Materials Science & Engineering

Graduate Handbook
2014-2015

Last Updated: 12/04/14

1. Introduction

The Department of Materials Science & Engineering (MSE) offers graduate students the opportunity to conduct state-of-the-art research under the supervision of world-class faculty while pursuing Master of Science or Doctor of Philosophy degrees in the discipline. The UF Graduate Catalog is the University of Florida's official record of graduate policies, critical dates, deadlines, course descriptions and faculty members for master's degree and doctoral degree students. It is the student's responsibility to know and understand these rules. The graduate school catalog may be found at this link: http://gradschool.ufl.edu/students/catalog.html. This handbook is provided to MSE graduate students to serve as a companion resource to the University of Florida Graduate Catalog.

2. Department Administration

Dr. Simon Phillpot
Chairman
100B Rhines
sphil@mse.ufl.edu
846-3782

Dr. Scott S. Perry
Associate Chairman of Academics Services
206 Rhines
ssp@mse.ufl.edu
846-3333

John J. Mecholsky, Jr.
Graduate Coordinator
237 Rhines
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Martha B. McDonald
Academic Coordinator
108A Rhines
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846-3312

3. Advising/Registration

The responsibility of every student's curriculum planning will rest on the student and his/her advisor/supervisor. If you have not joined a faculty member's group, then you will see Dr. John J. Mecholsky, Jr. (237 Rhines Hall) for advisement.

- Prior to each semester a registration hold will be placed on your records
- Please refer to www.isis.ufl.edu and review your hold screen to check for additional holds to your record which will prevent registration
- You must seek permission to register from your advisor either in person or electronically, this will enable the Academic Services Office (ASO) to lift your registration hold
    - In person – Download the form by following the directions below:
        - Go to MSE Website: www.mse.ufl.edu
        - Click on Academics in the menu bar
        - Click on Forms in the left-hand column (aka **Forms** page on the MSE website)
        - Click on Academic Advisement Form under Graduate Student Registration
            - Fill out advisement form and take to advisor/supervisor for signature
            - Bring completed advisement form to ASO for permission to register
    - Electronically – Online Advisement Form

        - This form is available from the 1st day of advanced registration through the last day of classes the previous term
        - Go to MSE Website: www.mse.ufl.edu
        - Click on Academics in the menu bar
        - Click on Forms in the left-hand column (aka **Forms** page on the MSE website)
        - Click on Online Graduate Advising Form under General Forms
            - Click on your advisor/supervisor's name; (Mecholsky, John if you do not have an advisor)
            - ASO will email you directions within one business day from receiving an approval from your advisor
    - After receiving permission to register, go to www.isis.ufl.edu
        - Go to Registration, Register Now in the left-hand column and click on the term (fall, spring, or summer) for which you are registering
        - Proceed to the registration screens
        - Click on Register by section number if applicable
        - Type in the section number provided by ASO and if applicable the number of credits
        - Confirm the course with your Gatorlink password
        - Repeat the steps above for the remainder of your registration
    - Register on time to avoid unnecessary late fees. Registration and payment deadlines for each semester can be found at this link: https://catalog.ufl.edu/ugrad/current/Pages/dates-and-deadlines.aspx
    - Some students on funding are required to pay non-matriculation fees each term
        - Fees for 2013-14 are 78.02/credit hour for students who started fall 2013
    - Pay your portion of fees by the fee payment deadline even if your tuition waiver has not been processed. This will insure you will not be assessed late payment fees. The ASO will not process petitions for late fee payments. In recent terms the Student Financial Affairs has deferred the portion

4. Funding/Employment

- Graduate Student Fellowship Award (GSFA) – must maintain enrollment of 9 credit hours in the fall and spring and 6 credit hours in the summer terms
- Graduate Research Assistant – the contract for UF Graduate Assistants United can be found at this link:
- http://ufgau.org/wp/
- External Funding (NSF, DOE, GEM, etc.) – It is customary to provide ASO with award information for external funding
- College Achievement Award (CA) – out-of-state or international students, who are not on traditional funding, may be awarded partial financial support via the CA. The following rules apply:
    - No other funding: i. e., assistantship, fellowship, etc. may be held concurrently. Support for services that do not contribute to their degree program is permitted (e.g., outside employment, temporary OPS in department).
    - Is good for a maximum of 36 credit hours within 1st two years of enrollment
    - Students pay a set rate per credit hour; this amount is provided in the original offer letter
    - May hold OPS employment in the department in which you receive the CA
    - Must maintain a minimum 3.0 gpa in both the departmental and cumulative courses
    - Must notify ASO upon receipt of other funding (GRA, External, etc.)

