

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

EP05.23

Office of the Provost and Vice Chancellor
for Academic Affairs

Swanlund Administration Building
601 East John Street
Champaign, IL 61820



RECEIVED
March 7, 2005
OFFICE OF THE SENATE

February 23, 2005

Abbas Aminmansour, Chair
Senate Committee on Educational Policy
Office of the Senate
228 English Building, MC-461

Dear Professor Aminmansour:

Enclosed are copies of a proposal from the University of Illinois Urbana-Champaign
College of Engineering for a Minor in Materials Science and Engineering.

This proposal has been approved by College of Engineering; it now requires Senate
review.

Sincerely,

Keith A. Marshall, Ph.D.
Assistant Provost

Enclosures

c: C. Livingstone

EP.05.23

STANDARD MINOR APPROVAL FORM

Title of the proposed minor: Materials Science and Engineering

Sponsoring unit(s): Department of Materials Science and Engineering

Date: 9/13/04

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Brief description of the program of study: please explain how the proposed minor meets each of the following criteria:

• The minor program of study should require some depth in the subject, but not as extensive as the major. Required are a total of 19 hours of Materials courses*; students in most other College of Engineering departments will have all required pre-requisite courses, with students in other science and engineering oriented departments having most of them. Students in MatSE have a total of 49 hours of MSE courses. Course titles for all courses listed in the requirements are given in the attached table; course numbers are as in Banner.

• The minor should be comprehensive of study in the discipline, rather than focusing on a subfield of study within the discipline. Required are 3 general materials courses (MSE 280, 401 and one more of our core junior year courses, as well as 3 courses in an area of materials.

• In general, a department should propose only one minor. The Minor in Polymer Science and Engineering is based in MatSE as a result of history; it differs from the above in being more focused on polymers rather than materials in general and involves courses from several departments.

* Currently a student choosing the biomaterials area would have only 17 hours required for the minor; MSE 472, the senior lab, is currently one hour rather than the 3 for the others areas; discussions are underway to raise it to 3 hours after which all student would need 19 hours.

Requirements: list the hours and course requirements for the proposed minor. The minor should consist of at least 16 and no more than 21 hours of course work within the sponsoring department or unit. At least six hours of the minor should be advanced (300 or 400 level courses). If the proposed minor fails to meet these criteria, please provide a reason.

Pre-requisites TAM/MSE 206 or equivalent, CHEM 104, PHYS 212, 214 (concurrent for MSE 280), and pre-requisites for courses selected.

The following 6 (or equivalents)

1. MSE 280 (3)
2. MSE 401 or equivalent (4)
3. One from MSE 402, 403, 304, 405, 406 (or equivalents) (all 3)
4. A MatSE area introductory course: 420, 441, 450, 460, 470 (all 3)

5. A MatSE senior lab; MSE 423, 442, 452, 462, 472 (all 3, except 472)
6. One from an advanced area course; e.g.,
 - MSE 421 or 422 (ceramics)
 - MSE 440, 443, 445, 486 (metals)
 - MSE 453, 455, 457, or 458 (polymers)
 - MSE 461, ECE 444 (electronic materials)
 - MSE 473 (biomaterials)
 - General MatSE, MSE 480, 481, 484, 485, 498xx (all 3)

Prerequisites for the minor: describe the prerequisites (if any) for the proposed minor. If the department intends to limit enrollment in the minor, tell how this will be done.

Pre-requisites TAM/MSE 206 or equivalent, CHEM 104, PHYS 212, 214 (concurrent for MSE 280), and pre-requisites for courses selected.

Expected enrollment in the minor: what is the total number of students expected in the minor once it achieves its full enrollment?

20-30 can be accommodated at present without overly straining the facilities; the main problem would be in the labs if all students chose the same area.

Admission to the minor: what is the position of the person within the department who will monitor the admission process for the minor?

Associate Head

Minor advisor: what is the position of the person within the department who will be assigned responsibility for advising students enrolled in the minor?

Chief Advisor

Certification of successful completion: what system has been set up within the college of the sponsoring department for certifying successful completion of the minor?

Not known under new system; presumably the same as for other minors in the College of Engineering

Statement for the catalog: provide a brief statement for the program catalog.

Materials are the basis for all engineering and also are the basis for much of the research in various areas of science. The Minor in Materials Science and Engineering is designed to give students in other areas of engineering and science both a broad view of all materials as well as several courses in a particular area of materials, knowledge that will be of value whether the student pursues a career in industry, government or academia.


The courses, listed below, have been selected to give an undergraduate student both a strong background in all types of materials as well as more detailed knowledge of a particular area of materials (e.g., ceramics, metals, polymers, electronic materials or

biomaterials). To obtain recognition for the materials science and engineering minor, students must register in the Office of the Associate Dean for Academic Affairs in the College of Engineering, 206 Engineering Hall. The student should also consult with Prof. Phillip H. Geil, MSEB 301 (geil@uiuc.edu), or Professor Angus A. Rockett, 1-109 CSL (arockett@uiuc.edu) who can also approve "equivalent courses".

The following 6 courses (or their equivalents) are required

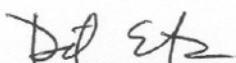
1. MSE 280
2. MSE 401 or equivalent
3. One from MSE 402, 403, 304, 405, 406 (or equivalents)
4. A MatSE area introductory course: 420, 441, 450, 460, 470
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CLEARANCES:



Department of Materials Science and Engineering

Date 2/8/2005



College of Engineering

Date 2/8/05

Chair, Senate Educational Policy Committee:

Date _____

Course numbers and names

Prerequisites	
TAM/MSE 206	Mechanics for MatSE
CHEM 104	General Chemistry II
PHYS 212	Univ Physics, Elec & Mag
PHYS 214	Univ Physics, Quantum Phys
General materials courses	
MSE 280	Intro to Eng Materials
MSE 401	Thermodynamics of Materials
Junior year MatSE core courses	
MSE 304	Electronic Properties of Matls
MSE 402	Kinetic Processes in Materials
MSE 403	Synthesis of Materials
MSE 405	Microstructure Determination
MSE 406	Thermal-Mech Behavior Matls
MatSE area introductory courses	
MSE 420	Ceramic Matls and Properties
MSE 441	Metals Processing
MSE 450	Intro to Polymer Sci and Eng
MSE 460	Electronic Matls & Proc I
MSE 470	Design and Use of Biomaterials
MatSE senior labs	
MSE 423	Ceramic Processing Laboratory
MSE 442	Metals Laboratory
MSE 452	Polymer Laboratory
MSE 462	Electronic Materials Lab
MSE 472	Biomaterials Laboratory
MatSE advanced area courses	
MSE 421	Cer Proc & Microstruc Devel
MSE 422	Electrical Ceramics
MSE 440	Adv Mechanical Prop of Solids
MSE 443	Design of Engineering Alloys
MSE 445	Corrosion of Metals
MSE 486	Selection of Eng Matls
MSE 453	Plastics Engineering
MSE 455	Polymer Physics
MSE 457/CHEM480	Polymer Chemistry
MSE 458/CHEM 482	Polymer Physical Chemistry
MSE 461	Electronic Matls & Proc II
ECE 444	IC Device Theory & Fabrication
MSE 473	Biomolecular Materials Science
MSE 480	Surfaces and Colloids
MSE 481	Electron Microscopy & Diffract
MSE 484	Composite Materials
MSE 485	Atomic Scale Simulations
MSE 498xx	Special topics in MatSE