



Mike Bright, Ph.D.
Professor & Chair of Electrical
and Computer Engineering
brightmw@gcc.edu

Dual Enrollment Suggested Schedule for 10th graders – this is an aggressive approach and students must be prepared to work very hard.

Grove City College offers a [Dual-Enrollment](#) option for many classes. Students in 10th through 12th grade can take advantage of these classes at a substantial reduction in per-credit cost. Please be aware that these are college-level courses and will require a significantly larger amount of time for study and completion of work. Students must be self-motivated and ready for the maturity expected.

Some [dual-enrollment](#) courses are taught online (asynchronous) while others are synchronous, which means they are offered at specific times and involve both on-campus students as well as remote.

Some students have been able to accomplish dual-enrolled classes while attending the traditional high school. Others are home-schooled. Still others are able to do a hybrid-education, involving some public/private classes along with dual-enrolled courses.

Below is a suggested schedule for highly motivated students desiring to complete a full year of classes prior to coming to campus to finish an Electrical Engineering degree. This will permit them to step into sophomore year, well prepared.

Although they will need to take a few credits associated with the typical Electrical Engineering freshmen year (PHYE Fitness and Wellness – 1 credit and ENGR 156 Intro to Engineering – 2 credits), the schedule below involves two courses that are often taken junior and senior year, purely due to scheduling limits and not course difficulty (one of the general education courses (foundations course in the social sciences), either SOCI 101 Foundations of Applied Sociology or SOCW 101 Foundations of Social Work – 3 credits or PSYC 101 Foundations of Psychological Science – 3 credits (note that other courses can be used to fulfill this requirement but are currently not offered as dual-enrollment options), and ROBO 101 Introduction to Robotics – 1 credit towards general elective credits).

The placement of many of these courses has been based on prerequisites and when the classes are offered. Please realize College offerings can change, so diligence to monitor changes must fall on the shoulders of the dual-enrolled student.

As noted in the suggested 3-year plan, during 10th and 11th grade, only one dual-enrolled class per term is suggested. Only after students become well acquainted with the workload of these types of courses (12th grade, after two years' experience) do we ever consider having high school students take 2 per term.

Finally, if students would like to have four years of campus study, we suggest that they consider the new System Engineers Master program. This is a new program and entails approximately 12

months of study to accomplish. It will begin immediately upon graduation and be completed the following spring or summer. Details for this program are found in the document entitled System Engineering Masters found in the Masters Program folder.

Proposed 3-year Schedule – this schedule can be modified but be careful to consider prerequisites/corequisites and workload

10th

Fall

ROBO 101
101

Spring

WRIT 101

Early Summer

SOCI 101 or SOCW 101 or PSYC

11th

Fall

HUMA 102

Spring

CHEM 111

Summer (tentative)

CHEM 113 (tentative)

12th

Fall

MECE 120 (tentative)
MATH 161

Spring

PHYS 101
COMP 141 or ELEE 204/252

Early Summer

MATH 162

Course Descriptions:

CHEM 111: General Chemistry I – The first semester of a year-long introduction to the fundamental principles of chemistry, including stoichiometry, nomenclature, basic reactions (solubility, acid-base and oxidation reduction), gas laws, Laws of Thermodynamics (enthalpy, entropy, Gibb’s free energy and equilibrium constant), electronic structure, bonding, molecular structure, properties of pure liquids and solids, and solutions. Three credit hours.

CHEM 113: General Chemistry Lab I - This course will develop laboratory skills in measurement, use of volumetric glassware and titration. Students will learn to use visible spectrometers, calorimeters, and data probes to record results on their computers. They will be exposed first-hand to concepts in CHEM 111 like solubility, acid-basneutralization, gas laws and colligative properties. One credit hour.

COMP 141: Computer Programming I - This course provides the student with an understanding of hardware and software concepts, structured program design, and programming using Java in an integrated development environment. Topics include Boolean expressions, iteration, standard library classes and methods, arrays, searching and sorting, multidimensional arrays, strings, dynamic memory allocation, programmer-defined classes and methods, and deep copying. This course, along with Math 161 and 488, fulfills the Information Literacy (IL) requirement for the Mathematics major. Three credit hours.

ELEE 204: Digital Logic Design - An introduction to digital circuit analysis and design methods. Combinational circuit topics include the use of Boolean algebra, map minimization methods, and circuit implementation with logic gates and standard integrated circuits. Sequential circuit design is explored, and implementation with flip-flops and standard integrated circuits is investigated. Programmable logic implementation of both combinational and sequential circuits is introduced. A group design project is required. Three credit hours.

