Microeconomic Analysis I& II*
- *ECON 303 & 304* *Intermediate Macroeconomic Analysis I& II*
- *ECON 306* *Survey of the Liberian Economy*
- *ECON 307* *Mathematics for Economists*
- *ECON 313 & 314* *Business and Economics Statistics I& II*
- *ECON 308* *Research Methodology*
- *ECON 403* *History of Economic Thought*
- *ECON 405* *Development Economics*
- *ECON 407* *Mathematical Economics*
- *ECON 408* *Econometrics and Time Series*
- *ECON 402* *Public Finance*
- *ECON 411* *Monetary Economics*
- *ECON 429* *Economic Internship*
- *ECON 430* *Project Writing*

Electives

- *ECONS 404* *Managerial Economics*
- *BFN 301* *Financial Management*
- *BFN 303* *Investment Theory and Analysis*
- *ACCT 301* *Intermediate Accounting I*
- *ACCT 302* *Intermediate Accounting II*
- *ACCT 303* *Cost Accounting I*
- *ACCT 304* *Cost Accounting II*
- *PADM 307* *Administrative Theory and Practice*
- *ECON 317* *Industrial Economics*
- *ECON 312* *International Economic Analysis*
- *BUS 314* *Operation Research*
- *BFN 302* *Corporate Finance*
- *PADM 306* *Administrative Law and Practice*
- *ECON 403* *History of Economic Thoughts*
- *ECON 409* *Economic Planning and Project Evaluation*
- *ECON 415* *Agricultural Economics*
- *BUS 411* *Entrepreneurship and Small Business*
- *BFN 403* *Management of Financial Institutions*
- *ECON 410* *Labor and Resource Economics*
- *BFN 412* *International Business Finance*
- *BFN 404* *Advanced Corporate Finance*

Bachelor of Arts in Economics

Freshman

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	College Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry & Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY101	Introduction to Psychology	3	PHIL 101	Introduction to Philosophy	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness	1
TOTAL		17			17

Sophomore

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
EVS 201	Intro to Environmental Science.	3	FRE 102 GLE 102 CHN102	Intermediate French Advanced Glebo Advanced Chinese	3
FRE 101 GLE 101 CHN101	Introduction to French Introduction to Glebo Introduction to Chinese	3	ACCT 202	Principles of Acct. II	3
HIST 102	World History and Western Civilization	3	ECON 202	Principles of Econ. II	3
ACCT 201	Principles of Accounting . I	3	BUS 202	Principles of Management	3
ECON 201	Principles of Econ. I	3	PADM 202	Introduction to Public Admin. and Political Science	3
ECON 203	Quantitative Techniques for Business & Econ.	3			
TOTAL		21			18

Junior

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ECON 301	Intermediate Microeconomic Analysis I	3	ECON 302	Intermediate Microeconomic Analysis II	3
ECON 303	Intermediate Macroeconomic Analysis I	3	ECON 304	Intermediate Macroeconomic Analysis II	3
ECON 307	Mathematics for Economists	3	ECON 306	Survey of Liberian economy	3
ECON 313	Business & Econ Statistics I	3	ECON 308	Research Methodology	3
EED 301	Entrepreneurship Education I		EED 302	Entrepreneurship II	
BFN 301	Financial Management	3	ECON 314	Business & Econ. Statistics II	3
	Elective	3		Elective	3
TOTAL		18			18

Senior

SEMESTER 1			SEMESTER 2			
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours	
ECON 411	Monetary Economics	3	ECON 404	Managerial Economics	3	
ECON 405	Development Economics	3	ECON 408	Econometrics and Time Series	3	
ECON 407	Mathematical Economics	3	ECON 402	Public Finance	3	
ECON 429	Internship in Economics	3	ECON 430	Project Writing	3	
ECON 403	History of Economic thoughts	3				
	Total	15			12	
			GRAND TOTAL			136

Course Descriptions

ECON 201

Principles of Economics I

3 Credit Hours

The course introduces students to the discipline of economics beginning with the definition, scope and methods of economic analysis. Concepts such as scarcity, choice, opportunity cost and the basic problem of resource allocation are reviewed along with the concepts of demand, supply, and equilibrium price. The study of the firm, market structure and types of business organization are introduced.

ECON 202

Principles of Economics II

3 Credit Hours

This course introduces the students to the study of national economy. Major topics include the nature and scope of macroeconomics, public vs. private sectors, the circular flow of income and expenditure, national income accounting and the uses of national income and output statistics. The concepts of unemployment, inflation, taxation, macroeconomic policy, money, banking, international trade and public finance are explored.

ECON 203

Quantitative Techniques for Business and Economics

Pre-Requisite: Math 101 & 102

3 Credit Hours

This course introduces the students to the use and appreciation of mathematical techniques for business and economic analysis. Topics include overview of the nature and scope of mathematics in business and economics analysis, mathematical symbols, limits, continuity, techniques and functions of several variables; derivative and the derivation of marginal concepts, growth rates and elasticity. The course also treats maximization, minimization and constrained optimization problems. Simple techniques of integration and its application to business and economics are discussed alongside matrix algebra.

ECON 301

Intermediate Microeconomics Analysis I

Pre-Requisite: ECON 201 & ECON 203

3 Credit Hours

The course focuses on price and allocation theory with emphasis on the techniques and methods of analysis. Principles of optimization, the theory of consumer behavior, and the firm and factor market are analyzed.

ECON 302***Intermediate Microeconomics Analysis II******Pre-Requisite: ECON 301******3 Credit Hours***

In continuation of ECON 301, the course starts with production and cost theory and continues with the analysis of market structure and price in terms of equilibrium of the business firm and consumer demand in markets of varying degrees of competition. Programming and activity analysis, welfare economics and general equilibrium analysis are also explored.

ECON 303***Intermediate Macroeconomics Analysis I******Pre-Requisite: ECON 202******3 Credit Hours***

This course deals with the concepts of economic model, national income and basic model of income determination with extension from simple closed economy to four sector economy model. The theories of consumption such as absolute income hypothesis, relative income hypothesis, permanent income hypothesis and the life cycle income hypothesis; theories of investment and the concepts of multiplier and accelerator are studied alongside the labor market, money and prices.

ECON 304***Intermediate macroeconomics Analysis II******Pre-Requisite: ECON 303******3 Credit Hours***

The course explores deeper understanding of the money and product markets using the IS-LM framework. It also discusses fiscal and monetary policy frameworks and extends to the Keynesian vs. monetarists views on unemployment and inflation. The foreign sector and the international monetary system are highlighted.

ECON 306***Survey of the Liberian Economy******3 Credit Hours***

The course is an empirical socio-economic analysis of the features and problems of the Liberian economy, covering such aspects as population, national account, internal trade, external trade and payments, public finance, banking, prices, agriculture, mining, industry, transport and communication. A study of the evolution, formulation and implementation of development plans of Liberia, regional cooperation, a general comparison of the features and problems of Liberia with those of other West African countries are explored.

