

School of Engineering

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Degrees Offered and Accreditation

The School of Engineering offers four-year programs leading to Bachelor of Science in Engineering (B.S.E.) degrees in

- Biomedical Engineering (128-credits)
- Chemical Engineering* (128-credits)
- Civil Engineering* (128-credits)
- Computer Science and Engineering* (126-credits)
- Computer Engineering (126-credits)
- Electrical Engineering* (126-credits)
- Environmental Engineering (128-credits)
- Mechanical Engineering* (128-credits)
- Metallurgy & Materials Engineering (128-credits)

Bachelor of Science (B.S.) degree (120-credits) in Computer Science

Bachelor of Science degree (128-credits) in Engineering Physics

Bachelor of Science (B.S.) degree (139-credits) in Management & Engineering for Manufacturing (jointly offered with the School of Business) and accredited by the Association to Advance Collegiate Schools of Business (AACSB)

The BSE programs shown above that are asterisked (*), are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET). The BSE in Computer Science & Engineering and the BS in Computer Science are accredited by the Computer Science Accreditation Board (CSAB). The BSE programs in Environmental Engineering, Computer Engineering, and Metallurgy & Materials Engineering, and the BS programs in Engineering Physics and Management & Engineering for Manufacturing will be submitted for EAC/ABET accreditation at the earliest opportunity.

The School of Engineering and the College of Liberal Arts and Sciences offer a five-year, double-degree *EUROTECH* program leading to a B.S. in Engineering Degree and a B.A. degree in German. The program includes German Language courses specially designed to include engineering content, engineering courses taught partly in German, and a six-month internship in a company in Germany.

Students who wish to concentrate their elective work in a second field within the School of Engineering may elect a double major program. This program requires the completion of all requirements in both majors. Students are required to inform the Director of Undergraduate Advising if they change or add a major.

The School of Engineering also offers Minors in Bioinformatics, in Biomedical Engineering, Environmental Engineering, Information Technology, and Metallurgy and Materials Engineering. Please refer to the "Minors" section of this publication for their descriptions.

Admission Requirements. See Admission to the University. All students admitted to the School of Engineering are required to take a calculus placement survey prior to attending summer orientation or registering for their first semester. Based on the survey results, students may be required to take additional preparatory course work that may not be counted toward graduation.

Admission to Junior Year. Students should declare their major as soon as possible, but no later than the second semester of their sophomore year. All students, to be admitted to their junior year in their selected major in the School of Engineering, must have a cumulative grade point average of at least 2.0 in all courses in mathematics, sciences, and engineering applicable toward the degree.

Scholarships. \$250,000 in scholarships is available to entering students with an academic merit record and more than \$650,000 in scholarships and awards is available annually to continuing students in the School of Engineering. For more details visit: http://www.engr.uconn.edu/SoE/soe_sch_opp.htm.

Faculty Advisors and Student Mentors. Faculty advisors are assigned to students entering the School of Engineering according to the student's major. Faculty advisors assist students in their course selections, counsel them in meeting their educational and career goals, and advise them in non-academic issues. The school's Mentoring, Advising and Tutoring (MAT) Center is staffed by graduate/undergraduate students and provides tutoring, coaching and mentoring to all engineering students during the day. Evening tutoring is available in the Engineering Learning Center.

School Academic Requirements

Students in the School of Engineering must complete the following requirements:

General Education Requirements. The University has adopted General Education Requirements in a variety of curricular areas, which must be satisfied as part of every bachelor's degree program. These requirements appear in the "Academic Regulations" section of this *Catalog*.

Additionally, all engineering students are required to complete:

- A *Plan of Study* form submitted during the first semester of the junior year
- MATH 115Q and 116Q (or MATH 112Q, 113Q, and 116Q), ENGR 100 and CSE 123C, and PHIL 104
- All majors, except BS in Computer Science majors, are required to complete CHEM 127Q (or CHEM 129Q) and PHYS 151Q and 152Q
- The University writing (W) course requirement is fulfilled through required major-specific W course work. Most programs have the required two W courses specified in the curriculum. If there are not two W courses in the program, each student must take a minimum of one W course outside the major to satisfy the University's General Education writing requirements.

