DATESubmitted: 09/29/2004

COLLEGE/SCHOOL: ENGR

DEPARTMENT/PROGRAM: Materials Science and Engineering

PROPOSED ACTION (A separate form for each) ADD____ DELETE____ CHANGE: X

DESCRIPTION (Provide a succinct account of the proposed action. Details should be provided in an attachment. Provide old and new sample programs for curriculum changes.)

The undergraduate curriculum includes a reliability course. In addition to ENRE 445 and ENRE 446, the faculty has voted to allow students to take ENME 392: Statistical Methods for Product and Processes Development. This is a formal request for inclusion of ENME 392 as an option for the reliability course in the ENMA curriculum.

JUSTIFICATION/REASONS/RESOURCES (Briefly explain the reason for the proposed action. Identify the source of new resources that may be required. Details should be provided in an attachment.)

The faculty member who teaches ENRE 445 and 446 has retired and the MSE faculty is unsure that the reliability courses will be offered on a long term basis. The MSE faculty have reviewed the syllabus of ENME 392 and has voted that the content will meet the reliability requirements. Students will be able to take any of these three courses in fulfillment of the reliability requirement. There will be no new resources required.

APPROVAL SIGNATURES

1. Department Committee Chair
   [Signature]
   09/29/04

2. Department Chair
   [Signature]
   09/30/04

3. College/School PCC Chair
   [Signature]
   10/15/04

4. Dean
   [Signature]
   09/29/04

5. Dean of the Graduate School (if required)

6. Chair, Senate PCC

7. Chair of Senate

8. Vice President for Academic Affairs & Provost

VPAAP Rev. 3/1/04
LOGISTICS, BUSINESS, AND PUBLIC POLICY

For information, consult the Robert H. Smith School of Business entry in chapter 6.

MARKETING

For information, consult the Robert H. Smith School of Business entry in chapter 6.

MATERIALS SCIENCE AND ENGINEERING

A. James Clark School of Engineering
2135 Chemical and Nuclear Engineering Building, 301-405-5208
www.mne.umd.edu

Chair: Biber
Professors: Armstrong (Emeritus), Arsenault (Emeritus), Biber, Christou, Dieter (emeritus), Dohrlein, Ramesh, Rayburn, Rubloff, Salamancas-Riba, Smith (emeritus), Wulff
Associate Professors: Ali-Shenkhly, Anker, Lloyd, Martinez-Miranda, Phaneuf
Assistant Professors: Takeuchi
Adjunct: Law
Affiliate Associate Professor: Kofinas

*Member of Mechanical Engineering Department

The Major

The development, production and use of novel materials has become a major issue in all fields of engineering. Materials which are strong and light at the same time are needed for space structures; faster electro-optical switches will result in improved mass communications; and stronger high temperature plastics would improve the efficiency of transportation systems. The mission of the materials science and engineering program is to provide the student with an interdisciplinary science-based education to understand the structure and resulting properties of metallic, ceramic, polymeric, and electronic materials. Students will gain the ability to solve problems in the design, testing, and processing and use of advanced materials. Students will have the opportunity to work with faculty and industry on complex problems through projects, internships, and research and co-op experiences. A wide variety of careers are open to graduates of this program ranging from production and quality control in the traditional materials industries to the molecular construction of electronic materials in ultra-clean environments, and to the applications of materials in electronic packages. The application of materials to solve environmental, energy, and reliability problems are also career options.

Students major in the Bachelor of Science in Materials Science and Engineering Program or may use Materials Engineering as a field of concentration in the Bachelor of Science Engineering Program.

Requirements for Major

Requirements for the Materials Science and Engineering major include thorough preparation in mathematics, chemistry, physics, and engineering science as well as the required University general education (CORE) requirements. All students will be required to select an area of specialization, an upper-class elective, and two technical electives. A minimum of 123 credits is required for a bachelor's degree. A sample program follows.

