**COURSE CHANGES:**

**EGR 275 - Environmental Site Engineering and Design**

3.00 credits.

The theory and application of geophysical imaging methods to the investigation of subsurface materials and structures that are likely to have significant engineering and environmental implications. A wide variety of methods including seismic reflection, seismic refraction, electromagnetic, ground-penetrating radar, potential fields, electrical resistivity, and borehold logging will be introduced and examined. Natural and man-made disasters will be discussed. \*Prerequisite(s): *PHY 201  and MA 122. Spring semester, even-numbered years.*

**EGR 276 - Sustainable Resource Engineering and Design**

3.00 credits.

Engineering and design practices to make use of natural resources such that environmental impacts are minimized and benefits to human civilization are maximized. Design of sustainable habitats and infrastructure for third world countries*. \*Prerequisite or Co-requisite: Physics III. Fall semester, even-numbered years.*

**EGR 315 - Communication Theory**

3.00 credit.

Analog and digital communication theory and system design including sampling, modulation, coding, transmission, noise, signal detection, and error detection & correction. \*Prerequisite(s): *EGR 310 Signals and Systems. Spring semester of even-numbered years.*

**EGR 343 - Green Architectural Engineering**

3.00 credits.

State-of-the-art green architectural engineering methods for residential, commercial, and industrial real-estate development in industrialized countries. Green building design methods for heating, cooling, lighting, power generation & distribution, water-management, indoor air-quality control, and noise abatement. Green construction methods. Green building standards including local building codes, zoning ordinances, and national and international standards. Case studies from the simplest Amish homes to state-of-the-art US, EU, and Asian green architectures. *\*Co-requisite: Physics III or permission of instructor. Fall semester, even-numbered years.*

**EGR 365 – Fluid Mechanics and Hydrology**

3.00 credits.

Topics include fluid properties, fluid statics, control volume analysis, steady and unsteady Bernoulli equation, and introduction to differential analysis of fluid flow. Laminar and turbulent flow in pipes and channels and in external flow. The boundary layer concept, lift and drag. Runoff and catchment. \*Prerequisite(s):[*PHY 202*](http://catalog.etown.edu/content.php?filter%5B27%5D=-1&filter%5B29%5D=&filter%5Bcourse_type%5D=64&filter%5Bkeyword%5D=&filter%5B32%5D=1&cpage=1&cur_cat_oid=3&expand=&catoid=3&navoid=101&search_database=Filter&filter%5Bexact_match%5D=1#tt_625684d9ce22d3e1b81) *and* [*EGR 263*](http://catalog.etown.edu/content.php?filter%5B27%5D=-1&filter%5B29%5D=&filter%5Bcourse_type%5D=64&filter%5Bkeyword%5D=&filter%5B32%5D=1&cpage=1&cur_cat_oid=3&expand=&catoid=3&navoid=101&search_database=Filter&filter%5Bexact_match%5D=1#tt_987594d9ce22d40b152)*. Spring semester, even-numbered years.*

**EGR 410 – Control Systems**

4.00 credits.

Design and analysis of continuous time-domain control systems using system modeling techniques and simulation software for control algorithms. Evaluation of control system performance and design criteria including feedback, stability, sensitivity, time and frequency response. Introduction to similar topics in the discrete-time domains. Includes a weekly two-hour laboratory applying the theory of control systems to physical systems. \*Prerequisite(s): *EGR 310 Signals and Systems.*

**REMOVE THIS COURSE FROM CATALOG:**

 **EGR 410L – Control Systems Laboratory**

1.00 credits.

A weekly two-hour laboratory applying the theory control systems to physical systems. \*Corequisite(s): [EGR 410](http://catalog.etown.edu/content.php?filter%5B27%5D=-1&filter%5B29%5D=&filter%5Bcourse_type%5D=64&filter%5Bkeyword%5D=&filter%5B32%5D=1&cpage=1&cur_cat_oid=3&expand=&catoid=3&navoid=101&search_database=Filter&filter%5Bexact_match%5D=1#tt_879774d9da90e3fef61) . Spring semester, odd-numbered years.

Close

**EGR 434 - Green Robotics, Automation, and Machine Intelligence (CS 434)**

4.00 credits.

Cutting-edge innovations in robotics, automation, and machine Intelligence that result in the most environmentally-friendly and humanity-sensitive use of technology and resources to manufacture products or aid humans. Various forms of Machine Intelligence including Symbolic AI which uses programmed rules, heuristics, and forms of knowledge representation; and artificial neural networks which are connectionist computer architectures (hardware or software) where many computational nodes are connected to solve problems requiring rapid adaptation, or where governing equations are not known or cannot be easily computed. Mobile-robot and robotic-arm theory, applications, simulations, real-time control, and path-planning strategies are included. *\*Prerequisites: Computer Science 121 and Math 121. Fall semester, odd-numbered years.*

**NOTE: THIS COURSE IS ALSO CROSS-LISTED AS:**

 CS 434 - **Green Robotics, Automation, and Machine Intelligence (EGR)**

**REMOVE THIS COURSE FROM CATALOG:**

**EGR – 434 Artificial Intelligence and Robotics (CS 434)**

4.00 credits.