ECON 307***Mathematics for Economics******Prerequisite: ECON 203******3 Credit Hours***

The course deepens the students understanding and appreciation of mathematical techniques in economic analysis. Topics include comparative statics and dynamics, utility functions, price discrimination, and indifference curves application. It continues with constrained optimization, utility maximizations and minimization, differential, integral and optimization techniques as well as matrices with their respective applications in economics.

ECON 308***Research Methodology******3 Credit Hours***

This course introduces the students to the importance and process of academic research. Major topics to be covered include the nature and importance of research, application of the principles of science to social phenomena, the problems of research in West Africa, and the research process as well as essential parts of a research paper.

ECON 421***International Economics Analysis******3 Credit Hours***

This course provides an analytical framework for the understanding of the reasons for international trade in products and services. Students learn to identify the determinants and patterns of international trade, and the effects on exchange rates and international capital flows in a free global market economy. The course also covers the role of international institutions in the development of international trade, financial markets, and economic growth. Students are introduced to policies that distort international trade and prevent the development of comparative advantage, specialization and economic development. Special emphasis is made on Liberia's performance in international trade.

ECON 313***Business and Economics Statistics I******Pre-Requisite: ECON 203******3 Credit Hours***

This course introduces students to statistical techniques employed in business and economic research. Topics include the definition, types and uses of statistics. The distinctions between descriptive and analytical statistics are highlighted. The process of collecting statistical data for business and economic research and analysis; census, population and sample, pilot surveys, questionnaires, and secondary sources of data. It continues with frequency distribution and diagrammatic representation of statistical data, measures of central tendency and measures of dispersion, regression and correlation and index numbers.

ECON 314***Business and Economics Statistics II******Pre-Requisite: ECON 313******3 Credit Hours***

The course is a continuation of ECON 313. It covers the following topics: The use of probability theory in business and economics research, construction of statistical models for business and economic research, especially the use of statistical tools and techniques such as sample designs and sampling distributions, point and interval estimation, confidence interval, hypothesis testing, chi-square tests of independence, analysis of variance, and the use of extrapolating methods such as moving average and exponential smoothing (time series).

ECON 404***Managerial Economics******Pre-Requisite: ECON 203 & 307******3 Credit Hours***

This course applies microeconomic analysis to specific business decisions. Emphasis is on managerial decision-making upon the basis of comparisons of worth of alternative courses of action with respect to their cost; tools for decision-making; elements of financial accounting; capital budgeting; economics of production; inventory management; application of classical optimization techniques of profit maximization; linear programming and project evaluation.

ECON 317***Industrial Economics******3 Credit Hours***

The course highlights what industrial economics is all about. The nature of the firm, ownership and control problem, theories of the firm- marginalist, behavioral and managerial; perfect competition, monopoly, oligopoly, monopolistic competition, company finance; investment theory, research and development; advertising; performance. The course explores the dimensions and determinant of market structure; concentration, merger and acquisition; integration, economies of scale; condition of entry; market power warfare, pricing and business practices. Others are public policy and regulation, industrial development structure and policy in Liberia -a sample of industry study.

ECON 401***Advanced Economics Analysis******Pre-Requisite: ECONS 301& 307******3 Credit Hours***

The course exposes the students to advance theories and mathematical techniques in economic analysis. Topics include indifference curves, constrained utility maximizations; applications of consumer theory – work and leisure, etc. costs and production functions; optimization in theory of the firm; duopoly, oligopoly and bilateral monopoly; linear programming analysis of the firm; elements of input-output analysis, general equilibrium theory of production; comparative cost; transformation and contract curves gains from

exchange; social and private costs and benefits; theory of distribution of wages, rent, profits and interest; matrix applications in the IS-LM framework, welfare function and Pereto optimum.

ECON 405

Development Economics

Pre-Requisite: ECON 404

3 Credit Hours

The course explores economic growth theories such as Horold-Domar, Solow and the neo-classical growth models etc. It covers problems and policies of domestic development, problems and policies of under developed and developed countries as well as third world emerging economies. Studies are varying: Methods for growth, population, pollution, control problems, United Nations agencies of assistance and foreign aid. This section looks at principles and concepts of development with interest in theories of development; diverse economic structure and common characteristics of developing nations; economics growth and development models.

ECON 403

Histories of Economic Thoughts

3 Credit Hours

This course is a study of economic thoughts from earliest time to present; capitalist and socialist systems from the point of view of various major writers, concepts and periods.

ECON 407

Mathematical Economics

Pre-Requisite: ECON 203 & 313.

This course is an introduction to quantitative analysis of economic behavior. This course seeks to expose students to the essential feature of Macro and Micro economics theories. Mathematical techniques and the assumptions underlying it are developed in comparative statics, partial elasticity, higher order determinants (Jacobian and Bordered -Hessian), Input and output analysis. Methods designed to detect and correct for the violations of these assumptions are examined. Special emphasis is given to the practical application of the procedures discussed through the use of computer exercises.

ECON 408

Econometrics and Time series

Pre-Requisite: ECON 407

3 Credit Hours

An introduction to the analytical and quantitative methods used in economics. Alternative forecasting methodologies for economic time series are analyzed and discussed. The ordinary least-square techniques and the assumptions underlying it are developed. Methods designed to detect and correct for the violation of these assumptions are examined. The foci of the course are: (1) the development of time-series (ARIMA) models and their application to forecasting, (2) the use of standard econometric models for forecasting, and (3) evaluation and comparison of these methods and the conditions

under which each is the appropriate methodology. Special emphasis is given to the practical application of the procedures discussed through the use of computer exercises.

ECON 409

Economic Planning and Project Evaluation

3 Credit Hours

The course is designed to explore the process of economic planning and project evaluation in both theoretical and empirical terms. Planning techniques at both macro and micro levels are covered and thoroughly explained. Basic topics covered are the origin of and rational for planning, social accounting utilization in planning, planning and integration, planning and budgeting implementation and evaluation. Some case studies are also highlighted.

ECON 410

Labor and Resource Economics

3 Credit Hours

The course focuses on the nature of labor force in developing economies. Possible topics include labor force, definition and concepts determinations of sizes and composition of labor force, concepts of unemployment, industrial and occupational distribution of labor force. Informal and the modern sector, labor market theories, economics of wage determination, features of the Liberian labor market, and manpower development. The course also looks at resources and their development.

ECON 411

Monetary Economics

Pre-Requisite: ECON 304

3 Credit Hours

The course defines monetary policy, its objectives and techniques at the disposal of government for its implementation. Theories of demand for money by classical and Keynesian school, Baumol's inventory theoretical approaches to money, Friedman reformation or restatement of quantity theory of money (QTM), the wealth theory, theories of the rate of interest, and role of money in the Macroeconomic model are extensively discussed. Conflicts, trade-offs and monetary coordination, the IS-LM framework and the effectiveness of monetary policy in economic stabilization; international adjustment and liquidity, and monetary policy in Liberia are highlighted.

ECON 415

Agricultural Economics

3 Credit Hours

This course uses the basic concept of economic theory with respect to agriculture on both the demand and supply sides agricultural resources in the Liberian economy and their characteristics. Resource allocation, efficiency and policy consideration are highlighted.

