Date: July 25, 2013

Modification to Graduate Program in Materials Department

in order to comply with General Degree Requirements

Note:

The original Graduate Program writeup that was approved by the Senate in November 2012 needs immediate modification, mainly in the context of MATE 592, Graduate Seminar course.

The verbage related to credits earned in MATE 592 were in violation of the General Degree Requirements, which specifies that S/U courses cannot count towards fulfilling degree requirements. Other departments have followed this rule, but somehow we did not spot it earlier. Below, I state the current writeup along with changes marked in red. In addition, the new writeup for the MATE 592 seminar course is included. All the changes are minor in nature. Therefore, the Materials Department would like these changes made in the catalog that will be coming out in August 2013.

Bhaskar Majumdar

Department Chair

Materials and Metallurgical Engineering Department

**Graduate Programs**

**Master of Science in Materials Engineering**

**Thesis Option**

The Thesis Option prepares students for high quality research (and is often preferred for admission into PhD programs around the country). Full time graduate students must formalize an advisory committee that will consist of an academic advisor from the department and at least two additional members. The selection of an adviser must be completed by the end of the first semester while the remaining members of the committee along with thesis topic must be decided by the end of the second semester. Department faculty must not be in the minority in the committee. Part time or DE students must formalize their adviser by the time they complete 12 credits. The student must meet with his or her committee at least once per year.

The Course Requirements include:

(A) At least 24 credit hours of course work that must include: (i) a minimum of 12 credit hours of 500 level courses, and, (ii) at least 6 hours of upper level (300+) courses outside the Materials Department, unless the student is from a non-Materials background. No more than 3 hours of MATE 581 Directed Study.

(B) 6 credit hours of MATE 591 (Thesis) that will be defended in a public oral defense. Students may take MATE500 (Directed Research) in multiple semesters but the credits may not count towards their degree requirements.

Students must take a minimum of 2 credit hours of MATE592, Graduate Seminar; however, credit hours may not be used to fulfill degree requirements. Students in residence are encouraged to attend graduate seminars each semester it is offered.

Courses must be approved by the advisory committee, and the research should be directed towards a journal publication. Students must inform faculty advisers in advance regarding courses that they plan to take in the following semester.

Studentsare required towrite a thesis proposal (or independent study proposal) and defend it in a public oral defense before the advisory committee at least one full semester (fall or spring) before the final defense.

The final thesis must be successfully defended in a public oral defense before the advisory committee.

Additional requirements for the MS degree include the New Mexico Tech General Graduate Program Requirements.

**Master of Science in Materials Engineering,**

**Independent Study Option**

A student may petition the department with the approval of the faculty to pursue a Master of Science Degree with an Independent Study Option. The selection of committee members and the research topic must follow the same requirements as those for the Master’s Thesis option.

The Course Requirements Include:

(A) At least 27 credit hours of course work that must include:(i) a minimum of 15 credit hours of 500 level courses, and, (ii)and at least 6 hours of upper level (300+) courses outside the Materials Department, unless the student is from a non-Materials background.

(B) 3 credit hours of MATE 590 (Independent Study) that will be defended in a public oral defense. Students may take MATE500 (Directed Research) in multiple semesters but the credits will not count towards their degree requirements.

Courses must be approved by the advisory committee. Students must inform faculty advisers in advance regarding courses that they plan to take in the following semester. The MATE 592 requirements as stated in the Masters Thesis Option will also be applicable here.

Studentsare required towrite an independent study proposal and defend it in a public oral defense before the advisory committee at least one full semester (fall or spring) before the final defense.

The Final Independent study must be successfully defended in a public oral defense before the advisory committee.

Additional requirements for the MS degree include the New Mexico Tech General Graduate Program Requirements.

**Combined Five Year Bachelor of Science /Master of Science Degree Program**

The combined degrees of a MS in Materials Engineering (either Thesis or Independent Study Option) along with a BS in Materials Engineering or affiliated field may be achieved in five years. For students in MATE or METE BS programs, a minimum of 158 credit hours are required to complete the combined (BS+MS) degree. For students in affiliated BS programs, there are commensurate requirements. Students must fulfill all the requirements for their BS program and, depending upon their selection of a Thesis or Independent Study Option, complete the following additional requirements:

* **Thesis Option**: (i) A minimum of 12 credit hours of 500 level courses; (ii) 9 additional credit hours of upper or 500 level courses that may include no more than 3 credit hours of MATE 491 (Directed Study), (iii) 2 credit hours of MATE 592, and, (iv) 6 credit hours of MATE 591 (Thesis) that will be defended in a public oral defense.
* **Independent Study Option**: (i) A minimum of 15 credit hours of 500 level courses, (ii) 9 additional hours of upper or 500 level courses that may include no more than 3 credit hours of MATE 491 (Directed Study), (iii) 2 credit hours of MATE 592, and, (iii) 3 credit hours of MATE 590 (Independent Study) that will be defended in a public oral defense.