Robotics and machine intelligence including symbolic Artificial Intelligence (AI) and artificial neural networks. Symbolic AI uses programmed heuristics and forms of knowledge representation. Artificial neural networks are connectionist computer architectures in which many computational nodes are connected to solve problems requiring rapid adaptation or in which governing equations are not known or cannot be easily computed. Course includes mobile-robot and robotic-arm theory, applications, simulations, real-time control and path-planning strategies. \*Prerequisite(s): [CS 121](http://catalog.etown.edu/content.php?filter%5B27%5D=-1&filter%5B29%5D=&filter%5Bcourse_type%5D=64&filter%5Bkeyword%5D=&filter%5B32%5D=1&cpage=1&cur_cat_oid=3&expand=&catoid=3&navoid=101&search_database=Filter&filter%5Bexact_match%5D=1#tt_591174d9dae557e34d1) and [MA 121](http://catalog.etown.edu/content.php?filter%5B27%5D=-1&filter%5B29%5D=&filter%5Bcourse_type%5D=64&filter%5Bkeyword%5D=&filter%5B32%5D=1&cpage=1&cur_cat_oid=3&expand=&catoid=3&navoid=101&search_database=Filter&filter%5Bexact_match%5D=1#tt_373164d9dae5580a602) . Fall semester, odd-numbered years.

**NOTE: THIS COURSE IS ALSO CROSS-LISTED AS:**

**CS – 434 Artificial Intelligence and Robotics (EGR 434)**CloseClose

**PROGRAM CHANGES:**

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| **Engineering (B.S.)** |
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The **Engineering major** is a rigorous program designed to lead to a technical career in industry or graduate school. The Engineering degree with concentrations in Mechanical, Electrical, Applied Physics is accredited by the Engineering Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700. The new concentration in Sustainable Design launched in Fall, 2011 is not yet accredited but will be evaluated for accreditation in 2015; and upon successful accreditation, degrees awarded in prior years will be officially accredited. Our engineering program is designed to prepare graduates who will: 1) develop successful careers relating to the design, development and/or implementation of complex devices and systems within fields integrating electrical, mechanical, modern physics, and sustainable design aspects; 2) meet the demands and challenges of the rapidly changing world and the global marketplace, researching and developing novel technologies to solve the problems and address market forces in society; 3) continue to develop their technical and professional skills throughout their careers; 4) display unwavering high ethical standards; and 5) contribute to the needs of, and in other ways enhance, their local communities and the world at large. Engineering majors may substitute [PHY 200](http://catalog.etown.edu/preview_program.php?catoid=3&poid=126&returnto=90#tt_83804d88a3b472d1d1)  for one of their Natural and Physical Science Core courses. Students who successfully complete the requirements for the Engineering major will have their Humanities Core requirement waived, and they may take up to 19 credits in up to three semesters at Elizabethtown without paying a credit overload fee. Students in the Sustainable Design concentration will also have their Creative Expression and Social Science Core requirements waived.  |
| **Engineering majors are required to take:*** [PHY 200 - College Physics I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1615)
* [PHY 201 - College Physics II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1616)
* [PHY 202 - College Physics III](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1617)
* [MA 121 - MA Calculus I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1398)
* [MA 122 - Calculus II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1399)
* [MA 222 - Calculus III](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1402)
* [MA 321 - Differential Equations](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1409)
* [EGR 100 - Introduction to Engineering I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1222)
* [EGR 110 - Introduction to Engineering II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1223)
* [EGR 210 - Circuit Analysis](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1224)
* [EGR 262 - Statics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1228)
* [EGR 263 - Dynamics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1229)
* [EGR 275 - Environmental Site Engineering and Design](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1303)
* EGR 276 - Sustainable Resource Engineering and Design
* [EGR 291 - Sophomore Project](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1233)
* [EGR 310 - Signals and Systems](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1235)
* [EGR 391 - Engineering Design and Junior Project](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1245)
* [EGR 395 - Fall Seminar](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1246)
* [EGR 396 - Spring Seminar](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1247)
* [EGR 400 - Engineering Portfolio](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1248)
* [EGR 410 - Control Systems](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1249)
* [EGR 491 - Senior Project in Engineering I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1258)
* [EGR 492 - Senior Project in Engineering II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1259)
* [CS 121 - MA Computer Science I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1145)
* [CH 105 - NPS Fundamentals of Chemistry: Introduction to Molecular Science](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1076)
* [PH 255A - Advanced Ethics: Business (BA 255A)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1602) or [PH 255C - Advanced Ethics: Legal](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1604) or [PH 255D - Advanced Ethics: Environmental](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1605)

