

Program of Study Leading to the A.S. in Civil Engineering at Hostos

Course Descriptions

First Year- Fall: Credits 17

MAT 210 Calculus I – 4 Credits, 5hrs.

Pre-requisite: MAT 160 or by placement

Pre/Co-requisite: ESL 035

This course provides skills in calculus in one real variable. Topics: limits, continuity, differentiation, applications to motion problems, maximum-minimum problems, curve sketching, and antiderivatives, definite integrals, conic sections, polar coordinates and introduction to vectors.

ENG 110 Expository Writing – 3 Credits, 3hrs.

Pre-requisite: Passing CUNY/ACT Reading and Writing tests or Exemption

English 110, a foundational writing course, is designed to strengthen students' composing skills so that they will produce increasingly complex and better-structured essays. Reading and responding to interdisciplinary texts representing various rhetorical modes, students will practice paraphrasing and summarizing these texts, enrich their vocabulary, and improve their writing, revision, and proofreading skills. Additionally, students will be introduced to the use of print and on-line secondary sources. Upon completion of the course, students will be able to respond critically in writing, to a variety of texts, integrating their own ideas with those presented in the readings.

CHE 210 General Chemistry I –4 Credits/ 3hrs. lecture/ 3hrs. lab/ 1hr. recitation

Pre-requisite: MAT 030

Co-requisite: MAT 160

The students will analyze data and solve problems related to the principles of modern atomic theory, stoichiometry, oxidation-reduction reaction, gas laws, thermochemistry, electromagnetic radiation and quantum theory, chemical bonding and molecular structure, and properties of solutions. This course is intended for students preparing for careers in the sciences and engineering.

HUM 100 Introduction to the humanities – 3 Credits, 3hrs.

Co-requisite: SPA 121 or ENG 091

This course will introduce the student to the richness and variety of the Humanities, presenting the various fields involved: Philosophy, Literature, Art, and History. This will allow the student to

discover a sense of relationships among life, work, and circumstances, to understand self and society from different times and places and through different eyes, and to reflect on the way personal origins and beliefs affect actions and values.

SOC 101 Introduction to Sociology – 3 Credits, 3hrs.

Pre-requisite: none

Co-requisite: none

The student will demonstrate an understanding of the basic topic of sociology, including social mobility, role status, race and prejudice, and factors leading to social change. Offered in English and Spanish.

PSY 101 General Psychology - 3 Credits, hrs.

Pre-requisite: none

Co-requisite: none

The student will demonstrate familiarity with the areas of psychology, including methods learning and memory, sensation, perception, physiological processes, emotions, drives, personality, abnormal behavior, psychotherapy, individual differences, social behavior, and growth and development. Offered in English and Spanish.

First Year – Spring: Credits 18

MAT 220 Calculus II - 4 Credits, 4.5hrs.

Pre/requisite: MAT 210

Pre/Co-requisite: ESL 035

This course provides skills in infinite series, geometry in the plane and space, and integral calculus in several variables. Topics: infinite series, solid analytical geometry, partial derivatives, and multiple integral with applications.

ENG 111 Literature and Composition – 3 Credits, 3hrs.

Pre-requisite: ENG 110 or Department permission

English 111, the second semester of freshman composition and a foundational writing course, introduces students to techniques for close reading of literary texts. This course develops students' critical thinking skills through the study of literary elements such as plot, character, setting, point of view, symbolism, and irony. Additionally, students will learn the Modern Language Association (MLA) system of parenthetical citation and how to incorporate quotations into their analysis of literary texts; they will also complete a research paper by consulting both print and on-

line sources. By the end of the semester, students will be able to interpret and write critically about each of the three major genres: poetry, fiction, and drama.

CHE 220 Chemistry II - 4 Credits, 3hrs. lecture/ 3hrs. lab/1 hr. recitation

Pre-requisite: CHE 210

Students will work on laws, concepts and techniques of chemistry including chemical kinetics, ionic equilibria in aqueous solution, thermodynamics electrochemistry, nuclear chemistry, classes of organic and biochemical compounds. This course is intended for students preparing for careers in the sciences and engineering.

PHY 210 General Physics I - 4 Credits, 3hrs. lecture/ 2hrs. lab/ 1hr. recitation

Pre/Co-requisite: MAT 220

Students will study vectors, Newton's Laws and their application to one-and two-dimensional motion, work and energy, momentum, collisions, torque, angular momentum, periodic motion, fluids, heat and thermodynamics processes. This course is intended for students preparing for careers in the sciences and engineering.

MAT 200 Modern Programming – 3 Credits, 3hrs.

Pre/requisite: MAT 160

Pre/Co-requisite: ESL 035

This course provides an introduction to problem solving methods and algorithm development through the study of the program, control structures, and data structures of the C++ programming language.