ECON 402***Public Finance******3 Credit Hours***

This course focuses on government revenue and expenditure. Topics include principles of taxation, incidence of taxation, budget and government accounting, government debt management, and government revenue and expenditure of developing economies.

ECON 429***Internship in Economics******3 Credit Hours***

The course provides experiential learning opportunities for senior students in economics. In addition, it provides practical experience for students wishing to aspire as future economists. Each student is required to prepare a comprehensive written report on his or her assigned internship experience with the institution he or she was placed.

ECON 430***Research***

Pre-Requisite: ECON 308 & 314

3 Credit Hours

Under the close supervision of a professor, each student is expected to conduct an independent research on any topic of his/her choice in partial fulfillment of the requirements for the award of the BBA- Economics.

EED 301***Entrepreneurship Education I******3 Credit Hours***

The course seeks to provide the students knowledge, skills and attitudes needed to become successful entrepreneurs; promote positive attitudes among the undergraduate students at the University towards entrepreneurship and business, and foster an enterprising spirit and self-confidence among them. It helps the students develop an entrepreneurial culture and skills that are necessary for building an entrepreneurial foundation for the nation. A combination of these will serve as a catalyst for sustainable private sector growth in Liberia, play a major role in the fight against the hurdles of youth unemployment and poverty, and also promote personal development. The course is taught on a modular basis from module one through three covering topics like understanding entrepreneurship and the concept of work and business, becoming an entrepreneur, and scanning the environment for business opportunities.

EED 302***Entrepreneurship Education II***

Pre-Requisite: EED 301

3 Credit Hours

The course continues from EE 301, and seeks to enhance the skills of the students on practical entrepreneurial activities borrowing from the knowledge gained from EE 301. There are two additional modules to be covered with topics such as business research and developing a business plan, as well as starting and operating a successful business.

Note: Internship for all courses to be done during the vacation after the student shall have completed the Junior Year, Semester II.

Bachelor of Public Administration (BPA)

Program Description

The BPA Public Administration degree program provides an academic background for individuals pursuing a career in both government and non-governmental organizations. The students are expected to acquire thorough knowledge of the mechanics of government and how it achieves its objectives. The course strives to teach students the various theories of administration and its applied circumstances.

Program Objectives

The program aims to provide students with an understanding of the extensive role of government in modern society with particular reference to the following:

- The relationship between the public sector and the wider society;
- The process of public policy-making and public management;
- Trends and development in Liberia, Africa, and Western society including the process of African integration;
- Prepare students for entry level position in government; and
- Provide students with the educational pre-requisites for graduate study.

Learning Outcomes

Students are able to:

- Demonstrate knowledge of the principles of Public Administration so as to be in readiness for the administering of services in governmental affairs.
- Administer Public Administration theories and principles appropriately.
- Demonstrate competency in analyzing the differences between Governmental and Non-governmental organizations (NGOs) and their responsibilities.
- Compare and contrast the pros and cons of government as a centralized vs decentralized institution after taking a critical look at the Liberian Agenda for Transformation.

Course Requirements

Candidates enrolling for the Bachelor of Public Administration (BPA) degree program in Public Administration at Tubman University are expected to successfully complete the below course requirements to be qualified for graduation.

➤ TU General Education Courses (20)	52 credits
➤ College Specific Required courses (7)	21 credits
➤ Elective Courses. (at least 2)	6 credits
➤ Professional courses (19)	<u>57 credits</u>
➤ Total	136 credits

Core Requirements:

• Gen Education	52 Credit Hours
• ACCT 201	Principles of Accounting I
• ACCT 202	Principles of Accounting II
• ECON 201	Principles of Economics I
• ECON 202	Principle of Economics II
• ECON 203	Quantitative Techniques for Business and Economics Analysis
• BUS 202	Principles of Management
• PADM 202	Introduction to Public Administration
• EED 301	Entrepreneurship Education I
• EED 302	Entrepreneurship Education II

Concentration Requirements

• PADM 307	Administrative Theory & Practice
• PADM 311	Government and NGO
• PADM 317	Organizational Communication
• BFN 301	Financial Management
• ECON 313	Business and Economics Statistics I
• ECON 314	Business and Economics Statistics II
• PADM 304	Development Planning and Administration
• PADM 306	Administration Law and Practice
• PADM 308	Public Organization Structure & Behavior
• ECON 308	Research Methodology
• PADM 401	Comparative Public Administration
• PADM 403	Public Personnel Administration
• PADM 405	Public Finance Administration
• PADM 417	Public Policy Process
• PADM 404	Multi National and Community Development
• PADM 420	Issues in Liberian and African Development
• PADM 408	Rural Development and Local Govt. Administration
• PADM 429	Public Administration Internship

- PADM 430 *Project Writing*

Electives

- ACCT 301 *Intermediate Accounting I*
- ACCT 302 *Intermediate Accounting II*
- ACCT 303 *Cost Accounting I*
- ACCT 304 *Cost Accounting II*
- BFN 311 *Money, Banking and Monetary Theory*
- ECON 301 *Intermediate Microeconomic Analysis I*
- ECON 303 *Intermediate Microeconomic Analysis II*
- ECON 303 *Intermediate Macroeconomic Analysis I*
- ECON 304 *Intermediate Macroeconomic Analysis II*
- BFN 303 *Investment Theory and Analysis*
- BUS 301 *Organizational Behavior*
- PADM 201 *Introduction to Political Science*
- BUS 307 *Principles of Business Law I*
- BUS 308 *Principle of Business Law II*
- BUS 302 *Human Resource Management*
- BUS 304 *Marketing Management*
- BUS 314 *Operation Research*
- ACCT 314 *Managerial Accounting*
- BUS 306 *Introduction to Electronic Data Processing*
- ACCT 401 *Advanced Accounting I*
- ACCT 402 *Advanced Accounting II*
- ACCT 403 *Auditing I*
- ACCT 404 *Auditing II*
- ECON 403 *Development Economics I*
- ECON 404 *Development Economics II*
- BUS 407 *Production & Operation Management*
- BUS 401 *Business Policy and Strategy*
- BUS 409 *Advertising & Sales Promotion*
- BUS 413 *Retail Management*
- BUS 411 *Entrepreneurship and Small Business Mgt.*
- ECON 418 *Public Finance*
- BUS 408 *Managerial Psychology*
- BUS 410 *Wages & Salary Administration*
- BFN 404 *Advanced Corporate Finance*
- BUS 402 *Marketing Research*
- BUS 408 *International Marketing*
- BUS 420 *Purchasing Administration & Material Mgt.*
- BUS 416 *Project Management*
- PADM 402 *Local Government & Rural Dev. Adm*

Bachelor of Public Administration (BPA)

Freshman

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 101	College Grammar and Phonetics	3	ENG 102	Academic Reading and Writing	3
MATH 101	College Algebra	3	MATH 102	Analytical Geometry & Trigonometry	3
BIO 101	General Biology	4	CHEM 101	Principles of Chemistry	4
PSY101	Introduction to Psychology	3	PHIL 101	Introduction to Philosophy	3
CSE 101	Introduction to Computer	3	CSE 102	Computer Literacy	3
PED 101	Physical Fitness and Wellness I	1	PED 102	Physical Fitness and Wellness	1
TOTAL		17			17