Semester I

ENES 100 — Introduction to Engineering Design ................. 3
ENMA 181* — Introduction to Engineered Materials, Seminar 1.1
CHEM 135 — General Chemistry for Engineers 3
CHEM 136 — Chemistry Lab ........................................... 1
MATH 140 — Calculus 1 .............................................. 4
MATH 141 — Calculus II ............................................. 4
ENGL 101 — Introduction to Writing .................................. 3
ENES 102 — Statics ................................................................ 3
PHYS 161 — General Physics I ........................................ 3
Total ............................................................................. 15

Semester II

ENES 361 — Advanced Engineering Design ......................... 3
ENMA 182* — Introduction to Engineered Materials, Seminar 2.1
CHEM 234 - Organic Chemistry or CHEM 481* ....................... 4
PHYS 262/263 — General Physics ....................................... 4
ENES 230 — Introduction to Materials and their Applications .. 3
ENEE 204 — Basic Circuit Theory ..................................... 3
CHEM 233 — Organic Chem, or CHEM 481* ......................... 4
Total ............................................................................. 14

*Recommended, but not required.

Sophomore Year

Core Program Requirements ............................................. 3
MATH 241 — Calculus III ............................................... 4
MATH 246 — Differential Equations for Scientists and Engr .... 3
PHYS 262/263 — General Physics ....................................... 4
ENES 230 — Introduction to Materials and their Applications .. 3
ENEE 204 — Basic Circuit Theory ..................................... 3
CHEM 233 — Organic Chem, or CHEM 481* ......................... 4
Total ............................................................................. 14

*Chem 233 is required for students specializing in organic materials

Junior Year

CORE Program Requirements ............................................. 3
ENMA 310 — Materials Laboratory I, Structural Characterization 3
ENMA 311 — Materials Laboratory II: Electromagnetic Properties 3
ENMA 362 — Mechanical Properties .................................. 3
ENMA 460 — Physics of Solid Materials ............................... 3
ENMA 461 — Thermodynamics of Materials .......................... 3
ENMA 465 — Microprocessing of Materials ............................ 3
Specialization Electives .................................................... 3
Total ............................................................................. 16

Senior Year

CORE Program Requirements ............................................. 3
ENMA 463 — Microprocessing of Materials .......................... 3
ENMA 471 — Kinetics, Diffusion and Phase Transformations .... 3
ENMA 490 — Materials Design ......................................... 3
Specialization Electives .................................................... 3
Technical Electives .......................................................... 6
ENNE 445 — Principles of Quality and Reliability ................ 3
Upper-level science elective .............................................. 3
Total ............................................................................. 18

130 Logistics, Business, and Public Policy

The double major is 27 credits; the core of 18 credits plus 3 upper level electives (9 credits). The double degree requires all 42 credits needed for the major.

(All linguistics courses are 3 credits each)

The Core (18 credits)

LING 200 — Introduction to Linguistics
LING 240 — Language and Mind
LING 311 — Syntax I (Fall only)
LING 312 — Syntax II (Spring only)
LING 321 — Phonology I (Fall only)
LING 322 — Phonology II (Spring only)

Grammar and Cognition Tracks

PHIL 170 or 173 or 271
PHIL 360 — Language and Mind
PSYC 100 — Introduction to Psychology
PSYC 341 — Introduction to Memory and Cognition
Two 300/400 level LING electives

Two electives from LING, PSYC, HESP, PHIL, or CMSC, chosen in consultation with the advisor.

Linguistic Theory and a Language Track

Six courses of study (or 18 credits total) in one language: one of these courses should be in the history or structure of the language, if offered. Two 300/400 level LING electives.

When possible, the language of specialization should be the same as the one used to satisfy the College of Arts and Humanities' foreign language requirement. The specialization normally includes those courses that make up the designated requirement for a major in the chosen language. Special provision may be made for students who are native speakers of a language other than English and wish to conduct analytical work on the grammar of that language. A student may also study grammatical theory and English in the 18-hour concentration in English consists of courses in the history and structure of English to be selected in consultation with the student's Linguistic Advisor.

For a double major, students need 27 credits in Linguistics, which normally include the LING course for one of the two specializations.

Citation in Linguistics

15 credit hours. LING 200, 240, 311, and one course from approved list of courses. Students who fulfill Citation requirements will receive a Citation on the official transcript. Please contact the Director of Undergraduate Studies for more information.

Course Code: LING