- Other Personnel Services (OPS) – on-campus jobs through www.jobs.ufl.edu
    - Must apply online through www.jobs.ufl.edu
    - If receiving CA, OPS is allowed within the same department as receiving the CA award
- Volunteering – Graduate students may not volunteer to work in this department under any circumstances. Students must either be compensated for their work in a lab or be registered for research under the faculty member's supervision.
- Internships – Students may register for internship credits under the following guidelines:
    - Must have permission from their supervisory committee chair or graduate coordinator if the student has no supervisory committee
    - Complete and submit the Request for internship form from the Forms page and attach your offer letter from the company
    - ASO will review your form and notify you via email if the request is processed
    - If approved ASO will send information on how to register for EGN5949
        - If registered for EGN5949, the following forms should be submitted to ASO electronically no later than a week before classes end for the term registered in order to receive grade for that term. Links to these forms are on the Forms webpage
            - EGN5949 Employer's Student Evaluation Form
            - EGN5949 Student's Evaluation of Employer
        - Curricular Practical Training (CPT) – For international students only, please refer to the University of Florida International Center for the CPT instructions and registration requirements: www.ufic.ufl.edu
            - Apply with ASO by following the Internship instructions above by the appropriate deadline
                - April 1 – summer CPT
                - July 1 – fall CPT
                - November 1 – spring CPT
- Payroll and Tax Information
    - Students on formal funding (assistantship, fellowship, etc.) should refer to the Tax Office for information on whether or not taxes will be taken out of their stipends: http://www.fa.ufl.edu/tax/
- Graduate Insurance
    - Students on appointments began receiving health care benefits beginning in the fall 2013 term, please refer to http://www.hr.ufl.edu/benefits/gatorgradcare/ for additional information
- If you obtain any type of funding (Graduate Research Assistantship (GRA), External Fellowship, etc.) after you arrive, please notify ASO
- Graduate students are required to keep a minimum 3.0 grade point average (GPA) both for their cumulative and departmental courses; failure to maintain the appropriate GPA may result in loss of funding

5. Academic Requirements

- Form Supervisory Committee no later than the end of your second semester of study or after 12 credit hours in order to be able to register for a third semester
    - Form is at the following link: http://www.mse.ufl.edu/academics/mse/general-forms/
        - Form requires all original signatures of faculty members

- Transfer credits – graduate level courses from a Master's degree from another university may be considered for transfer to count towards the MS or PhD degree with approval of your supervisory chair or the graduate coordinator. In addition the following must apply:
    - If student is pursuing a MS degree at UF, then up to nine (9) credits may be requested
    - If student is pursuing a PhD at UF, then up to 30 credits may be requested
    - All work transferred must be coursework taken with a grade of B or better
    - Student must submit a Transfer of Credit review by sending an email to advising@mse.ufl.edu
- Progression to Graduation – Every student is expected to make satisfactory progress toward graduation each semester. Students who fail to make satisfactory progress may be required to seek advisement, mandated to meet specific conditions in order to continue in the major, or denied further registration in the department.
    - Additional Progression Standards which all MSE students must meet:
        - Maintain a grade point average (GPA) of 3.0 or higher both cumulatively and within departmental courses
    - Probation: students who fail to maintain the minimum 3.0 GPA in either the cumulative or departmental courses are placed on Academic Probation and may need to petition to maintain funding
        - Must sign a probation contract with ASO by the last day of drop/add for each semester
        - May request a one-time petition only to maintain funding (GSFA, GRA, CA, etc.); this will only be processed if a current probation contract is in place

