BIO 451  Plant Anatomy – 3 hrs. Study of plant cells, tissues and organ systems of vascular plants, their ontogeny, differentiation and maturation. Students will learn modern techniques of preparing plant materials for microscopic study. Prerequisites: BIO 203, 203L, 204, BIO 204L. Co-requisites: BIO 451L.

BIO 451L  Plant Anatomy Lab – 1 hr. A companion lab for BIO 451 covering the lecture topics. Prerequisites: BIO 203, 203L, 204, 204L. Co-requisites: BIO 451.

BIO 454  Plant Pathology – 3 hrs. History, nonparasitic, and parasitic diseases incited by bacteria fungi, plasmodiophorales, nematodes and viruses will be discussed. Disease control through exclusion, eradication, protection and post resistance will be mentioned. Prerequisites: BIO 344, 344L. Co-requisites: BIO 454L.

BIO 454L  Plant Pathology Lab – 1 hr. A companion lab for BIO 454 covering the lecture topics. Prerequisites: BIO 344, 344L. Co-requisites: BIO 454.

BIO 461  Plant Physiology – 3 hrs. The basic physical and chemical organization and metabolism in higher plants with emphasis on various aspects of nutrition and growth. Prerequisites: BIO 203, 203L, 204, 204L. Co-requisites: 461L.

BIO 461L  Plant Physiology Lab – 1 hr. A companion lab for BIO 461 covering the lecture topics. Prerequisites: BIO 203, 203L, 204, 204L. Co-requisites: BIO 461.

BIO 471  Biology Seminar – 1 hr. Discussions of biological literature, careers in biology, graduate schools, and specialty schools. Pertinent discussions on current biological topics are held. Prerequisites: BIO 103, 103L.

BIO 481  Research in Biology – 2-4 hrs. Formation and execution of research projects in biology under supervision of an advisor. Open only to junior and senior students. Prerequisites: BIO 471.

BIO 482  Biomedical Research – 1-3 hrs. A course designed for students who plan to pursue graduate work in the area of biomedical research. The course consists of performing research under the supervision of a qualified biomedical research faculty member. The results of such research will be presented at a formal scientific meeting and published in a recognized journal when possible. Prerequisites: Open only to junior and seniors with consent of biomedical research faculty.

BIO 490  Biology Internships – 1-4 hrs. A course designed as a preceptorship to allow students to gain experience in actual job situations in areas of career interest. Prerequisites: Open only to juniors and seniors.

Career Development

CDS 301  Career Development Seminar – 1 hr. This course offers resume writing, interviewing skills, values clarification, job research techniques and other related topics in the area of career development.

Civil Engineering

CE 101  Introduction to Civil Engineering – 1 hr. Introduction to civil engineering profession and societies. Local field trips and guest lectures are also included. Prerequisites: None.

CE 201  Surveying – 3 hrs. (1 hours lecture and 3 hours lab). A study of measurement and error calculation, leveling, traverse and area computation, topographic mapping, triangulation, highway, public land and construction surveying. Computer applications are included. Prerequisite: None. Co-requisites: EGC 101 or consent of instructor.

CE 304  Environmental Engineering – 3 hrs. A survey of environmental pollution and control involving the air, land, and water environments; the management of the environment; and other problems concerning water and sewage treatment, solid waste disposal and treatment. Prerequisites: CHE 102, 102L, and MTH 238 or consent of instructor.

CE 305  Hydrogeology – 3 hrs. The study of a hydrologic cycle with emphasis on precipitation and runoff, stream flow and groundwater distribution. Geology of groundwater occurrence, groundwater contamination, development and management are also covered. Prerequisites: EGC 204, 305.