Sophomore

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ENG 201	Technical Communication and Public Speaking	3	ENG 204	Introduction to Literature	3
EVS 201	Intro to Environmental Science.	3	FRE 102 GLE 102 CHN102	Intermediate French Advanced Glebo Advanced Chinese	3
FRE 101 GLE 101 CHN101	Introduction to French Introduction to Glebo Introduction to Chinese	3	ACCT 202	Principles of Acct. II	3
HIST 102	World History and Western Civilization	3	ECON 202	Principles of Econ. II	3
ACCT 201	Principles of Accounting . I	3	BUS 202	Principles of Management	3
ECON 201	Principles of Econ. I	3	PADM 202	Introduction to Public Admin. and Political Science	3
ECON 203	Quantitative Techniques for Business & Econ.	3			
TOTAL		21			18

Junior

SEMESTER 1			SEMESTER 2		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
PADM 307	Administrative Theory & Practice	3	PADM 304	Development Planning & Admin.	3
PADM 317	Organizational Communication	3	PADM 306	Administrative Law & Practice	3
BFN 301	Financial Management	3	PADM 308	Public Organizational structure & Behavior	3
ECON 313	Business & Econ. Statistics I	3	ECON 314	Business & Econ. Statistics II	3
PADM 311	Government and NGO	3	ECON 308	Research Methodology	3
EED 301	Entrepreneurship Education		EED 302	Entrepreneurship Education	
	Elective	3		Elective	3
TOTAL		18			18

Senior

SEMESTER 1			SEMESTER 2			
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours	
PADM 401	Comparative Public Administration	3	PADM 402	Local Govt.and Rural Development Administration	3	
PADM 403	Public Personnel Administration	3	PADM 420	Issues in Liberian & African Development	3	
PADM 405	Public Finance Administration	3	PADM 430	Project Writing	3	
PADM 417	Public Policy Process	3	PADM 404	Govt. and Multi National Organization	3	
PADM 429	Internship	3				
	Total	15			12	
			GRAND TOTAL			136

Course Descriptions

PADM 201

Introductions to Political Science

3 Credit Hours

The course is designed to familiarize the students with some of the concepts, contents and method of analysis currently in used in the Political Science and other social science disciplines. The main learning areas covered include a global view of political beliefs, actions and systems as well as specific view of public problems, political institutions and policy making.

PADM 202

Introduction to Public Administration & Political Science

3 Credit Hours

This course focuses primarily on the functional aspects of the three branches of government, a general introduction to the science and art of public administration, the elements, functions and processes of public administration, simple decision making models, financial and personnel administration, organizational theories and leadership concepts. It also underscores the principles of public administration in respect to accomplishing public goals, public service and the community. The course evaluates public administration as academic discipline, analyzing the respective schools of thought, organizational charts and hierarchies, civil servants, spoil and merit systems. Prerequisite:

PADM 304

Development Planning and Administration

Pre-Requisite: PA 202 & EC 202

3 Credit Hours

This course focuses on the nature, objective and functions of development planning and administration in the third world, with special reference to Liberia. The course includes the rising role of social-economic planning models, implementation and coordination of comprehensive national, inter-regional, and sectoral development programs including the mobilization and allocation of human and financial resources. It also explores the functional aspects of rural, urban, and regional community development

PADM 307

Administrative Theory and Practice

Pre-Requisite: PA 202

3 Credit Hours

Students exhibit knowledge and understanding of the administrative behavior, theories and practice. Topics covered social, psychological and behavioral theories of organization; concepts of administrative leadership organization and the individual; emphasis on the use of legal and administrative power in government and public organizations, ecological constraints and the styles used in the exercises of social, legal and administrative power.

PADM 308***Public Organizational Structure and Behavior******Pre-Requisite: PA 202******3 Credit Hours***

The course enables students articulate a thorough knowledge of public organizational structure, identify key concepts central to organizing and changing public agencies for social needs. The concepts are traced from the historical development of contemporary theories, and projection of trends in the public agencies. Bureaucratic theory underlying contemporary organizational assumptions of man are also explored.

PADM 317***Organizational Communication******Pre-Requisite: PADM 202******3 Credit Hours***

The course is organized in three sections: a) communication and the organization, b) introduction to basic communication models and c) cybernetic and intra organizational communication processes and problems. This course covers verbal, written, implied, behavioral electronic informal and interpersonal forms of organization communication.

PADM 401***Comparative Public Administration******3 Credit Hours***

The course is intended to help students demonstrate proficiency in administration management. A comparison is made between the administrative systems of industrial nations and those of the underdeveloped world alongside the political and ecological landscape styles of these two separate worlds.

PADM 402***Rural Development Administrations******3 Credit Hours***

The course is the study of the Liberian Government and its socio-economic development policy objectives and programs as it relates to the rural areas in Liberia. Emphasis is placed on the government's decentralization policy and the evaluation of rural/culture systems, planning and development of communities.

PADM 403***Public Personnel Administration******3 Credit Hours***

The course analyzes the personnel problems with emphasis on supervision and management of public and private employees and public organization in an age of change. Special emphasis is made to the Liberian civil service agency and its function in recruitment, examination, selection position classification pay plan, grievances and complains and the retirement system.

PADM 404***Multi-National Organizations and Community Development******3 Credit Hours***

This course is designed to enhance students to critically examine the contributions of Multi-National Organizations in the development of Communities in Africa general and Liberia in particular. It underscores the Corporate Social Responsibility of Multi-National Organization in up lifting communities that have been deprived of basic needs.

PADM 405***Public Financial Administration******3 Credit Hours***

The course looks at management trends in public sector finance- administration, budgetary procedures and techniques, as well as control and monitoring systems with special reference to Liberia. Its analysis is primarily based on the Liberian Government budget as an instrument of economic and social policy and a tool for efficient financial management and coordination. Emphasis is also placed on the four basic phases of the Liberian budgetary process- executive preparation and budget to check on inflation, reverse trade recession, improve the balance of payments and distribute incomes. Furthermore, theories and social consequences of budget decision-making and practices of budgetary process at all levels of government are highlighted. Other critical topics explore include cash management, capital projects management, debt administration, disbursement, funds management and auditing.

PADM 417***Public Policy Process******3 Credit Hours***

The focus of this course is on the role of administrators in policy formulation, analysis and decision-making with special emphasis on the study of methods and techniques by which public policies are formulated, analyzed, implemented and evaluated.

PADM 420***Issues in Liberian and African Development******3 Credit Hours***

The course integrates the development studies and other related courses offered in other universities. It is cross-disciplinary in its approach and mainly concerns itself with the dynamics and problem which affect the development and modernization process of Liberia in particular and Africa in general.

PADM 408***Local Government Administration******3 Credit Hours***

The course looks at the role of decentralized local government in the in the planning and political development of local communities. It discusses functions and relationship of various line ministries representatives in the counties with county superintendent and central offices/government.