PhD

- Required Credit Hours: 90 beyond the bachelor's degree
- Required: 18 hours EMA5000-6000 level (base-count hours) courses with a minimum grade of C or better
- Coursework is decided between the student and advisor
- All graduate students are required to register for "EMA6936: Seminar in Materials Science and Engineering" (1 credit) each semester, unless a student has registered for 9 credits of graded courses in that semester, or is in the final semester before graduation and has received a waiver from the Academic Services Office.
- Additional options for courses which are relative to the PhD degree
    - Maximum 9 credit hours of coursework outside the Department; of these 3 credits may be an undergraduate course at a 3000-4999 level
    - Maximum 8 credit of EMA6905 – Individual Work
    - Maximum 5 credits of EMA6910 – Supervised Research
- Supervisory Committee – Rules for the MSE Supervisory Committee are as follows:
    - Must be formed by the end of the 2nd semester or completion of 12 credits
        - To form the committee, students must submit a completed Supervisory Committee Form with signatures from all faculty, the form may be found on the **Forms** page of the MSE website www.mse.ufl.edu
    - Committee consists of 5 members who hold graduate faculty status with the Graduate School
        - 4 Internal MSE members
            - Chair
            - 3 additional MSE graduate faculty
        - 1 External member; this individual cannot hold MSE graduate faculty status
- Ph.D. track students will have to achieve two separate requirements (one academic, one research potential) as described below in order to be admitted to Ph.D. candidacy.

I. ACADEMIC REQUIREMENT:

- All PhD track students must take 4 core courses:
  EMA 6313: Advanced Materials Principles 1
  EMA 6114: Advanced Materials Principles 2
  EMA 6316: Materials Thermodynamics
  EMA 6136: Diffusion, Kinetics, & Transport
- Students must obtain a minimum grade of B or better in each core course. Students cannot take any core course more than twice in order to achieve this requirement.
- All PhD track students must pass one specialty course (EMA 6xxx) with a minimum grade of B or better within two attempts (including withdrawal), with the following conditions:
  - The specialty course needs to be selected from a list of graduate courses the Department has approved (see attachment). Special topics courses (EMA 6938) may also be considered on a case-by-case basis through petitioning.
  - Upon consultation with the faculty advisor, the student needs to designate the required specialty course before enrolling in that course.
  - If a student fails the designated specialty course (i.e., a grade of B- or worse) on his/her first attempt, the student may choose to re-take the same course if available, or choose a different course from the approved course list and designate it as the required specialty course. In either case, the student needs to pass the specialty course on this second attempt in order to satisfy the PhD degree requirement on specialty course (i.e. a total of two attempts will be allowed regardless if the student chooses to take the same specialty course twice or two different courses with one attempt each).
- Students have a maximum of two years from the entry to the graduate program to achieve this academic component requirement (note the exception below).
- Under special circumstances, students identified during the recruiting process and/or first semester registration, may petition to delay enrollment in these courses in order to remedy deficiencies in their undergraduate preparation or any other course load limitation (e.g. off-campus students). An approved plan of study (by ASO, the graduate coordinator and the advisor championing the student) must be in place (petitioned and approved) before drop/add in the beginning of the first semester.

II. RESEARCH POTENTIAL REQUIREMENT:

- The students must write a Ph.D. research proposal and defend it orally in front of the Ph.D. supervisory committee.
- A Ph.D. supervisory committee must be in place for the student to present/defend the research proposal.
- Examination will be graded pass/fail.
- Students have a maximum of two attempts to defend the Ph.D. research proposal. The first attempt should be made no later than the end of the 5th term (counting the Summer Term) from the entry to the graduate program.
- The students have a maximum of two years from the entry to the graduate program to achieve this research potential requirement
  - Online announcement must be submitted to ASO at least one week prior to the defense by following the directions below:
    - Go to the Forms page on the www.mse.ufl.edu website
    - Click on Admission to Candidacy in the Supervisory Committees/Defenses section, the form is self-explanatory
      - If you have any internal substitutes (maximum of 2), then indicate the substitution on the form. For example, Dr. Phillpot will substitute for Dr. Perry
  - Proposal defense date
    - Entire Supervisory Committee must attend and examine the student

