Washington State University
MAJOR CHANGE FORM - REQUIREMENTS
(Submit original signed form and TEN copies to the Registrar's Office, zip 1035.)
See https://www.ronet.wsu.edu/ROPubs/Apps/HomePage.ASP for this form.
*Submit an additional copy to the Faculty Senate Office, French Administration 338, zip 1038.

Department Name  Materials Science and Engineering

1. CHECK PROPOSED CHANGES.
   *☐ Change department/program name from________________________ to________________________
   *☐ New degree or program in________________________________________
   *☐ Change name of degree from________________________ to________________________
   *☐ Drop degree or program in________________________________________
   *☐ Extend existing degree or program to________________________________________ campus
   *☐ New Major in________________________________________
   *☐ Change name of Major from________________________ to________________________
   *☐ Revise Major requirements in________________________________________
   *☐ Drop Major in________________________________________
   ☒ Revise certification requirements for the Major in PHD in Materials Science and Engineering
   *☐ New Option in________________________________________
   *☐ Revise requirements for the Option in________________________________________
   *☐ Drop Option in________________________________________
   *☐ New Minor in________________________________________
   *☐ Revise Minor requirements in________________________________________
   *☐ Drop Minor in________________________________________
   *☐ New Undergraduate Certificate in________________________________________
   *☐ Revise Undergraduate Certificate requirements in________________________________________
   *☐ Drop Undergraduate Certificate in________________________________________
   *☐ Other

Effective term/year ____________________

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<tr>
<th>Dr. Indranath Dutta</th>
<th>335-8354</th>
<th><a href="mailto:idutta@wsu.edu">idutta@wsu.edu</a></th>
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2. GIVE REASONS FOR EACH REQUEST MARKED ABOVE. (Attach additional paper if necessary; see reverse side.) See Attachment

4. SIGN AND DATE APPROVALS.

Chair Signature/date ____________________  Dean Signature/date ____________________  General Education Com/date ____________________

Catalog Subcom/date ____________________ Academic Affairs Com/date ____________________ Graduate Studies Com/date ____________________  Senate/Date ____________________
MEMORANDUM

From: Indranath Dutta, Director, Materials Science & Engineering Program
To: Howard Grimes, Dean of Graduate School and VP of Research
Dated: March 16, 2011

RE: Proposed Curriculum Change for MSEP

The Materials Science and Engineering Program (MSEP) has recently undergone a change not only in name (previously Materials Science Program, MSP), but in structure and operation as well. In order to more closely align the program with the desires of the faculty for a more interdisciplinary endeavor, the advisory council of MSEP has approved some changes in course requirements. There are 2 principal motivations for the proposed changes: (1) to reduce the required number of graded credits from 34 to 22, in response to the policy change of the WSU Graduate School instituted a year ago; (2) to expand the slate of core courses in order to build more flexibility into the curriculum with the intent to make the program fit the needs of a diverse, interdisciplinary faculty.

The specific changes are detailed and rationalized below.

1. Previously, every student participating in the program (the old MSP) was required to take 5 core courses, with one course picked from each of 5 areas. A limited number of courses (between 1 and 3) was listed under each topic. With the rapid expansion and diversification of the discipline of Materials Science and Engineering (MSE) during the past two decades, and the assimilation of areas as diverse as biology, physics and chemistry, wood materials and agriculture into program, a need was felt to expand the number of core areas from 5 to 10, while at the same time, significantly increasing the number of courses listed within any given core area. Students still have to take 5 core courses, but they can pick 5 areas out of 10 that best suit their needs, while being able to choose the course in each area from a larger palette of courses. Continuing having the core ensures that students have the breadth required for a modern Materials person, while broadening the core options enables them to take courses of their interest and relevance.

2. Previously, 18 credits of additional courses were required beyond the core. This has now been reduced to a minimum of 6 credits. These courses could be any of the courses listed under the core, or any other graduate-level course from engineering, physical sciences or other relevant discipline as suggested by the student's dissertation committee. Again the reduction, as well as the relaxation of constraints on where the courses could be taken from, enhances the flexibility and appeal of the program to an interdisciplinary constituency.

All other requirements, including those for seminar and thesis research remain the same as those in the old program.

It is hereby requested that pending approval of the revised program requirements by the Faculty Council, a temporary approval be given to the program by the Graduate School so that all students (current and future) may draw up their programs of study in accordance with the new requirements, effective immediately.
Current Curriculum

CORE: (16 credits)
MatS 505 Advanced Materials Science. (4)
MatS 571 Microscopic Analysis of Surfaces. (3)
A graduate Thermodynamics course (one of Phys 533, MSE 514, Chem 531, Phys 534,
Chem 534, ME 526/527) (3)
Phys 563 or Phys 463 Solid State Physics; Chem 480 Solid State Chemistry. (3)
A graduate math course: Math 540 Applied Mathematics or Phys 571 Methods of
Theoretical Physics. (3)

ADDITIONAL COURSES: (minimum of 18 credits)
Additional courses are selected by the student in consultation with their research advisor and
thesis committee. Any 400-500 level courses in engineering, mathematics and the physical
sciences are usually acceptable unless they have been used for credit in the undergraduate
program. Whenever a course is cross-listed with a MatS course, students should sign up for the
MatS course. Suggested courses include, but are not limited to
Chem 501 Advanced Inorganic Chemistry (3)
Chem 532 Advanced Physical Chemistry (3)
Chem 536 Quantum Chemistry (3)
MatS 506 Biomaterials (3)
MatS 516 Phase Transformations (3)
MatS 521 Statistics of Microstructures (3)
ME 530 Solid Mechanics (3)
ME 537 Fracture Mechanics and Mechanisms (4)
MSE 515 Electronic Properties of Materials (3)
Phys 561 Atomic and Molecular Physics (3)
Phys 575 Advanced Solid State Physics (3)

SEMINAR:
MatS 593 Seminar in Materials Science (1). May be repeated for credit. Minimum 6
credit hours required.

RESEARCH CREDITS:
At least 20 credits of MatS 800.

OTHER REQUIREMENTS:
The program must include enough 500-level courses to satisfy the Graduate School.
Proposed Curriculum

CORE:
16 credit hours = 4 credits of Mandatory coursework (i) + 12 credits chosen from four of topics (ii) through (x)
(i) MANDATORY CORE COURSE: Advanced Materials / MATS/MSE 505, 4 credits
(iv) Materials Characterization (Microscopic Anal./MATS 571, Stats. of Microstructure /MSE/MATS 521)
(vi) Quantum Mechanics / Quantum Theory (Adv. Phys. Chem/CHEM 532, PHYS 450, PHYS 550)

ADDITIONAL COURSES: (minimum of 6 credits)
Additional courses are selected by the student in consultation with their research advisor and thesis committee. Any 400-500 level courses in engineering (MSE, ME, CE, ChE), the physical sciences (PHYS and CHEM), and mathematics (MATH) are usually acceptable unless they have been used for credit in the undergraduate program. Any of the courses listed under the core (above), which have not been counted towards the satisfying the core requirement, may be counted as additional course(s). Whenever a course is cross-listed with a MatS course, students should sign up for the MatS course.

SEMINAR: (minimum 6 credits)
MatS 593 Seminar in Materials Science (1). May be repeated for credit.

RESEARCH CREDITS:
At least 20 credits of MatS 800.

OTHER REQUIREMENTS:
- The program must include enough 500-level courses to satisfy the Graduate School.
- No more than two 400-level courses may count towards degree requirements.