

UNIVERSITY OF MASSACHUSETTS AMHERST
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

*BIOLOGY AND THEMATIC ELECTIVE COURSE
INFORMATION FOR ALL CSE AND EE STUDENTS*

BIOLOGICAL SCIENCE COURSE REQUIREMENT

All CSE and EE students must take either BIO 110 or BIO 151. It will satisfy the University's Biological Science requirement, but it WILL NOT satisfy the CSE/EE Thematic Elective degree requirement.

THEMATIC ELECTIVE

The Thematic Elective is intended to allow depth of study in a field of the sciences, mathematics or engineering management that is relevant to your educational objectives and interests. CSE and EE students are only required to take one thematic elective. Your Thematic Elective may be used toward a minor in another major.

- There are four approved thematic elective subject areas:
 1. Biology and Chemistry
 2. Physics and Astronomy
 3. Mathematics
 4. Engineering Management (**Note:** Courses in this category are **only** for students who intend to complete the Engineering Management minor.)
- AP credit cannot generally be applied toward the Thematic Elective requirement. The only exception is Chemistry. If you earn UMass credit for CHEM 111 through AP Chemistry, this will fulfill the Thematic Elective degree requirement for CSE and EE.
- If you earn a C or better in ENGIN 112 after earning a C or better in ENGIN 110, 111 or 113, you will be allowed to count ENGIN 110, 111 or 113 as a Thematic Elective.
- Check SPIRE to determine when these courses are offered.

Thematic Elective Course Lists

Biology and Chemistry

<i>Course</i>	<i>Title</i>	<i>Prerequisites</i>
BIOL 152	Intro. Biology II	BIOL 151
BIOL 521	Comparative Anatomy	BIOL 110
CHEM 111	General Chemistry I	none

Physics and Astronomy

<i>Course</i>	<i>Title</i>	<i>Prerequisites</i>
PHYS 261	General Physics III	PHYS 151, 152, MATH 233
PHYS 287	Thermodynamics	PHYS 151, MATH 131
ASTRON 223	Planetary Science	MATH 131, PHYS 151
ASTRON 226	Cosmology	MATH 131, PHYS 151
ASTRON 228	Stars and Galaxies	MATH 131

Mathematics

<i>Course</i>	<i>Title</i>	<i>Prerequisites</i>
MATH 233	Multivariate Calculus	CSE only, MATH 132
MATH 300	Fund. Concepts of Mathematics	MATH 132
MATH 421	Complex Variables	MATH 233
MATH 425	Advanced Calculus	MATH 233, 235
MATH 456	Mathematical Modeling	MATH 131, 132, 233, 235, 331
MATH 471	Theory of Numbers	MATH 235
MATH 532	Topics in Ordinary Diff. Equations	MATH 235, 331
MATH 534	Intro. Partial Differential Equations	MATH 233, 235, 331
MATH 545	Linear Algebra with Applied Math	MATH 235
MATH 551	Intro. Scientific Computation	MATH 233, 235

Engineering Management

<i>Course</i>	<i>Title</i>	<i>Prerequisites</i>
ACCTG 221	Financial Accounting	none
MIE 353	Engin. Econ. Dec. Making	MATH 132
MGMT 301	Principles of Management	Junior standing
MKTG 301	Fundamentals of Marketing	none

This last option is only for students who intend to complete the Engineering Management minor. Students in their second semester freshman year who meet the requirements may apply for the Engineering Management minor. There is a minimum GPA requirement. Applications and brochures are available from the Office of Student Affairs in 126 Marston Hall. Submit completed applications to Kathleen G. Rubin, Assistant Dean of Student Affairs, Office of Student Affairs, 126 Marston Hall. Any student who completes the Engineering Management minor would automatically satisfy their Thematic Elective. Again, please be aware that there are other courses required to complete the Minor that are not mentioned in this document.

(*Note:* Students interested in Engineering Management should take ECON 103 and ECON 104 as part of their Social World electives.)