PADM 429

Internship in Public Administration

PADM 430

Project Writing (3 credit hours)

Prerequisite: ECON 314

Each student is required to conduct independent academic research in any area of interest in Public Administration but with approval from the assigned supervisor in partial fulfillment of the requirements for graduation.

Note: Internship for all courses to be done during the vacation after the student shall have completed the Junior Year, Semester II.

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Seyaker, Davis, MPH
Tamba, Jackson, MA
Theoway, Phillip, MSEE
Thomas-Connor, Iona, MAN

Tokpah, Mulbah, MPH, MSc. MH

Tubman, Eli, MA

Vandi, Patrick, MPA

Weetol-Geninyan, Willimai, MSN. Ed.

Wesley, Mlen-Too, Ph. D.

Wilson, Mark, MS

Woart, Henry, BS

Woyea, Godfrey, BS

Yaradua, Abu 'bakar, MA

LIBRARY STAFF

STEPHEN BROWN, MA
Head Librarian

JENNIFER DIOH, BA
Librarian

ROBERT KOTI-KOTI, BS
Assistant Librarian

JULIA NAT-DOE, BA
Library Assistant

FRANCIS WESSEH, B.Ed.
Library Assistant

PAUL HARMON
Library Assistant

HAWAH JALLAH
Library Assistant

THEODORA DICKSON
Library Assistant

ROSELINE BOIMAH
Library Assistant

OFFICE OF ACADEMIC SUPPORT SERVICES

DENNIS WALKER, Ph. D.
AVP for Academic Support Services

MATTHEW AKINSELURE, MA
Director of Admissions

RANDELL DAUDA, MA
Registrar

SYLVESTER NAH, BS
Assistant Registrar

OFFICE OF FINANCIAL AID

VIOLA LASANA LINCOLN, MA
Director, Financial Aid

UNIVERSITY CURRICULUM COMMITTEE

MR. ISAAC GEORGE, MPA

Chair of the Committee

Members

MR. SUNDAY DAWODU, MA

College of Arts and Sciences

MR. ABUBAKAR YARADUA, MA

College of Agriculture and Food Science

MR. WILLIAM HARRIS

College of Education

MR. DAVID SEYAKER

College of Health Sciences

MR. JEMIGBEYI SYLVESTER, MS

College of Engineering and Technology

MR. ELI LUMEI

Faculty Senate

ACADEMIC CALENDAR 2016- 2020

Academic Year 2016-17

Semester I, 2016-17

August 1-26, 2016	Registration-Access to College
August 10-12, 2016	Student Orientation
August 12, 2016	Last Day for filing Request for Change of Grades to Registrar's Office
August 11, 2016	Curriculum Committee meeting 12:00-2:00 pm
August 13, 2016	Student Recruitment Fair – Monrovia
August 15-26, 2016	Registration – Regular Students
August 25-27, 2016	Faculty Orientation
August 24, 2016	NATIONAL HOLIDAY – Flag Day
August 29, 2016	Opening Convocation
August 30, 2016	First Day of Classes
August 30 – September 2, 2016	Late Registration
September 5-9, 2016	Add/Drop
September 8, 2016	Curriculum Committee Meeting 12:00-2:00 pm
September 9, 2016	CHS: Nursing – Capping & Candlelight Ceremony
September 14, 2016	Charter Day
September 16, 2016	Student Government Association Induction
September 17, 2016	Open House – Harper
September 22, 2016	Last Day for Submitting Admissions Applications
September 22 - 24, 2016	Games: Intramural
September 27, 2016	Posting of the List of Qualified Candidates for Placement Exams
October 1, 2016	Placement Examination – Harper & Monrovia
October 6, 2016	Curriculum Committee meeting 12:00-2:00 pm
October 8, 2016	Qualifying Examinations
October 11, 2016	Last Day for Submitting Transfer Applications
October 14, 2016	Posting of List of Accepted Transfer Students
October 14, 2016	Posting of Placement Examination Results
October 17-22, 2016	Midterm Examinations
October 28, 2016	Last Day for Submission of Mid-term Examination Grades to Departments and Colleges
November 3, 2016	NATIONAL HOLIDAY – Thanksgiving Day
November 7-11, 2016	Pre-Registration
November 7 – December 16, 2016	Application for Graduation
November 21-25, 2016	Processing of Requests for Incomplete Grades (INC)
November 25, 2016	Miss TU Pageant
November 29, 2016	NATIONAL HOLIDAY – William V.S. Tubman Birthday
November 30 - December 16, 2016	Registration for New Students - Access to College
December 3, 2016	Last Day of Classes

December 5-10, 2016	Final Examinations
December 8, 2016	Curriculum Committee Meeting 12:00-2:00 pm
December 15, 2016	Last Day for Submission of Grades to the Office of the Registrar
December 15, 2016	Issuance of Clearance- Access to College
December 16, 2016	University Closes
December 19, 2016 – January 6, 2017	HOLIDAYS BREAK

Semester II, 2016-17

January 9, 2017	University Re-opens
January 9-13, 2017	Registration for Access to College: Returning & New Students-Late Registration
January 12, 2017	Curriculum Committee Meeting 12:00-2:00pm
January 12-13, 2017	Student Orientation
January 11-13, 2017	Issuance of Grade Slips
January 13, 2017	Publication of Academic Standing List
January 13, 2017	Distribution of Probation and Suspension Letters
January 16-27, 2017	Registration – Regular Students
January 16-20, 2017	Processing of Requests for Change of Grades
January 30, 2017	First day of Classes
January 30 – February 1, 2017	Late Registration
February 2-3, 2017	Student Career Fair
February 4, 2017	General Faculty Meeting
February 6, 2017	Publication – Potential Graduates list
February 7-10, 2017	Processing of Change of Incomplete Grades (INC)
February 9, 2017	Curriculum Committee Meeting 12:00-2:00pm
February 11, 2017	NATIONAL HOLIDAY – Armed Forces Day
February 13-17, 2017	Add/Drop
February 18, 2017	Students Recruitment Fair – Monrovia
February 18, 2017	Student Games
February 25, 2017	Open House-Harper
March 2, 2017	Last Day for Submitting Admissions Applications
March 3, 2017	Mr. TU Pageant
March 8, 2017	NATIONAL HOLIDAY – Decoration Day
March 9, 2017	Curriculum Committee Meeting 12:00-2:00pm
March 15, 2017	NATIONAL HOLIDAY – Joseph Jenkins Roberts Birthday
March 20-25, 2017	Mid-term Examinations
March 29, 2017	Last day for Submission of Mid-term Examination Grades
April 3, 2017	Posting of the List of Qualified Candidates for Placement Exams
April 8, 2017	Placement Examination, Harper & Monrovia
April 13, 2017	Curriculum Committee Meeting 12:00-2:00pm
April 14, 2017	NATIONAL HOLIDAY – Fast and Prayer Day
April 17, 2017	Last Day for Transfer Application
April 17-21, 2017	Pre-Registration