Students graduating with a BS in Materials Engineering must include a minimum of 6 credit hours of approved upper-division or graduate course work from other departments in the above list, as part of the general breadth requirements for MS degree. The breadth requirement may be waived for non-materials students, but they are highly encouraged to take all courses towards their MS degree in Materials Engineering. The student must select courses in close consultation with the MS advising committee and research work should be directed towards a publication. Students for the 5-year program must apply for graduate standing, normally in their 6th semester. Admission is contingent upon their having a 3.0 GPA and the acceptance of their proposed course of study. Students with upper division standing may apply, but admittance into the program will be conditional. Graduate Admission will be contingent upon adherence to the approved program of study and a 3.0 minimum overall cumulative GPA. Graduate status will be granted upon fulfillment of the requirements for the BS degree.

**Doctor of Philosophy in Materials Engineering**

The prospective doctoral candidate should develop a good background in materials sciences, chemistry, physics, and mathematics, in addition to achieving a high level of competence in a specialized area of materials. Programs are arranged by the prospective student and the student’s advisory committee.

The PhD requirements include the following:

1. Select an advisory committee that shall consist of a minimum of four members: (a) an academic adviser from the Materials department, (b) at least three other members out of which one must be from outside the department (not necessary from a different field). The research adviser may be the academic adviser or other members of their committee. Materials faculty shall not be in the minority on the advisory committee. The student must select an academic adviser, who may serve as a temporary research adviser, before the second semester of study. The selection of the entire committee and thesis topic must be completed by the end of the second semester of study for full-time in-house students, and immediately after completing 12 credit hours for DE students. The student mustmeet with his or her committee at least once per year, and must get courses approved by them.
2. Complete at least 24 credit hours of courses approved by the doctoral committee, including:

(i) At least 12 hours of 500 level courses. No more than 3 hours of MATE 581 Directed Study may be used for fulfilling the course requirements. Students may take MATE500 (Directed Research) in multiple semesters but the credits may not count towards their degree requirements. Students must take a minimum of 3 credit hours of MATE592, Graduate Seminar; however, credit hours may not be used to fulfill degree requirements. Students in residence are encouraged to attend graduate seminars each semester it is offered.

* For students who already receive an MS degree from the Materials department, the total credit requirements for course work may be reduced below 24 credits with the approval of their committee, department chair and the graduate dean.

1. Conduct a successful written and public oral critique of a paper published in a high quality professional journal. The paper choice shall be agreed on by the doctoral committee. The paper critique is the Materials Department’s **Preliminary**(alternately called qualifying) examination. This is the first examination that a student has to pass. During the paper critique presentation, the student may be asked questions relating to background knowledge gained from taking regular coursework in materials and related subjects. The paper critique must be completed within 18 months of enrolling into the PhD program.
2. Write a research proposal and defend it in a public oral defense at least two full semesters before the final dissertation defense. This proposal defense is the Materials Department **Candidacy** exam, and should address the rationale for the research plan and preliminary work in progress. This examination can only be taken after a student has passed the preliminary examination.

5. The admission to candidacy to the PhD degree requires that the preliminary and candidacy examinations be passed and approved by the advisory committee. Following this, the student must enroll in at least 24 credit hours of MATE 595 Dissertation during which the student completes the research project approved by the advisory committee. The student cannot start taking MATE 595 credits until both the preliminary exam (paper critique) and the candidacy exam (proposal defense) have been passed.

6. A full-time graduate student must be enrolled in a minimum of 9 credit hours per regular semester and 6 credit hours during the summer.

7. The student must submit at least one paper based on the dissertation to a recognized journal acceptable to the doctoral committee. A preprint must be submitted to the doctoral committee prior to defense of the PhD thesis. It is preferable that this paper be accepted by the journal and a written copy of acceptance or conditional acceptance with reviewer comments should be provided to the committee.

8. The student must write the final dissertation and defend it in an oral public defense before the doctoral committee.

Additional requirements include the New Mexico Tech General Graduate Program Requirements.

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**MATE 592, Materials Engineering Graduate Seminar, 1 cr, 1 cl hrs**

*Must be taken S/U*

*Prerequisite*: Graduate standing or consent of instructor

Seminar presentations by students, faculty and outside speakers. Discussion of topics of technical interest in materials science and engineering and related fields.