Credit Restrictions. The following courses may not be counted for credit toward graduation in the School of Engineering: MATH courses numbered 112 and below; MATH 118; PHYS 101 and 103; CSE 101; STAT 100; and courses labeled "independent study" or "variable topics" (e.g. course numbered 298 or 299) taken in departments outside the School of Engineering. No course taken on a Pass/Fail basis may be counted for credit toward graduation or may be used to meet any course requirements of the School of Engineering. Only eight credits of chemistry (CHEM courses 124Q through 130Q) and only eight credits of physics (PHYS courses 121Q through 152Q) may be applied toward the degree.

Major Requirements and Normal Sequences. In addition to the University General Education requirements and the School requirements listed above, the requirements for the specific majors are listed in the following pages. Additionally, students successfully completing these courses will have met their general education computer technology and information literacy exit requirements for this major. Full program details, normal course sequences, and accreditation requirements can be found in the respective *Guide to Course Selection* for each major.

Bachelor of Science in Engineering in Biomedical Engineering

Biomedical Engineering majors are required to complete the following:

- CE 211
- BIOL 107
- BME 211, 221, 251, 252, 261W, 271, 290, 291
- CHEM 128Q (or 130Q) and 243
- ECE 210W
- ENGR 166
- MATH 210Q, 211Q
- MMAT 201 or 243
- PNB 264
- STAT 220Q
- BME/Engineering electives (15 credits)
- Life Science elective (3 credits)

The professional requirements and electives are specified in the *Biomedical Engineering Guide to Course Selection*.

Bachelor of Science in Engineering in Chemical Engineering

Chemical Engineering majors are required to complete the following:

- CHEG 203, 211, 212, 223, 224, 237W, 239W, 243, 247, and 251
- CHEG Electives (6 credits minimum)
- CHEM 128Q (or 130Q), 240, 243, 244, 256, and 263.
- ENGR 166
- MATH 210Q and 211Q
- Professional Requirements (12 credits)
- MCB/CHEM requirement*
- Elective courses (4 credits)

*Students may select CHEM 232Q, 264Q; MCB 203, 204 or 229.

Selection of Professional Requirements courses must include engineering design work as detailed in the *Chemical Engineering Guide to Course Selection*. At least three credits of Professional Requirements must be outside of Chemical Engineering.

Bachelor of Science in Engineering in Civil Engineering

Civil Engineering majors are required to complete the following:

- CE 201, 211, 212, 222 or 262 (if both are taken), 234 or 260 (if both are taken), 236, 240, 254, 263, 271, 280W, 287, 291, and 297
- CHEM 128Q or 130Q
- ECE 220 and ME 233
- ENGR 166 (section offered by the CE Department recommended)
- MATH 210Q and 211Q
- Professional Requirements courses (15 credits)
- Elective courses (6 credits)
- CE 291 must be taken twice before CE 280W.

To satisfy professional requirements, students must take at least one course each from four of the following different technical areas:

- Construction Management Engineering* - CE 202
- Environmental/Sanitary Engineering* - CE 260, 279 (CE 260 may be used only to fill the professional requirements by students who have taken CE 234)
- Geotechnical Engineering* - CE 241, 242
- Hydraulic/Water Resources Engineering* - CE 265, 267
- Structural Engineering* - CE 238, 239
- Surveying Geodetic* - CE 276
- Transportation Engineering* - CE 255

Courses taken from the above list but not used to fulfill the four technical area requirements may be used to satisfy remaining professional requirements. In addition, the following courses may also be considered for remaining professional requirements: CE 237, 268, 266, 222 or 262 (if both taken), CE 234 or 260 (if both taken.)

The Professional Requirements must satisfy engineering design credit and other distribution requirements as specified in the *Civil Engineering Guide to Course Selection*.