CE 306  Structural Analysis I – 3 hrs. An analysis of stresses and deflections in statically determinate structures caused by fixed and moving loads; study of influence lines and loading criteria for beams and plane trusses; and introduction to classical analysis of indeterminate structures including the slope deflection and moment distribution methods. Application of computer techniques to structural problems is required. Prerequisites: MTH 227, 238, EGC 101, 207.
CE 308  Soil Mechanics – 3 hrs. A study of origin, formation, classification, identification and subsurface exploration of soil. Physical and mechanical properties of soils, shear strength, consolidation, settlement, and bearing capacity are also covered. Prerequisites: EGC 207. Co-requisites: EGC 207L, CE 308L.

CE 308L  Soil Mechanics Lab. – 1 hr. The purpose of this course is to present a selection of experiments that will demonstrate the principles of Soil Mechanics. A Laboratory Manual for this course will be used for performing these experiments. Prerequisites: EGC 207. Co-requisites: CE 308.

CE 310  Transportation Systems and Materials – 3 hrs. Transportation systems including land and air transportation for passenger movement; functions of transportation systems; vehicles and controls; transportation system planning, operation, maintenance, safety and transportation material testing are addressed in this course. Prerequisites: EGC 101, 205, CE 201.

CE 401  Structural Steel Design – 3 hrs. Introduction to the design of steel structures to include behavior of members and their connections. Theoretical and practical basis for proportioning members are addressed. Prerequisites: CE 306.


CE 404  Hydraulic Engineering and Design – 3 hrs. A study of the similitude, and flow measurement; open channel flow, pipe flow and their applications; and design of various elements of hydraulic structures. Prerequisites: EGC 204, 207, 305.

CE 405  Concrete and Aggregates – 3 hrs. A study of engineering properties of plain concrete; influence of cement, aggregates, water and mixtures on the properties of fresh and hardened concretes; mix design behavior under various types of loading and environments. Prerequisites: EGC 207.

CE 406  Computer Analysis of Structures – 3 hrs. This course focuses on flexibility and stiffness methods of analysis. Development of matrix methods for both trusses and rigid frames and use of the computer in structural analysis, including finite element method are included. Prerequisites: CE 306 and EGC 104.

CE 408  Foundation Design – 3 hrs. The study of shallow and deep foundation elements, determination of bearing capacity of spread footings, mat and pile foundations. This course also includes instruction on drilled caissons and piers as well as lateral earth pressure and the design of retaining structures. Prerequisites: CE 306 and EGC 104.

CE 409  Public Health Engineering – 3 hrs. A study of the engineering aspects involved in the control of the environment for the protection of health and the promotion of the comfort of man. Discussion will include communicable disease control, air pollution, refuse disposal, industrial hygiene, and radiological health hazards. Prerequisites: CE 304.

CE 410  Transportation Engineering and Design – 3 hrs. A study of engineering and design basics for highway transportation; elements of highway transportation and their characteristics; drivers; vehicles, volume, density, speed, and travel time; design for safety, service, and economy; highway alignment, cross section and geometric design elements. Prerequisites: CE 310. Co-requisites: EGC 204.

CE 411  Urban Transportation Planning – 3 hrs. A study of functions and elements of urban transportation including modeling trip generation, trip attraction, modal split and network assignment; integrated models, and computer applications. Prerequisites: EGC 204, CE 310 or consent of instructor.

CE 412  Pavement Systems – 3 hrs. A study of the design of highway and airport pavement systems; subgrades, subbases and bases; flexible and rigid pavements; drainage and earthwork; pavement evaluation and maintenance. Prerequisites: EGC 207 and CE 310.

CE 413  Construction Management – 3 hrs. An introduction to construction project planning and scheduling by network diagrams. Estimating and project control fundamentals. Various equipment and productivity are included. Prerequisites: Senior standing.

CE 414  Design of Timber Structures – 3 hrs. A study of wood as an engineering design material. Beams, columns, plywood design, and glued laminated structural members as used in actual design and construction are covered. Prerequisites: CE 306.
CE 415 Transportation Materials: Characterization and Design – 3 hrs. Covers the characterization and design of transportation materials: asphalt binder, aggregates, and hot mix asphalt; properties of aggregates, asphalt binder and hot mix asphalt; AASHTO characterization of aggregates and binder; Superpave mix design; Superpave performance tests; pavement performance and maintenance; practical applications and recent developments; transportation laboratory will be used for this course. Prerequisites: CE 310 or consent of instructor.

