

Add Course Request

Submitted on: 2012-01-23 10:41:56

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| 1. COURSE SUBJECT | MSE |
| 2. COURSE NUMBER (OR PROPOSED NUMBER) | 2102 |
| 3. COURSE TITLE | Materials Science and Engineering II |
| 4. INITIATING DEPARTMENT or UNIT | Chemical, Materials & Biomolecular Engineerin |
| 5. NAME OF SUBMITTER | Cathy L McCrackan |
| 6. PHONE of SUBMITTER | Phone: +1 860 486 4620 |
| 7. EMAIL of SUBMITTER | Email: cathy.mccrackan@uconn.edu |
| 8. CONTACT PERSON | Mei Wei |
| 9. UNIT NUMBER of CONTACT PERSON (U-BOX) | 3136 |
| 10. PHONE of contact person | Phone: 860-486-9253 |
| 11. EMAIL of of contact person | Email: m.wei@ims.uconn.edu |
| 12. Departmental Approval Date | 04/14/2010 |
| 13. School/College Approval Date | 11/08/2010 |
| 14. Names and Dates of additional Department and School/College approvals | |
| 15. Proposed Implementation Date | Term: Spring, Year: 2013 |
| 16. Offered before next printed catalog is distributed? | No |
| 17. General Education Content Area | |
| 18. General Education Skill Code (W/Q). Any non-W section? | None |
| 19. Terms Offered | Semester: Spring Year: Every_Year |
| 20. Sections | Sections Taught: 1-2 |
| 21. Student Number | Students/Sections: 100 |
| 22. Clarification: Open to non-MSE majors. Required course for ME and BME students. Used for requirements for minor in MSE and Nanomaterials. | |
| 23. Number of Credits | 3 if VAR Min: Max: credits each term |
| 24. INSTRUCTIONAL PATTERN | |

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| 2 75 minute class periods per week. | |
| 25. Will this course be taught in a language other than English? | No If yes, then name the language: |
| 26. Please list any prerequisites, recommended preparation or suggested preparation: MSE 2001 or 2101. Not open to students who have passed MSE 2002. | |
| 27. Is Instructor, Dept. Head or Unit Consent Required? | No |
| 28. Permissions and Exclusions: Not open for credit to students who have passed MSE 2002 | |
| 29. Is this course repeatable for credit? | No If yes, total credits allowed: Allow multiple enrollments in same term? |
| 30. Grading Basis | Graded |
| 31. If satisfactory/unsatisfactory grading is proposed, please provide rationale : | |
| 32. Will the course or any sections of the course be taught as Honors? AsHonors | |
| 33. Additional Details: | |
| 34. Special Attributes: | |
| 35. REGIONAL CAMPUS AVAILABILITY: | |
| 36. PROVIDE THE PROPOSED TITLE AND COMPLETE CATALOG COPY: Materials Science and Engineering II Structures, properties, and processing of ceramics; structure, properties and processing of polymers and composites; electrical, thermal, magnetic and optical properties of solids; and corrosion. | |
| 37. RATIONALE FOR ACTION REQUESTED Create a 2-course sequence for introductory Materials Science & Engineering for non-MSE majors. MSE 2102 will be the follow-up course of MSE 2101 to be taken by non-MSE majors who wish to minor in MSE and for those students whose major requires MSE courses | |
| 38. SYLLABUS: Online URL: (https://web2.uconn.edu/senateform/request/course_uploads/clm03012-1327333294-MSE 2102 Course Syllabus.doc) | |
| 39. Course Information: ALL General Education courses, including W and Q courses, MUST answer this question | |
| 40. Goals of General Education: All Courses Proposed for a Gen Ed Content Area MUST answer this question | |
| 41. Content Area and/or Competency Criteria: ALL General Education courses, including W and Q courses, MUST answer this question.: Specific Criteria | |

- a. **Arts and Humanities:**
- b. **Social Sciences:**
- c. **Science and Technology:**
 - i. **Laboratory:**
- d. **Diversity and Multiculturalism:**
 - 43. **International:**
- e. **Q course:**
- f. **W course:**

42. RESOURCES:

Does the department/school/program currently have resources to offer the course as proposed
YES

If NO, please explain why and what resources are required to offer the course.

43. SUPPLEMENTARY INFORMATION:

ADMIN COMMENT:

Senate approved new course 2.27.2012

MSE 2102

Introduction to Structure, Properties, and Processing of Materials II

Catalog Data MSE 2102, Materials Science and Engineering II. Second semester.

Three credits. Prerequisite: MSE 2001 or 2101. Open to sophomores or higher

Structures, properties, and processing of ceramics; structure, properties and processing of polymers and composites; electrical, thermal, magnetic and optical properties of solids; and corrosion.

Textbook

Materials Science and Engineering: An Introduction, by William D. Callister and David G. Rethwisch, 8th edition, John Wiley and Sons (2010), ISBN: 0-470-41997-0. Copies are available at the UConn Co-Op.

Goals

To provide a basic understanding of the structures, properties and processing of ceramics, polymers and composites. To introduce the main chemical, thermal, electrical, magnetic and optical properties exhibited by materials along with examples of how these properties are utilized in real world applications.

Lab Projects None

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|-----------------------------|---------------|-----------------|
| Units of Assessment: | Homeworks | 25% (2.5% each) |
| | Mid-term exam | 25% |
| | Term project | 25% |
| | Final exam | 25% |

Class / Examination Schedule

| Session | Topic (relevant chapter in Callister) | <i>HW</i> |
|---------|--|-----------|
| 1 | Simple ceramic crystal structures (12) | |
| 2 | Polymorphism and defects in ceramics (12) | |
| 3 | Applications of ceramics & glasses (13) | HW1 |
| 4 | Processing of ceramics & glasses (13) | |
| 5 | Introduction to polymers (14) | HW2 |
| 6 | Molecular and crystalline structures in polymers (14) | |
| 7 | Mechanical behavior of polymers (15) | HW3 |
| 8 | Processing of polymers (15) | |
| 9 | Classification of composite systems (16) | HW4 |
| 10 | Mechanical behavior of composites (16) | |
| 11 | PACING/REVIEW HW5 | |
| 12 | NO CLASS | |
| 13 | EXAM | |
| -- | SPRING BREAK | |
| 14 | Corrosion (17) | |
| 15 | Thermal properties of materials (19) | HW6 |
| 16 | Electrical conduction in materials (18) | |
| 17 | Band structure & types of electrical behavior (18) | HW7 |
| 18 | Semiconductor junctions & ferroelectrics (18) | |
| 19 | Magnetic properties of materials (20) | HW8 |
| 20 | Magnetic domains & superconductivity (20) | |
| 21 | Optical properties of materials (21) | HW9 |
| 22 | Absorption and luminescence (21) | |
| 23 | Optical applications: LEDs, LASERs & fiber optics (21) | HW10 |
| 24 | PACING/REVIEW | |
| 25 | Term project presentations | |
| 26 | Term project presentations | |
| 27 | Term project presentations | |
| (TBD) | FINAL EXAM | |

N.B. All assignments are handed out at the end of the Thursday class and are due back at the beginning of the following Thursday class. Assignments may be handed in early but late submissions will not be graded. As such, submission of assignments on Tuesday is encouraged.