Undergraduate Engineering Courses

ENGR 1211. Engineering Fundamentals I. 2 Credit Hours (Lecture: 2 Hours, Lab: 2 Hours).
Introduction to engineering fundamentals, including problem solving methods and concepts, algorithm development, and analysis tools, including spreadsheets. Introduction to engineering as a profession, including ethics, team-based design, technical communication, and career paths. Prerequisite: MATH 1314 or 1316 or 2412 or 2413 or concurrent registration Lab fee: $2.

ENGR 2251. Fundamentals of GIS for Engineers. 2 Credit Hours (Lecture: 1 Hour, Lab: 3 Hours).
This course offers an introduction to methods of managing and processing geographic information. Basic principles of geographic information systems and their use in spatial analysis and information management are introduced. Students gain experience with cutting-edge geospatial technologies and an understanding of their capabilities. Application in engineering is emphasized. Prerequisite: MATH 2413 or concurrent registration Lab fee: $2.

ENGR 2303. Engineering Economy. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Principles of economics equivalence; time value of money, analysis of single and multiple investments; comparison of alternatives; capital recovery and tax implications; certainty; uncertainty; risk analysis; public sector analysis; and break-even concepts. Prerequisites: MATH 1316, MATH 2412, MATH 2413, or MATH 1352.

ENGR 2321. Engineering Mechanics: Statics. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Theory and analysis of bodies in equilibrium, including vector algebra, Newtonian mechanics, forces due to friction; forces acting on members of trusses and frame structures, and determinations of centroids and moments of inertia. Prerequisites: Either ENGR 1211, and concurrent enrollment in PHYS 2425 and MATH 2414; or PHYS 2425, and concurrent enrollment in ENGR 1211 and MATH 2414.

ENGR 2322. Engineering Thermodynamics I. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Theory and application of energy methods in engineering; conservation principles to investigate traditional thermodynamics (e.g., temperature, thermodynamic equilibrium, and heat). Prerequisite: ENGR 1211; MATH 2414 or concurrent registration.

ENGR 2324. Engineering Mechanics: Dynamics. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Application of theory and principles of mechanics to dynamic particles and rigid body systems in rectilinear and curvilinear systems, including forces, acceleration, conservation of energy, and impulse and momentum. Prerequisite: ENGR 2321.

ENGR 3311. Engineering Mathematical Methods. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
This course presents mathematical techniques frequently encountered in advanced engineering analyses. The topics include the following areas: linear algebra, including matrix and eigenvalue applications; probability and statistics, including descriptive and inferential statistics, probability densities, statistical simulations and quality control. Prerequisites: MATH 2413 and ENGR 1211.

ENGR 4084. Professional Practice. 1-3 Credit Hours (Lecture: 0 Hours, Lab: 1-3 Hours).
Internships and cooperative education; students work individually in a professional organization (business, technical, or government) under the supervision, monitoring, and mentorship of a licensed professional engineer or EIT (engineering in training), performing tasks and duties directly related to the environmental and civil engineering disciplines; A minimum of 80 hours per credit earned is required. Oral and written reports of internship experience are required. This course may be offered pass/fail. No more than 3 credits may count towards the ENVE-BS and CVEN-BS program. Internship performance evaluation report completed by the supervisor at the end of the internship is required. Prerequisite: CVEN 2312 or ENVE 2310 Lab Fee: $2.

ENGR 4086. Special Problems. 1-4 Credit Hours (Lecture: 1-4 Hours, Lab: 1-4 Hours).
Directed study of selected topics in Engineering. May be repeated with approval of department head.

ENGR 4258. Engineering Professionalism. 2 Credit Hours (Lecture: 2 Hours, Lab: 0 Hours).
This course covers knowledge, skills and values necessary in engineering professional practice. Includes FE review sessions, engineering ethics, design process including multiple realistic constraints such as social, economic, safety, and sustainability, and the impact of engineering solutions in a global, economic, environmental, and societal context. Prerequisite: Within one year of graduation as per departmental capstone policy.

ENGR 4259. Engineering Capstone I. 2 Credit Hours (Lecture: 2 Hours, Lab: 0 Hours).
This course is the first part of the capstone design experience synthesizing knowledge, skills and values necessary in engineering practice. Includes FE review sessions, engineering ethics, design process including multiple realistic constraints such as social, economic, safety, and sustainability, and the impact of engineering solutions in a global, economic, environmental, and societal context. During this course students develop a proposal for their capstone project. Prerequisites: Within one year of graduation and subject to instructor approval as per departmental capstone policy.

ENGR 4360. Engineering Capstone II. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours). [WI (https://catalog.tarleton.edu/academicaffairs/)]
This course is part 2 of the culminating design experience in the last year of the curriculum used to integrate the student's education. Includes reference to business concepts, mathematics, science, engineering and humanities. Emphasizes team work, a holistic approach to problem solving, and incorporates appropriate engineering standards and multiple realistic constraints. Prerequisite: ENGR 4259.

ENGR 4380. Engineering Capstone. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours). [WI (https://catalog.tarleton.edu/academicaffairs/)]
This course covers the culminating design experience in the last year of the curriculum used to integrate the student's education. Includes reference to business concepts, mathematics, science, engineering and humanities. Emphasizes team work, a holistic approach to problem solving, and incorporates appropriate engineering standards and multiple realistic constraints. Prerequisite: Within one year of graduation and subject to instructor approval as per departmental capstone policy.