Second Year- Fall: Credits 14

MAT 310 Calculus III - 4 Credits, 4.5hrs.

Pre/requisite: MAT 220

Pre/Co-requisite: ESL 035

This course provides skills in infinite series, geometry in the plane and space, and integral calculus in several variables. Topics: infinite series, solid analytical geometry, partial derivatives, and multiple integral with applications, Taylor's theorem and convergence tests.

PHY 220 Physics II - 4 Credits, 3hrs. lecture/ 2hrs. lab/ 2hrs. recitation

Pre/requisite: PHY 210

Pre/Co-requisite: MAT 310

Students will study waves and acoustics, optics, diffraction, electricity, D.C. circuits, magnetism, electromagnetism and their application, power and A.C. circuits. This course is intended for students preparing for careers in the sciences and engineering.

HIS 210 United States History: Through the Civil War – 3 Credits, 3 hrs.

Pre-requisite: ENG 110

Major currents in United States history from colonial times to the end of the Civil War are examined in this course. Emphasis is placed on the development of slavery and the abolition movement, the origins and character of the American Revolution, and the experiences of Native Americans, immigrants, and women.

HIS 211 United States History: Reconstruction to the Present – 3 Credits, 3hrs.

Pre-requisite: ENG 110

This course examines major issues in United States history from the Reconstruction Era (1866-76) to the present. Emphasis will be placed on the role of women, labor, immigrants, and racial and ethnic minorities in key developments such as urbanization, the Great Depression, and the Civil Rights Movement.

ENGR 103 Computer Aided Analysis Tools for Engineers - 2 Credits, 2hrs.

Pre/requisite: Math 210 (or 20102) (min. C)

An introduction to computer aided analysis techniques necessary for the study of electrical engineering and the design of electrical systems. Concepts introduced through short lectures are examined thoroughly during computer workstation-based workshops. Among the topics studied are: functions of real variables and their graphs, complex numbers and phasors, linear algebra, difference equations with applications to signal processing, and an introduction to system analysis.

ENGR 204 Electrical Circuits – 3 Credits, 3hrs.

Pre-requisite: PHY 210 (min. C grade)

Pre/Co-requisite: MAT 310 (min. C grade)

Basic circuit laws. Methods of circuit analysis. Circuit theorems. Operational amplifiers. Capacitors and inductors. Sinusoids and phasors. Sinusoidal steady state analysis. Frequency response

Second Year – Spring: Credits 15

MAT 360 Ordinary Differential Equations** - 3 Credits, 3hrs.

Pre-requisite: MAT 310

Pre/Co-requisite: ESL 035

The student will formulate and solve differential equations of the first and higher order linear equations with constant coefficients, undetermined coefficients, variation of parameters, applications; Euler's equation, Laplace Transforms, series solutions, linear systems; elementary partial differential equations and separation of variables; Fourier series. **Some sections of

courses identified with double asterisks (**) are restructured in the sense that they are taught using Graphing Calculators or Computer Systems, in a collaborative learning mode with the assistance of peer tutors.

MAT 320 Linear Algebra with Vector Analysis – 3 Credits, 3hrs.

Pre/requisite: MAT 310

Pre/Co-requisite: ESL 035

The student will study VECTOR CALCULUS, matrix algebra, system of homogeneous and non-homogeneous linear equations, concepts of vector space, subspace, basis and dimension of a vector space, linear transformation, and Eigen values and Eigenvectors for a linear transformation.

ENGR 106 / EAS 106 Introduction to Earth & Atmospheric Science -4Credits, 4hrs.

Pre/requisite: MAT 210 & ENG 110

This course is designed to provide the student with an understanding of the earth system on a global scale by studying its component parts or reservoirs (the atmosphere, hydrosphere, geosphere, and biosphere), the interactions, linkages and dynamic equilibrium among these reservoirs at various time scales, and the effect of external forces on the system.

ENG 202 Writing for Engr. - 3 Credits, 3hrs.

Pre/requisite: ENG 111

In this course, students will perform tasks related to the technical writing process in order to write effectively on the job. In addition to learning to generate written documents for the technical and business professions, this course will focus on skills such as defining purpose, understanding readers, understanding clients, constructing effective sentences and paragraphs, composing drafts, testing drafts and revising the quality of finished documents. At the completion of the course, students will be able to create communications that will succeed in the workplace.

VPA 192 Fundamentals of Public Speaking – 3 Credits, 3hrs.

Pre-requisite: ESL 035 or ESL 086

Co-requisite: ENG 091 or ESL 091

The student will present introductions; present impromptu, extemporaneous, and manuscript speeches; perform exercises to improve public speaking technique; limit topics; create outlines; and present informative and persuasive speeches, as well as speeches for special occasions.