Bachelor of Science in Engineering in Computer Engineering

Offered jointly by the Departments of Computer Science & Engineering and Electrical & Computer Engineering

Computer Engineering majors are required to complete the following:

- CSE 133, 134, 210W, 230, 243, 254, 258
- ECE 101, 202, 210W, 212, 215, 249, 252, 290, 291
- MATH 210Q, 211Q, and 227Q
- STAT 220Q
- Professional Requirements courses (9 credits)
- Design Laboratory courses (6 credits including ECE 266 or CSE 268)
- Elective course (3 credits)

Further details and course sequences are given in the *Computer Engineering Guide to Course Selection*.

Bachelor of Science in Computer Science

Computer Science majors are required to complete the following:

- CSE 133, 134, 220, 230, 237, 254, 258, 259, and 293W
- MATH 227Q, and *either* MATH 210Q *or* 211Q
- Either STAT 220Q or STAT 230Q
- One two-semester laboratory course sequence from *either* chemistry (CHEM 127Q-128Q, 129Q-130Q, or 137Q-138Q) *or* physics (PHYS 131Q-132Q, 141Q-142Q, or 151Q-152Q)
- One additional science course (from BIOL 107, 108, or 110; CHEM 127Q, or 128Q; PHYS 131Q, 132Q, 141Q, 142Q, 151Q, or 152Q) but not in the same department as the two-semester sequence.
- Either CSE 233 or CSE 244
- Three courses from CSE 228, 245, 255, 257, 275, 277, 282, or 298 with prior approval
- One design laboratory course from CSE 262, 263, 265, 268, and 269
- Two other CSE 200-level courses (6 credits)
- A minimum of three 3-credit courses at the 200-level in a single related area forming a cohesive body of knowledge outside of Computer Science
- Elective courses (9 credits)

Further details and course sequences are given in the *Computer Science Guide to Course Selection*.

Bachelor of Science in Engineering in Computer Science and Engineering

Computer Science and Engineering majors are required to complete the following:

- CSE 133, 134, 210W, 220, 221, 230, 237, 244, 249, 254, 258, 259, and 293W
- One CSE design laboratory course from CSE 261, 262, 263, 265, 268, 269, ECE 265 or ECE 268.
- MATH 210Q, 211Q, and 227Q
- One of MATH 231, STAT 220Q, 224Q, *or* 230Q
- ECE 202, and 210W
- Professional Requirements courses (9 credits)
- Elective courses (7 credits)

Further details and course sequences are given in the *Computer Science & Engineering Guide to Course Selection*.

Bachelor of Science in Engineering in Electrical Engineering

Electrical Engineering majors are required to complete the following:

- CSE 133 or ECE 110 or ENGR 166 and CSE 210W
- ECE 101, 202, 205, 210W, 212, 214, 232, 240, 241, and 245
- ECE 290 and 291
- MATH 210Q, 211Q and 227Q
- STAT 224Q
- Professional Requirements courses (12 credits)
- Design Laboratory courses (6 credits)
- Elective courses (9 credits)

Further details and course sequences are given in the *Electrical Engineering Guide to Course Selection*.

Bachelor of Science in Engineering Physics

Offered jointly by the Physics Department of the College of Liberal Arts and Sciences and the School of Engineering

Engineering Physics majors can concentrate in either Electrical, Materials Science, or Mechanical Engineering. Students must satisfy the course requirements of both the College of Liberal Arts and Sciences and the School of Engineering to complete this degree.

Engineering Physics majors are required to complete the following:

- CHEM 128Q or 130Q
- PHYS 230, 242, 255Q, 257, 258W, and 261
- MATH 210Q, 211Q, and 272
- Electrical Engineering* - ECE 202, 210W, 212, 228, 229, 232, 241, 245, 290, and 291; CSE 210W; MATH 227Q; PHYS 271; STAT 224Q, Elective courses (4 credits).

Mechanical Engineering - ME 220, 227, 233, 234, 242, 250, 253, 272 and 273W; CE 211, 287; STAT 224Q; ME Elective Courses (6 credits); PHYS Elective courses (6 credits).

Materials Science and Engineering - MMAT 236W, 243, 244, 255, 256, 265, 266, 284, 285 and 286, 287 and 288W; CHEG 256; PHYS 273 and 281; MMAT Elective Courses (6 credits); Physics Elective Courses (3 credits).

The professional requirements and electives are specified in the *Engineering Physics Guide to Course Selection*.