**Engineering majors must either: (1) Select one of the following four concentrations and complete all the courses in it, or (2) Earn the degree without a concentration by completing any five of the engineering courses listed under the four concentrations.****Mechanical Engineering:*** [EGR 264 - Strength of Materials](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1230)
* [PHY 302 - Electromagnetism (EGR 302)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1619)
* [EGR 321 - Thermodynamics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1237)
* [EGR 365 - Fluid Mechanics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1243) and Hydrology
* [EGR 463 - Analytical Mechanics and Vibrations](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1255)

**Electrical Engineering:*** [EGR 220 - Electronics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1225)
* [PHY 302 - Electromagnetism (EGR 302)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1619)
* [EGR 315 - Communication](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1236) Theory
* [EGR 351 - Physics of Semiconductor Devices](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1240)
* [EGR 352 - Fiber Optics Communication Systems](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1241)

**Applied Physics:*** [PHY 302 - Electromagnetism (EGR 302)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1619)
* [EGR 351 - Physics of Semiconductor Devices](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1240)
* [EGR 463 - Analytical Mechanics and Vibrations](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1255)
* [PHY 353 - Advanced Physics Laboratory (CH 353)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1620)
* [PHY 361 - Applied Quantum Mechanics/Advanced Topics in Applied Physics (EGR 361)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1621)
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**Sustainable Design:**

* [EGR 321 - Thermodynamics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1240)
* [EGR 343 - Green](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1620) Architectural Engineering
* [EGR 365 - Fluid Mechanics and](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1255) Hydrology
* EGR 434 - Green Robotics, Automation, and Machine Intelligence
* ART 105 - CE Drawing
* SO 204 - SSC Population and Global Issues
* EGR370 - Engineering Special Topics, EGR470 - Engineering Internship, or three credits of EGR280 - Engineering Research.

 (The selected course must be related to Sustainable Design)