April 21, 2017	Posting of Placement Examination Results
April 21, 2017	Posting of List of Accepted Transfer Students
April 24, 2017	Comprehensive Exams Begin
May 2, 2017	Last Day for Returning Students to Submit Financial Aid Applications for the Upcoming Semester I
May 5, 2017	Last Day for Submission of Results- Comprehensive Exams
May 5, 2017	Last Day of Classes (Graduating Seniors)
May 8-9, 2017	Final Examinations (Graduating Seniors)
May 11, 2017	Last Day for Submission of Grades (Graduating Seniors)
May 11, 2017	Curriculum Committee Meeting 12:00-2:00pm
May 13, 2017	Last Day of Classes (General Student Body)
May 14, 2017 (Will be celebrated on May 15, 2017)	NATIONAL HOLIDAY – Unification Day
May 16-19, 2017	Final Examinations (General Student Body)
May 16, 2017	Issuance of Grade Slips (Graduating Seniors)
May 16, 2017	Posting of Preliminary List of Graduating Students
May 18, 2017	Posting of Final List of Graduating Students
May 24, 2017	Last Day for Submission of Grades to the Office of the Registrar – (General Student Body)
May 26, 2017	End of Academic Year Faculty Meeting
May 27-31, 2017	Graduation Activities
May 29, 2017	Issuance of Grade Slips (General Student Body)
May 29, 2017	Distribution of Probation and Suspension Letters
May 29, 2017	Awards Ceremony – President’s, Deans, and Honors recipients
May 31, 2017	Graduation Day
June 1, 2017 – July 31, 2017	Annual Break

Vacation School 2016-17

May 23 – 27, 2017	Registration
June 5, 2017	First Day of Classes
June 27 – 30, 2017	Mid-term Examinations
July 18-21, 2017	Final Examinations
July 26, 2017	NATIONAL HOLIDAY – Independence Day
July 27, 2017	Last Day for Submission of Grades
August 3, 2017	Issuance of Grade Slips

Academic Year 2017-2018

Semester I, 2017-18

August 1-25, 2017	Registration-Access to College
August 11, 2017	Last Day for filing Request for Change of Grades to the Registrar's Office
August 9-11, 2017	Student Orientation
August 3, 2017	Curriculum Committee meeting 12:00-2:00 pm
August 12, 2017	Student Recruitment Fair – Monrovia
August 14-25, 2017	Registration – Regular Students
August 23-26	Faculty Orientation
August 24, 2017	NATIONAL HOLIDAY – Flag Day
August 28, 2017	Opening Convocation
August 29, 2017	First Day of Classes
August 29 – September 1, 2017	Late Registration
September 4-8, 2017	Add/Drop
September 8, 2017	Student Government Association Induction
September 14, 2017	Curriculum Committee Meeting 12:00-2:00 pm
September 14, 2017	Charter Day
September 15, 2017	CHS: Nursing – Capping & Candlelight Ceremony
September 16, 2017	Open House – Harper
September 21, 2017	Last Day for Submitting Admissions Applications
September 21-23, 2017	Games: Intramural
September 26, 2017	Posting of the List of Qualified Candidates for Placement Exams
October 7, 2017	Placement Examination – Harper & Monrovia
October 12, 2017	Curriculum Committee meeting 12:00-2:00 pm
October 10, 2017	Last Day for Submitting Transfer Applications
October 13, 2017	Posting of List of Accepted Transfer Students
October 14, 2017	Qualifying Examinations
October 20, 2017	Posting of Placement Examination Results
October 16-21, 2017	Midterm Examinations
October 27, 2017	Last Day for Submission of Mid-term Examination Grades to Departments and Colleges
November 2, 2017	NATIONAL HOLIDAY – Thanksgiving Day
November 6-10, 2017	Pre-Registration
November 6 – December 15, 2017	Application for Graduation
November 20-24, 2017	Processing of Requests for Incomplete Grades (INC)
November 24, 2017	Miss TU Pageant
November 29, 2017	NATIONAL HOLIDAY – William V.S. Tubman Birthday
November 30 - December 15, 2017	Registration for New Students - Access to College
December 1, 2017	Last Day of Classes

December 4-9, 2017	Final Examinations
December 14, 2017	Curriculum Committee Meeting 12:00-2:00 pm
December 14, 2017	Last Day for Submission of Grades to the Office of the Registrar
December 14, 2017	Issuance of Clearance- Access to College
December 15, 2017	University Closes
December 18, 2017 – January 5, 2018	HOLIDAYS BREAK

Semester II, 2017-18

January 8, 2018	University Re-opens
January 8-12, 2018	Registration for Access to College: Returning & New Students-Late Registration
January 11, 2018	Curriculum Committee Meeting 12:00-2:00pm
January 11-12, 2018	Student Orientation
January 10-12, 2018	Issuance of Grade Slips
January 12, 2018	Publication of Academic Standing List
January 12, 2018	Distribution of Probation and Suspension Letters
January 15-26, 2018	Registration – Regular Students
January 15-19, 2018	Processing of Requests for Change of Grades
January 29, 2018	First day of Classes
January 29 – February 2, 2018	Late Registration
February 1-2, 2018	Student Career Fair
February 3, 2018	General Faculty Meeting
February 5, 2018	Publication – Potential Graduates list
February 6-9, 2018	Processing of Change of Incomplete Grades (INC)
February 8, 2018	Curriculum Committee Meeting 12:00-2:00pm
February 11, 2018 (Will be celebrated on Feb. 12, 2018)	NATIONAL HOLIDAY – Armed Forces Day
February 13-16, 2018	Add/Drop
February 17, 2018	Students Recruitment Fair – Monrovia
February 17, 2018	Student Games
February 24, 2018	Open House-Harper
March 1, 2018	Last Day for Submitting Admissions Applications
March 2, 2018	Mr. TU Pageant
March 7, 2018	NATIONAL HOLIDAY – Decoration Day
March 8, 2018	Curriculum Committee Meeting 12:00-2:00pm
March 15, 2018	NATIONAL HOLIDAY – Joseph Jenkins Roberts Birthday
March 19-24, 2018	Mid-term Examinations
March 28, 2018	Last day for Submission of Mid-term Examination Grades
April 2, 2018	Posting of the List of Qualified Candidates for Placement Exams
April 7, 2018	Placement Examination, Harper & Monrovia
April 12, 2018	Curriculum Committee Meeting 12:00-2:00pm
April 13, 2018	NATIONAL HOLIDAY – Fast and Prayer Day