Bachelor of Science in Engineering in Environmental Engineering

Environmental Engineering majors are required to complete the following:

CE 211
CHEG 211, 212, 223, and 224.
CHEM 128Q or 130Q
EEB 244
ENGR 166
ENVE 110, 201 (or CE 201), 260 (or ENVE 281), 262, 263, 270,
285 (or CHEG 285), 290W, 291W, and 296
MATH 210Q and 211Q
MCB 229
Elective course (3 credits)
Professional Requirements courses (9 credits).

Professional Requirements include at least *one* course each to strengthen *three* of the following nine focus areas: Atmospheric Systems and Air Pollution Control, Environmental and Occupational Health, Environmental Chemistry, Environmental Systems Modeling, Hazardous Waste Management, Solid Waste Management, Water Supply and Resources, Hydrology of Earth Resources, and Wastewater Management. The following courses may be used to meet the Professional Requirements:

ANSC 226
ARE 234 and 235
ENVE 265, 267
EEB 238 and 247
MCB 203, 235, and 240W
CHEG 247, 251, 273, and 280
CHEM 232, 263 - 264, 270W
CE 265, 268
GEOG 205, 236, 215, 237, and 286
GEOL 206, 228, 234, and 245
OPIM 210
MARN 244 and 280
ME 239
NRME 204, 210, 236Q, 237, 239, 240, 260, and 263
SOCI 259W
PLSC 259

The Professional Requirements are specified in the *Environmental Engineering Guide to Course Selection*.

Bachelor of Science in Management and Engineering for Manufacturing

Offered jointly by the School of Business
and the School of Engineering

Management & Engineering for Manufacturing majors are required to complete the following:

ACCT 131 and 200
ANTH 100 or GEOG 160
BLAW 271
CE 211, 212, and 287
COMM 100
ECON 102
ECE 220
FNCE 201
HIST 101
MATH 210Q and 211Q

ME 221, 222, 227, 233, and 260W
MEM 151, 210, 211, 215W, 221, 225, and 231
MGMT 201, 270W, and 290
MKTG 201
MMAT 201 or 243
OPIM 252
STAT 110Q
Technical Electives courses (3 credits)

The Technical Electives must be 200-level or higher courses from departments listed in the School of Business and the School of Engineering as specified in the *Management & Engineering for Manufacturing Guide to Course Selection*. Students are encouraged to seek faculty-supervised manufacturing summer internships prior to their junior and senior years. Such internships may be shown on the student records by registering for MEM 296 – Manufacturing Internship, with instructor and advisor approval.

Bachelor of Science in Engineering in Mechanical Engineering

Mechanical Engineering majors are required to complete the following:

CE 211, 212, and 287
ECE 220
ENGR 166
MATH 210Q and 211Q
ME 220, 227Q, 233, 234, 242, 250, 253, 255, 260W, 262, 272, and 273W
MMAT 201 or 243 and 202
ME Requirement (9 credits)
Professional Requirements (6 credits)
Electives (6 credits)

Details on the ME and Professional Requirements are specified in the *Mechanical Engineering Guide to Course Selection*.

Bachelor of Science in Engineering in Metallurgy and Materials Engineering

Metallurgy and Materials Engineering majors are required to complete the following:

CHEM 128Q or 130Q
ENGR 166
MATH 210Q and 211Q
CE 211 and 287
MMAT 234, 236W, 243, 244, 255, 256, 265, 266, 267, 276, 277, 284,
285, 286, 287, and 288W
ECE 220
CHEG 256
Recommended Professional Elective courses - 9 credits from:
BME 271; ECE 246; ME 217 and 228; and MMAT 207, 219, 229,
234, and 238

Technical Elective courses - 6 credits from:

BIOL 107; CHEM 243, 244, and 264; MCB 203; ME 218, 253, and
255; MATH 214, 215, 227Q, and 231; PHYS 261 and 262; STAT 220Q,
221Q, and 224Q

Selection of courses is detailed in the *Materials Science and Engineering Guide to Course Selection*.

School of Engineering Website

<http://www.engr.uconn.edu/>