        - Two internal MSE members may be substituted if necessary
    - Supervisory Committee chair or another member of the committee must pick up the defense paperwork from ASO
        - Forms must be returned within 5 business days of the defense or ASO will process as a failed examination
        - If the exam is passed, then the student will be Admitted to Candidacy
        - If the student does not pass the initial attempt of the Proposal Defense, then the 2nd attempt should be taken no later than the last day of classes the following term
- Either requirement can be passed or achieved independently of the other. That is, the academic requirement can be met independent of the research potential requirement, and vice versa.
- ONCE students achieve both requirements they will be admitted to Ph.D. Candidacy before the beginning of the third year. Students not successfully achieving both requirements by the end of their second year will not be admitted to Ph.D. candidacy.
- Time limitations
    - Per the grad school catalog, "All work for the doctorate must be completed within 5 calendar years after the qualifying examination, or this examination must be repeated." NOTE: for the MSE department, the Qualifying Exam pertains to the completion of both the Academic Requirement and the Research Potential Requirement.
    - Admission to Candidacy – Per the grad school catalog, "All work for the doctorate must be completed within 5 calendar years after the qualifying examination, or this examination must be repeated." NOTE: for the MSE department, the Qualifying Exam pertains to the completion of both the Academic Requirement and the Research Potential Requirement.
    - Final Exam – Per the grad school catalog, "The defense should be no more than 6 months before degree award."
- All Ph.D. students admitted into the MSE graduate program in or after Fall 2013 are required to complete a professional development requirement as part of their Ph.D. education. This professional development requirement has the following two components:
    - Students are required to successfully complete a one-credit hour Professional Development (teaching/research training) course before beginning their second year of study.
    - Students are required to serve as a teaching assistant (TA) for two separate courses, with an expected work load of 5 hours per week per course. This component is expected to be satisfied within the second and third year from the student's entrance into the MSE Ph.D. program.

Expectations for Teaching Assistants and Faculty Instructors:

- It is a TA's responsibility to meet with the assigned faculty instructor as soon as the assignment is made.
- The instructor should give a clear instruction on the duties and expectations for the TA.
- The faculty instructor is strongly recommended to assign a diverse set of duties to ensure the TA will receive broad-based training through this TA experience.
- The faculty instructor should ensure that the work load of the TA does not exceed the allowed time (5 hours per week per course) with reasonable effort by the TA.
- Possible duties may include, but are not limited to, a subset of the following:
    - Host office hours
    - Host review sessions
    - Grade homeworks and/or exams
    - Help the instructor create homework and/or exam problems

    - Prepare homework and/or exam solutions
    - Proctor exams
    - Prepare, copy and distribute classroom materials
    - Return student work
    - Attend classes if required by instructor
    - Give lectures, but only under special circumstances and agreed upon by the instructor and the TA
- Performance of the TA will be evaluated by both the faculty instructor and the students enrolled in the course.
- The TA should communicate regularly and promptly with the instructor to resolve issues related to students' work in the course as well as the performance and duties of the TA.
- An official grievance process is in place if the TA feels him/her being treated unfairly by the students in the course and/or the faculty instructor. The complaint goes to the MSE Graduate Coordinator first, then to the Associate Chair for Academics, and to the Department Chair.

- Dissertation Defense
    - Online announcement must be submitted at least one business day prior to the defense by following the directions below:
        - Go to the **Forms** page on the www.mse.ufl.edu website
        - Click on **Final Examinations (MS-Thesis or PhD)** in the Supervisory Committees/Defenses section, the form is self-explanatory
            - If you have any internal substitutes (maximum of 2), then indicate the substitution on the form. For example, Dr. Phillpot will substitute for Dr. Perry
    - Dissertation defense date
        - Entire Supervisory Committee must attend and examine the student
            - Two internal MSE members may be substituted if necessary
        - Supervisory Committee chair or another member of the committee will pick up the defense paperwork from ASO, the paperwork will include the ETD Signature Page
            - Final examination forms must be returned within 5 business days of the defense or ASO will process as a failed examination
            - If the ETD signature page is not completed at the final examination, then the student will be given the ETD page for completion. The student must submit the completed ETD page to ASO no later than three business days prior to the Graduate School Editorial Office's published deadline for Final Examinations

MS Non-Thesis (MSN)

- Required Credit Hours: 30
- Required: 15 credits of EMA5000-6000 level (base-count hours) core courses (see below) with a minimum grade of C or better in each course and a minimum GPA of 3.0 or above
- All graduate students are required to register for "EMA6936: Seminar in Materials Science and Engineering" (1 credit) each semester, unless a student has registered for 9 credits of graded courses in that semester, or is in the final semester before graduation and has received a waiver from the Academic Services Office.
    - EMA 6313: Advanced Materials Principles 1
    - EMA 6114: Advanced Materials Principles 2