April 16, 2018	Last Day for Transfer Application
April 16-20, 2018	Pre-Registration
April 20, 2018	Posting of Placement Examination Results
April 20, 2018	Posting of List of Accepted Transfer Students
April 23, 2018	Comprehensive Exams Begin
May 1, 2018	Last Day for Returning Students to Submit Financial Aid Applications for the Upcoming Semester I
May 4, 2018	Last Day for Submission of Results- Comprehensive Exams
May 4, 2018	Last Day of Classes (Graduating Seniors)
May 7-8, 2018	Final Examinations (Graduating Seniors)
May 10, 2018	Last Day for Submission of Grades (Graduating Seniors)
May 10, 2018	Curriculum Committee Meeting 12:00-2:00pm
May 12, 2018	Last Day of Classes (General Student Body)
May 14, 2018	NATIONAL HOLIDAY – Unification Day
May 15-19, 2018	Final Examinations (General Student Body)
May 15, 2018	Issuance of Grade Slips (Graduating Seniors)
May 15, 2018	Posting of Preliminary List of Graduating Students
May 17, 2018	Posting of Final List of Graduating Students
May 24, 2018	Last Day for Submission of Grades to the Office of the Registrar– (General Student Body)
May 25, 2018	End of Academic Year Faculty Meeting
May 26-31, 2018	Graduation Activities
May 29, 2018	Issuance of Grade Slips (General Student Body)
May 29, 2018	Distribution of Probation and Suspension Letters
May 29, 2018	Awards Ceremony – President’s, Deans, and Honors recipients
May 31, 2018	Graduation Day
June 1, 2018 – July 31, 2018	Annual Break

Vacation School 2017-18

May 22 – 28, 2018	Registration
June 4, 2018	First Day of Classes
June 25 – 29, 2018	Mid-term Examinations
July 16-20, 2018	Final Examinations
July 26, 2018	NATIONAL HOLIDAY – Independence Day
July 27, 2018	Last Day for Submission of Grades
July 31, 2018	Issuance of Grade Slips

Academic Year 2018-2019

Semester I, 2018-19

August 1-23, 2018	Registration-Access to College
August 9, 2018	Curriculum Committee meeting 12:00-2:00 pm
August 6-10, 2018	Processing of Request for Change of Grades
August 8-10, 2018	Student Orientation
August 11, 2018	Student Recruitment Fair – Monrovia
August 13-27, 2018	Registration – Regular Students
August 22-25	Faculty Orientation
August 24, 2018	NATIONAL HOLIDAY – Flag Day
August 28, 2018	Opening Convocation
August 29, 2018	First Day of Classes
August 29 – September 4, 2018	Late Registration
September 4-10, 2018	Add/Drop
September 13, 2018	Curriculum Committee Meeting 12:00-2:00 pm
September 14, 2018	CHS: Nursing – Capping & Candlelight Ceremony
September 14, 2018	Charter Day
September 15, 2018	Open House – Harper
September 20, 2018	Last Day for Submitting Admissions Applications
September 20-22, 2018	Games: Intramural
September 21, 2018	Student Government Association Induction
September 25, 2018	Posting of the List of Qualified Candidates for Placement Exams
October 6, 2018	Placement Examination – Harper & Monrovia
October 9, 2018	Last Day for Submitting Transfer Applications
October 11, 2018	Curriculum Committee meeting 12:00-2:00 pm
October 12, 2018	Posting of List of Accepted Transfer Students
October 13, 2018	Qualifying Examinations
October 19, 2018	Posting of Placement Examination Results
October 15-20, 2018	Midterm Examinations
October 26, 2018	Last Day for Submission of Mid-term Examination Grades to Department and Colleges
November 1, 2018	NATIONAL HOLIDAY – Thanksgiving Day
November 5-9, 2018	Pre-Registration
November 5 – December 14, 2018	Application for Graduation
November 19-22, 2018	Processing of Requests for Incomplete Grades (INC)
November 23, 2018	Ms. TU Pageant
November 29, 2018	NATIONAL HOLIDAY – William V.S. Tubman Birthday
November 30 - December 14, 2018	Registration for New Students - Access to College
December 7, 2018	Last Day of Classes
December 10-15, 2018	Final Examinations
December 13, 2018	Curriculum Committee Meeting 12:00-2:00 pm

December 18, 2018	Last Day for Submission of Grades to the Office of the Registrar
December 18, 2018	Issuance of Clearance- Access to College
December 18, 2018	University Closes
December 19, 2018 – January 4, 2019	HOLIDAYS BREAK

Semester II, 2018-19

January 7, 2019	University Re-opens
January 7-11, 2019	Registration for Access to College: Returning & New Students-Late Registration
January 10, 2019	Curriculum Committee Meeting 12:00-2:00pm
January 10-11, 2019	Student Orientation
January 9-11, 2019	Issuance of Grade Slips
January 11, 2019	Publication of Academic Standing List
January 11, 2019	Distribution of Probation and Suspension Letters
January 14-25, 2019	Registration – Regular Students
January 14-18, 2019	Processing of Requests for Change of Grades
January 28, 2019	First day of Classes
January 28 – February 1, 2019	Late Registration
January 31 - February 1, 2019	Student Career Fair
February 2, 2019	General Faculty Meeting
February 4, 2019	Publication – Potential Graduates list
February 5-8, 2019	Processing of Change of Incomplete Grades (INC)
February 11, 2019	NATIONAL HOLIDAY – Armed Forces Day
February 12-15, 2019	Add/Drop
February 14, 2019	Curriculum Committee Meeting 12:00-2:00pm
February 16, 2019	Students Recruitment Fair – Monrovia
February 16, 2019	Student Games
February 23, 2019	Open House-Harper
February 28, 2019	Last Day for Submitting Admissions Applications
March 1, 2019	Mr. TU Pageant
March 6, 2019	NATIONAL HOLIDAY – Decoration Day
March 14, 2019	Curriculum Committee Meeting 12:00-2:00pm
March 15, 2019	NATIONAL HOLIDAY – Joseph Jenkins Roberts Birthday
March 18-22, 2019	Mid-term Examinations
March 27, 2019	Last day for Submission of Mid-term Examination Grades
April 1, 2019	Posting of the List of Qualified Candidates for Placement Exams
April 6, 2019	Placement Examination, Harper & Monrovia
April 11, 2019	Curriculum Committee Meeting 12:00-2:00pm
April 12, 2019	NATIONAL HOLIDAY – Fast and Prayer Day
April 15, 2019	Last Day for Transfer Application
April 15-19, 2019	Pre-Registration

April 19, 2019	Posting of Placement Examination Results
April 19, 2019	Posting of List of Accepted Transfer Students
April 22, 2019	Comprehensive Exams Begin
April 30, 2019	Last Day for Returning Students to Submit Financial Aid Applications for the Upcoming Semester I
May 3, 2019	Last Day for Submission of Results- Comprehensive Exams
May 3, 2019	Last Day of Classes (Graduating Seniors)
May 6-7, 2019	Final Examinations (Graduating Seniors)
May 9, 2019	Last Day of Submission of Grades (Graduating Seniors)
May 9, 2019	Curriculum Committee Meeting 12:00 – 2:00 PM
May 10, 2019	Last Day of Classes (General Student Body)
May 13 – 18, 2019	Final Examinations (General Student Body)
May 14, 2019	NATIONAL HOLIDAY – Unification Day
May 15, 2019	Issuance of Grade Slips (Graduating Senior)
May 15, 2019	Posting of Preliminary List of Graduating Students
May 16, 2019	Posting of Final List of Graduating Students
May 23, 2019	Last Day for Submission of Grades to the Office of the Registrar (General Student Body)
May 24, 2019	End of Academic Year Faculty Meeting
May 25 – 31, 2019	Graduation Activities
May 29, 2019	Issuance of Grade Slips (General Student Body)
May 29, 2019	Distribution of Probation and Suspension Letters
May 29, 2019	Awards Ceremony – President's, Deans, and Honors recipients
May 31, 2019	Graduation Day
June 1, 2019 – July 31, 2019	Annual Break