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| Computer Engineering (B.S.) |
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The **Computer Engineering major** is offered in conjunction with the Computer Science Department and combines studies of engineering and computer technology, including both hardware and software. The Computer Engineering degree is accredited by the Engineering Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700. Our computer engineering program is designed to prepare graduates who will: 1) demonstrate a working knowledge of mathematics, physics, electrical engineering and computer science by developing successful careers and/or postgraduate study relating to digital system design, embedded systems, computer architecture, software design and development and/or project management; 2) meet the demands and challenges of the ever-changing computer-related professions by assessing multiple design solutions and finding creative applications of fundamental engineering principles; 3) adopt the scientific method as the cornerstone of their lifelong education and use their broad understanding of human institutions, achievements and values to become leaders in their chosen fields of endeavor; 4) display unwavering high ethical standards; and 5) contribute to the needs of, and in other ways enhance, their local communities and the world at large by applying problem-solving skills and critical and independent thinking to a broad range of projects that can produce technical innovation aimed at satisfying the future needs of society. Computer Engineering majors may substitute [PHY 200](http://catalog.etown.edu/preview_program.php?catoid=3&poid=115&returnto=90#tt_437064d88e5aab445c1)  for one of their Natural and Physical Science Core courses, and they may take up to 19 credits in up to three semesters at Elizabethtown without paying a credit overload fee. Students who successfully complete the requirements for the Computer Engineering major will have their Humanities Core requirement waived. |
| Computer Engineering majors are required to take:* [PHY 200 - College Physics I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1615)
* [PHY 201 - College Physics II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1616)
* [PHY 202 - College Physics III](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1617)
* [CS 121 - MA Computer Science I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1145)
* [CS 122 - Computer Science II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1146)
* [CS 222 - Systems Programming (EGR 222)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1148)
* [EGR 100 - Introduction to Engineering I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1222)
* [EGR 110 - Introduction to Engineering II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1223)
* [EGR 210 - Circuit Analysis](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1224)
* [EGR 220 - Electronics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1225)
* [EGR 230 - Microcomputer Architecture (CS 230)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1227)
* [EGR 310 - Signals and Systems](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1235)
* [EGR 332 - Computer Organization and Architecture (CS 332)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1238)
* [EGR 333 - Digital Circuits and Computer Interfacing (CS 333)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1239)
* [EGR 400 - Engineering Portfolio](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1248)
* [EGR 410 - Control Systems](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1249)
* [EGR 422 - Operating Systems and Systems Programming (CS 422)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1252)
* [EGR 433 - Advanced Computer Engineering (CS 433)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1253)
* EGR 434 - Green Robotics, Automation, and Machine Intelligence (CS 434)
* [EGR 491 - Senior Project in Engineering I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1258)
* [EGR 492 - Senior Project in Engineering II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1259)
* [CH 105 - NPS Fundamentals of Chemistry: Introduction to Molecular Science](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1076)
* [PH 255A - Advanced Ethics: Business (BA 255A)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1602) or [PH 255C - Advanced Ethics: Legal](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1604) or [PH 255D - Advanced Ethics: Environmental](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1605)
* [MA 121 - MA Calculus I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1398)
* [MA 122 - Calculus II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1399)
* [MA 222 - Calculus III](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1402)
* [MA 321 - Differential Equations](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1409)
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| Industrial Engineering Management (B.S.) |
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The **Industrial Engineering Management major** is offered in cooperation with the Business Department and combines engineering physics with business administration. Because of the broad educational requirements of this degree, engineering accreditation is not appropriate for this program by the Engineering Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700. Our Industrial Engineering Management program is designed to prepare graduates who will (1) develop successful careers relating to the management, design, development and/or implementation of highly efficient complex industry systems; (2) meet the demands and challenges of the rapidly changing world and the global marketplace, researching and developing novel technologies to solve the problems and address market forces in industry; (3) continue to develop their technical and professional skills throughout their careers; (4) display unwavering high ethical standards; and (5) contribute to the needs of and in other ways enhance their local communities and the world at large. Industrial Engineering Management majors may substitute [PHY 200](http://catalog.etown.edu/preview_program.php?catoid=3&poid=146&returnto=90#tt_346854d88e78d169291)  for one of their Natural and Physical Science Core courses. Students who successfully complete the requirements for the Industrial Engineering Management major will have their Humanities Core and their Social Science Core requirements waived, and they may take up to 19 credits in up to three semesters at Elizabethtown without paying a credit overload fee.  |
| Industrial Engineering Management majors are required to take:* [PHY 200 - College Physics I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1615)
* [PHY 201 - College Physics II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1616)
* [PHY 202 - College Physics III](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1617)
* [EGR 100 - Introduction to Engineering I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1222)
* [EGR 110 - Introduction to Engineering II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1223)
* [EGR 391 - Engineering Design and Junior Project](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1245)
* [EGR 400 - Engineering Portfolio](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1248)
* [EGR 411 - Current Industrial Engineering Methods](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1251)
* EGR 434 - Green Robotics, Automation, and Machine Intelligence (CS 434)
* [EGR 492 - Senior Project in Engineering II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1259)
* [MA 121 - MA Calculus I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1398)
* [MA 122 - Calculus II](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1399)
* [MA 222 - Calculus III](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1402)
* [MA 251 - MA Probability and Statistics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1404)
* [CS 121 - MA Computer Science I](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1145)
* [CH 105 - NPS Fundamentals of Chemistry: Introduction to Molecular Science](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1076)
* [EN 282 - Technical Writing](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1274)
* [PSY 105 - SSC General Psychology](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1664)
* [AC 270 - Cost Management Accounting](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=933)
* [EC 101 - Principles of Macroeconomics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1177)
* [EC 102 - Principles of Microeconomics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1178) or [BA 380 - Entrepreneurship](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1017)
* [BA 265 - Management and Organizational Behavior](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=997)
* [BA 466 - Operations and Production Management](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1023)
* [BA 330 - Legal Environment of Business](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1007) or [BA 333 - Cyberlaw and E-Commerce Regulation](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1010)
* [BA 248 - Quantitative Methods/Operations Management](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=993) or [MA 331 - Operations Research](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1410)
* [PH 255A - Advanced Ethics: Business (BA 255A)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1602) or [PH 255C - Advanced Ethics: Legal](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1604) or [PH 255D - Advanced Ethics: Environmental](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1605)

Industrial Engineering Management majors must select four of the following:* [EGR 210 - Circuit Analysis](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1224)
* [EGR 220 - Electronics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1225)
* [EGR 230 - Microcomputer Architecture (CS 230)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1227)
* [EGR 262 - Statics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1228)
* [EGR 263 - Dynamics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1229)
* [EGR 264 - Strength of Materials](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1230)
* [EGR 275 - Environmental Site Engineering and Design](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1303)
* [EGR 302 - Electromagnetism (PHY 302)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1234)
* [EGR 310 - Signals and Systems](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1235)
* [EGR 315 - Communication](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1236) Theory
* [EGR 321 - Thermodynamics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1237)
* [EGR 332 - Computer Organization and Architecture (CS 332)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1238)
* [EGR 333 - Digital Circuits and Computer Interfacing (CS 333)](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1239)
* [EGR 352 - Fiber Optics Communication Systems](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1241)
* [EGR 365 - Fluid Mechanics](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1243) and Hydrology
* [EGR 410 - Control Systems](http://catalog.etown.edu/preview_course_nopop.php?catoid=3&coid=1249)
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