ELEE 252: Digital Circuits Laboratory - A laboratory course intended to acquaint the student with hardware and software tools used for the design and implementation of digital circuits. A variety of digital design techniques are investigated, including gate-level circuits, programmable FPGA devices, and hardware definition languages (VHDL). CAD software, a hardware target system, and lab equipment are used to design, simulate, program, and verify the operation of digital circuits. Computers are used to design and simulate circuits and to program digital devices to implement those designs. One credit hour.

HUMA 102: Civilization and the Biblical Revelation – A study of Christian revelation and how it influenced the course of Western civilization. It focuses on key texts that are foundational for theology, cosmology, epistemology, human nature, society, and ethics. This course contains the second component of the across-the-curriculum Information Literacy (IL) requirement. Three credit hours.

MATH 161: Calculus I – A first course in calculus that assumes no prior study of the subject. Topics include limits and continuity, differentiation, curve sketching, the fundamental theorem of calculus, definite and indefinite integrals, and applications. This course fulfills in part the Informational Literacy (IL) requirement for the Mathematics major. Prerequisites: High school mathematics including algebra, analytic geometry, and trigonometry. Four credit hours.

MATH 162: Calculus II – A continuation of MATH 161 covering the topics: exponential, logarithmic and inverse trigonometric functions, techniques of integration, parametric equations, sequences, infinite series, and Taylor series. This course fulfills in part the Information Literacy (IL) requirement for the Mathematics major. Prerequisite: MATH 161. Four credit hours.

MECE 120: Numerical Computing for Mechanical Engineers – This course introduces students to applied numerical computation, with an emphasis on solving typical mechanical engineering problems. Sequential logic programming is taught using MATLAB. Topics include array and scalar operators, program control elements, graphic and text I/O, internal and user-defined functions. Students are introduced to numerical methods such as root finding, solutions to systems of linear equations, linear regression, and numerical integration and differentiation. Corequisites or Prerequisites: MATH 161 and PHYS 101. Three credit hours.



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PHYS 101: General Physics I – Engineering – A calculus-based study of mechanics including kinematics, Newton’s laws of motion, work, energy, linear momentum, rotational motion, angular momentum, gravity, equilibrium, fluids, oscillations, traveling and standing waves. Three lectures and one lab per week. Corequisite or Prerequisite: MATH 161. Four credit hours.

ROBO 101: Intro to Robotics – A hands-on introduction to the science of engineering involved in mobile robots. Fundamentals of robot hardware and software are explored and reinforced with weekly hands-on projects culminating in a final project competition. Prerequisite: Algebra I course in high school. One credit hour.

PSYC 101: Foundations of Psychological Science – This course is designed to introduce the student to the field of psychology, which is defined as the scientific study of behavior and mental processes. Like other sciences, psychology seeks to explain, predict, and control the events it studies. Students will be exposed to the important theories, methods, and landmark findings that have helped to shape psychology as a field of inquiry. An integral focus of the course will be a consideration of how psychology can contribute to the synthesis of a consistent Christian worldview. Three credit hours.

SOCI 101: Foundations of Applied Sociology – An introductory study of the major and enduring theoretical ideas, concepts, methods, and debates that have shaped and informed the discipline of sociology from its inception to the current day. Topics include the origins of the discipline, the social conditions under which humans may thrive, social order, religion, and inequality. Attention is also paid to the ways in which the Christian tradition perceives and, in some cases, may challenge contemporary social conditions. Three credit hours.

SOCW 101: Foundations of Social Work – This foundational course introduces students to the rich and diverse discipline of social work and its widespread societal contributions. Students will learn the fundamentals of generalist social work; the ethics, tenets, and history of the profession; as well as an overview of the social welfare system in America. Examination of prominent social work values, philosophical assumptions, and theories occurs throughout the course. Discussions of the diverse populations and settings served by social workers are also discussed. Thoughtfully integrating the core values of social work and Biblical view of human nature is a particular aim of the course. Three credit hours.

WRIT 101: Foundations of Academic Discourse – A course introducing students to the fundamentals of college composition. Topics include the writing process, rhetorical strategies, basics of critical reading and thinking, and key forms of writing such as informative, evaluative, argumentative, and synthesis. This course serves as a foundation to prepare students to succeed in other academic writing contexts. This course contains the Information Literacy (IL) requirement. Three credit hours.