Vacation School 2018-19

May 21 – 27, 2019	Registration
June 3, 2019	First Day of Classes
June 27 – July 2, 2019	Mid-term Examinations
July 18-23, 2019	Final Examinations
July 26, 2019	NATIONAL HOLIDAY – Independence Day
July 29, 2019	Last Day for Submission of Grades
August 5, 2019	Issuance of Grade Slips

Academic Year 2019-2020

Semester I, 2019-20

August 5-23, 2019	Registration-Access to College
August 8, 2019	Curriculum Committee meeting 12:00-2:00 pm
August 12-16, 2019	Processing of Request for Change of Grades
August 14-16, 2019	Student Orientation
August 17, 2019	Student Recruitment Fair – Monrovia
August 12-30, 2019	Registration – Regular Students
August 21-23, 2019	Faculty Orientation
August 24, 2019	NATIONAL HOLIDAY – Flag Day
September 2, 2019	Opening Convocation
September 3, 2019	First Day of Classes
September 3-6, 2019	Late Registration
September 9-13, 2019	Add/Drop
September 12, 2019	Curriculum Committee Meeting 12:00-2:00 pm
September 13, 2019	CHS: Nursing – Capping & Candlelight Ceremony
September 14, 2019	Charter Day
September 14, 2019	Open House – Harper
September 20, 2019	Last Day for Submitting Admissions Applications
September 20, 2019	Student Government Association Induction
September 26-28, 2019	Games: Intramural
September 27, 2019	Posting of the List of Qualified Candidates for Placement Exams
October 5, 2019	Placement Examination – Harper & Monrovia
October 7, 2019	Last Day for Submitting Transfer Applications
October 10, 2019	Curriculum Committee meeting 12:00-2:00 pm
October 14, 2019	Posting of List of Accepted Transfer Students
October 18, 2019	Qualifying Examinations
October 18, 2019	Posting of Placement Examination Results
October 21-25, 2019	Midterm Examinations
October 30, 2019	Last Day for Submission of Mid-term Examination Grades to Department and Colleges
October 31 – November 6, 2019	Pre-Registration
November 7, 2019	NATIONAL HOLIDAY – Thanksgiving Day
November 8 – December 19, 2019	Application for Graduation
November 25-28, 2019	Processing of Requests for Incomplete Grades (INC)
November 29, 2019	Ms. TU Pageant
November 29, 2019	NATIONAL HOLIDAY – William V.S. Tubman Birthday
December 2 -13, 2019	Registration for New Students - Access to College
December 6, 2019	Last Day of Classes
December 9-14, 2019	Final Examinations
December 12, 2019	Curriculum Committee Meeting 12:00-2:00 pm
December 19, 2019	Last Day for Submission of Grades to the Office of the

	Registrar
December 19, 2019	Issuance of Clearance- Access to College
December 19, 2019	University Closes
December 20, 2019 – January 5, 2020	HOLIDAYS BREAK

Semester II, 2019/20

January 6, 2020	University Re-opens
January 6-10, 2020	Registration for Access to College: Returning & New Students-Late Registration
January 9, 2020	Curriculum Committee Meeting 12:00-2:00pm
January 9-10, 2020	Student Orientation
January 8-10, 2020	Issuance of Grade Slips
January 10, 2020	Publication of Academic Standing List
January 10, 2020	Distribution of Probation and Suspension Letters
January 13-24, 2020	Registration – Regular Students
January 13-17, 2020	Processing of Requests for Change of Grades
January 27, 2020	First day of Classes
January 27 – 31, 2020	Late Registration
January 30 - 31, 2020	Student Career Fair
February 1, 2020	General Faculty Meeting
February 3, 2020	Publication – Potential Graduates list
February 4-7, 2020	Processing of Change of Incomplete Grades (INC)
February 10-14, 2020	Add/Drop
February 11, 2020	NATIONAL HOLIDAY – Armed Forces Day
February 13, 2020	Curriculum Committee Meeting 12:00-2:00pm
February 15, 2020	Students Recruitment Fair – Monrovia
February 15, 2020	Student Games
February 22, 2020	Open House-Harper
February 27, 2020	Last Day for Submitting Admissions Applications
February 28, 2020	Mr. TU Pageant
March 5, 2020	NATIONAL HOLIDAY – Decoration Day
March 12, 2020	Curriculum Committee Meeting 12:00-2:00pm
March 15, 2020 (Will be celebrated on March 16, 2020)	NATIONAL HOLIDAY – Joseph Jenkins Roberts Birthday
March 17-21, 2020	Mid-term Examinations
March 26, 2020	Last day for Submission of Mid-term Examination Grades
March 30, 2020	Posting of the List of Qualified Candidates for Placement Exams
April 4, 2020	Placement Examination, Harper & Monrovia
April 9, 2020	Curriculum Committee Meeting 12:00-2:00pm
April 10, 2020	NATIONAL HOLIDAY – Fast and Prayer Day
April 13, 2020	Last Day for Transfer Application
April 13-17, 2020	Pre-Registration
April 17, 2020	Posting of Placement Examination Results

April 17, 2020	Posting of List of Accepted Transfer Students
April 20, 2020	Comprehensive Exams Begin
April 30, 2020	Last Day for Returning Students to Submit Financial Aid Applications for the Upcoming Semester I
May 1, 2020	Last Day for Submission of Results- Comprehensive Exams
May 1, 2020	Last Day of Classes (Graduating Seniors)
May 4-5, 2020	Final Examinations (Graduating Seniors)
May 7, 2020	Last Day of Submission of Grades (Graduating Seniors)
May 7, 2020	Curriculum Committee Meeting 12:00 – 2:00 PM
May 8, 2020	Last Day of Classes (General Student Body)
May 11 – 16, 2020	Final Examinations (General Student Body)
May 14, 2020	NATIONAL HOLIDAY – Unification Day
May 13, 2020	Issuance of Grade Slips (Graduating Senior)
May 13, 2020	Posting of Preliminary List of Graduating Students
May 15, 2020	Posting of Final List of Graduating Students
May 21, 2020	Last Day for Submission of Grades to the Office of the Registrar (General Student Body)
May 22, 2020	End of Academic Year Faculty Meeting
May 25 – 30, 2020	Graduation Activities
May 27, 2020	Issuance of Grade Slips (General Student Body)
May 27, 2020	Distribution of Probation and Suspension Letters
May 28, 2020	Awards Ceremony – President's, Deans, and Honors recipients
May 30, 2020	Graduation Day
June 1, 2020 – July 31, 2020	Annual Break

Vacation School 2019-20

May 19 – 25, 2020	Registration
June 1, 2020	First Day of Classes
June 25 – 30, 2020	Mid-term Examinations
July 16-21, 2020	Final Examinations
July 26, 2020	NATIONAL HOLIDAY – Independence Day
July 27, 2020	Last Day for Submission of Grades
August 3, 2020	Issuance of Grade Slips