CE 424 Civil Engineering Practice – 3 hrs. An introduction to the practical concepts necessary to a practicing engineer, such as engineering ethics, engineering economics, estimating, cost analysis, contract bidding, and specification writing. Prerequisites: Senior standing or consent of instructor.

CE 450 Hydraulics of Open Channel Flow – 3 hrs. A study of the mechanics of fluid flow in open channels, as an extension of basic engineering hydraulics and experimental concepts applied to the theory, design, and shape optimization of open channels. Classification of flow, channel cross section, hydraulic jump, stilling basins, specific energy, culvert hydraulics, and the use of design charts and tables are included. Prerequisites: EGC 305.

CE 455 Wastewater Treatment – 3 hrs. An introduction to wastewater characteristics and treatment processes; biological mechanism, reactors, waste treatment, and kinetics. The engineering design of physical processes such as sedimentation, thickening, and filtration, as well as chemical processes, processing of sludge and advanced wastewater treatment processes are included. A field trip to wastewater treatment plant is required. Prerequisites: (CE 304, EGC305) or consent of instructor.

CE 456 Solid Waste Disposal – 3 hrs. An introduction to the problem of solid waste management; types and quantities of wastes; collection and transportation of wastes; composting, landfill and incineration; and recycling of wastes and resource recovery. Prerequisites: CE 304 or consent of instructor.

CE 457 Hazardous Waste Management – 3 hrs. An introduction to the transportation, storage, and disposal of hazardous wastes. Legal aspects of hazardous materials, cleanup of hazardous material spills, and the impact of hazardous materials on the environment are all covered. Prerequisites: CE 304 or consent of instructor.

CE 460 Computer-Aided Design in Civil Engineering – 3 hrs (2 hours lecture, 3 hours lab). A course which focuses on the design of Civil Engineering structures/systems using computers. Utilization of graphics and component design programs as design tools is required. Prerequisites: EGC 101 and senior standing.

CE 470 Civil Engineering Design Project – 3 hrs. An individualized or grouped civil engineering design project completed under supervision of instructor. Prerequisites: Must have completed at least two CE design courses or consent of instructor.

CE 480 Special Topics – 3 hrs. A course covering selected topics in Civil Engineering. Prerequisites: Consent of instructor.

Chemistry

CHE 101 General Chemistry I – 3 hrs. A study of the fundamental laws of matter that govern physical and chemical changes. Atomic and molecular theories, atomic structure, periodic functions and classification of the elements are addressed. Required of all majors in chemistry. Prerequisites: None. Co-requisites: CHE 101L.

CHE 101H General Chemistry I Honors – 3 hrs. Recommended for all students in AAMU Honors Program. Topics covered are the same as in CHE 101 but in more depth and with more rigor. A study of the fundamental laws of matter that govern physical and chemical changes. Atomic and molecular theories, atomic structure, periodic functions and classification of the elements are address. Required of all majors in chemistry. Prerequisites: None. Co-requisites: CHE 101M.

CHE 101L General Chemistry I Lab – 1 hr. (3 clock hrs.) Laboratory to accompany CHE 101. Basic exercises in general chemistry, to include fundamental operations used in making scientific measurements; properties of gases, liquids and solids, chemical elements and compounds. Prerequisites: None. Co-requisites: CHE 101.

CHE 101M General Chemistry I Lab Honors – 1 hr. (3 clock hours). Laboratory to accompany CHE 101 Honors. Recommended for all students in AAMU Honors Program. Topics covered are the same as in CHE 101L but in more depth and with more rigor. Basic exercises in general chemistry, to include fundamental operations used in making scientific measurements; properties of gases, liquids and solids, chemical elements and compounds. Prerequisites: None. Co-requisites: CHE 101H.