

Center for Materials Science Minor

The educational mission of the Center for Materials Science is to develop and maintain an innovative interdisciplinary and multidisciplinary undergraduate program in materials science that will increase the maturation of students, their research experience and their employment opportunities. The mission includes the integration of undergraduate education with basic and applied research in materials science.

Goals

- To develop an undergraduate interdisciplinary, multidisciplinary curriculum in materials science.
- To integrate undergraduate education with basic and applied research.
- To increase funding for applied and basic research in materials science. (Faculty and students focus on problems of interest to industry and government in materials processing, materials characterization, materials applications and thermal sciences including thermal structural interactions and infrared analysis.)

Minor Requirements

- A choice of an entry-level introductory course in materials science.
- A lecture or laboratory course that emphasizes more specialized areas in materials science.
- Materials science electives that can include all specialized courses.
- Research or an additional materials science lecture or laboratory experience.

Courses for the minor are offered through the departments of chemistry, geology and environmental studies, integrated science and technology, mathematics, and physics.

COURSES	CREDIT HOURS
Choose one of the following:	3
MATS/CHEM/PHYS 275. An Introduction to Materials Science	
MATS/GEOL 395. Geologic Perspectives in Materials Science	
MATS/ISAT 430. Materials Science in Manufacturing	
Choose one of the following:	3
MATS/PHYS 381. Materials Characterization	
MATS/ISAT 432. Selection and Use of Engineering Materials and Manufacturing Processes	
MATS/ISAT 436. Micro-Nanofabrication and Applications	
Materials Science Electives	9
Research or Additional Materials Laboratory Science	3

Concentration Requirements

The concentration in materials science consists of 12 credits hours of course work approved by the student's adviser and by the director of the center. Appropriate courses may be chosen from materials science offerings in the areas of chemistry, geology and environmental studies, integrated science and technology, mathematics, and physics. This concentration must be

pursued in conjunction with a designated major in chemistry, geology and environmental studies, integrated science and technology, biology, mathematics, or physics.

COURSES	CREDIT HOURS
Choose one of the following:	3
MATS/CHEM/PHYS 275. An Introduction to Materials Science	
MATS/GEOL 395. Geologic Perspectives in Materials Science	
MATS/ISAT 430. Materials Science in Manufacturing	
MATS Electives	6
Research or Materials Science Laboratory Course	3

Research in Materials Science

Register for Research in Materials Science under one of the following:

COURSES	CREDIT HOURS
CHEM 497. Undergraduate Research (in materials science, 2-4)	2-4
GEOL 497. Problems in Geology (in materials science)	1-3
ISAT 491, 492, 493. Thesis (in materials science)	6
PHYS 498R. Undergraduate Physics Research (in materials science)	2-4
MATS 498R. Undergraduate Materials Science Research	1-3, repeatable up to 6

Materials Science Elective Courses

COURSES	CREDIT HOURS
GEOL 300. Introduction to Petrology	3
MATS/PHYS 337. Solid State Physics	3
MATS/PHYS 381. Materials Characterization (Lecture/Lab Course)	3
MATS 382. Microfabrication Laboratory (Lecture/Lab Course)	3
PHYS 380. Thermodynamics and Statistical Mechanics or CHEM 331. Physical Chemistry I	3
MATS/ISAT 431. Manufacturing Processes	3
MATS/ISAT 432. Selection and Use of Engineering Materials and Manufacturing Processes	3
MATS/ISAT 436. Micro-Nanofabrication and Applications	
CHEM 445. Polymer Chemistry	3
MATS/GEOL 396. X-RAY Characterization of Solid Materials	3
Special Topics in materials science registered under:	
CHEM 480. Selected Topics in Chemistry (materials science)	1-3
GEOL 398. Topics in Geology (materials science)	1-4
ISAT 480. Selected Topics in ISAT (i.e., light metals)	1-4
MATH 483. Selected Topics in Applied Mathematics (materials science)	3
MATS 498R. Undergraduate Materials Science Research	3
PHYS 497. Topics in Physics (materials science)	1-4

These courses, collectively fulfill the 9 credit approved technical elective package for the Bachelor of Science in the School of Engineering.