

Engineering and Computer Science

[ECS 1100](#) Introduction to Engineering and Computer Science (1 semester credit hour) Introduction to engineering and computing careers; overview of Engineering and Computer Science (ECS) curricula, connections among ECS fields and to the sciences, and other fields; basic study, problem solving, and other skills needed to succeed as an ECS major. Corequisite: [UNIV 1010](#). (1-1) Y

[ECS 3301](#) Introduction to Nanoscience and Nanotechnology (3 semester credit hours) Introduction to the underlying principles and applications of the emerging field of nanotechnology and nanoscience. Intended for a multidisciplinary audience with a variety of backgrounds. Introduces tools and principles relevant at the nanoscale dimension. Discusses current and future nanotechnology applications in engineering, materials, physics, chemistry, biology, electronics, and energy. Prerequisites: [CHEM 1311](#) and ([MATH 2415](#) or [MATH 2419](#) or equivalent) and [PHYS 2326](#) or instructor consent required. (Same as [MSEN 3301](#)) (3-0) Y

[ECS 3310](#) Introduction to Materials Science (3 semester credit hours) This course provides an intensive overview of materials science and engineering focusing on how structure/property/processing relationships are developed and used for different types of materials. The course illustrates roles of materials in modern technology by case studies of advances in new materials and process. Topics include atomic structure, crystalline solids, defects, failure mechanisms, phase diagrams and transformations, metal alloys, ceramics, polymers as well as their mechanical, thermal, electrical, magnetic and optical properties. Prerequisites: [CHEM 1311](#) and ([MATH 2415](#) or [MATH 2419](#) or equivalent) and [PHYS 2326](#) or instructor consent required. (Same as [MECH 3360](#) and [MSEN 3310](#)) (3-0) Y

[ECS 3361](#) Social Issues and Ethics in Computer Science and Engineering (3 semester credit hours) This course exposes students to major theoretical approaches and modes of reasoning about ethics while exploring a range of important professional and ethical issues in computing and engineering, and the interrelationship between the computing and engineering professions and important elements of social systems. Issues of professional ethics, computer crime and privacy, intellectual property, the balance between the acceptability of risk and constraints such as cost, scheduling, safety and quality, the role of globalization and various important constitutional issues are explored by drawing upon engineering and computing case studies. Prerequisite: Junior Level Standing. (3-0) Y

[ECS 3390](#) Professional and Technical Communication (3 semester credit hours) Expands students' professional and team communication skills and strategies in technical contexts. Integrates writing, speaking and group communication by developing and presenting technical information to different audiences. Written assignments focus on creating professional technical documents, such as proposals, memos, abstracts, reports and letters. Presentation assignments emphasize planning, preparing and delivering dynamic, informative and persuasive presentations. Attendance at first class mandatory. Prerequisites: [RHET 1302](#) and junior standing. (3-0) S