    - EMA 6316: Materials Thermodynamics
    - EMA 6136: Diffusion, Kinetics, & Transport
    - EMA 5095: Critical Analysis of Research in MSE
- Course work is decided between the student and the graduate coordinator
- Additional options for courses which are relative to the MSN degree
    - Maximum 6 credit hours of 3000 level or higher courses outside the MSE program
    - Maximum 6 credits of S/U graded work
    - Department approval is needed for registering for EMA 6905 – Individual Work
- Transfer credits – up to 9 credits of graduate level courses from a Master's degree at another university may be considered for transfer to count towards the MSN degree with approval of your supervisory chair or the graduate coordinator. In addition per the grad school catalog, "Petitions for transfer of credit for a master's degree must be made during the student's first term of enrollment in the Graduate School." In addition the following must apply:
    - All work transferred must be coursework taken with a grade of B or better
    - Student must submit a Transfer of Credit request form electronically via the Student-Forms webpage
    - ASO will notify student via email once the form is ready for the graduate coordinator's signature
    - Student will need to pick up the form and return it to ASO for processing
- Time limitations – All work, including transferred credits, counted toward the master's degree must be completed during the seven years immediately preceding the date which the degree is awarded
- MSN Non-Thesis Paper – Guidelines for the MSN Non-Thesis Paper may be found on the **Forms** page on the MSE website www.mse.ufl.edu
    - The paper is due to the graduate coordinator of the respective program by email no later than 5 business days prior to the Graduate School's published deadline for the respective document.

MS Thesis (MST)

- Required Credit Hours: 30
- Required: 15 credits of EMA5000-6000 level (base-count hours) core courses (see below) with a minimum grade of C or better in each course and a minimum GPA of 3.0 or above
- All graduate students are required to register for "EMA6936: Seminar in Materials Science and Engineering" (1 credit) each semester, unless a student has registered for 9 credits of graded courses in that semester, or is in the final semester before graduation and has received a waiver from the Academic Services Office.
    - EMA 6313: Advanced Materials Principles 1
    - EMA 6114: Advanced Materials Principles 2
    - EMA 6316: Materials Thermodynamics
    - EMA 6136: Diffusion, Kinetics, & Transport
    - EMA 5095: Critical Analysis of Research in MSE
- Coursework is decided between the student and their MST advisor
- Additional options for courses which are relative to the MST degree
    - Maximum 6 credit hours of 3000 level or higher courses outside the MSE program
    - Maximum 6 credits of EMA6971 – Master's Research
    - Maximum 6 credits of S/U graded work excluding EMA6971 – Master's Research

- Department approval is needed for registering for EMA 6905 – Individual Work

- Transfer credits – up to 9 credits of graduate level courses from a Master's degree at another university may be considered for transfer to count towards the MST degree with approval of your supervisory chair. In addition per the grad school catalog, "Petitions for transfer of credit for a master's degree must be made during the student's first term of enrollment in the Graduate School." In addition the following must apply:
  - All work transferred must be coursework taken with a grade of B or better
  - Student must submit a Transfer of Credit request form electronically via the Student-Forms webpage
  - ASO will notify student via email once the form is ready for their supervisory chair's signature
  - Student will need to pick up the form and return it to ASO for processing
- Time limitations – All work, including transferred credits, counted toward the master's degree must be completed during the seven years immediately preceding the date on which the degree is awarded
- Supervisory Committee – Rules for the MSE Supervisory Committee are as follows:
  - Must be formed by the end of the 2nd semester or completion of 12 credits
    - To form the committee, students must submit a completed Supervisory Committee Form with signatures from all faculty, the form may be found on the **Forms** page of the MSE website www.mse.ufl.edu
  - Consists of 3 MSE faculty members who hold graduate faculty status with the Graduate School
- Thesis Defense
  - Online announcement must be submitted at least one business day prior to the defense by following the directions below:
    - Go to the **Forms** page on the www.mse.ufl.edu website
    - Click on **Final Examinations (MS-Thesis or PhD)** in the Supervisory Committees/Defenses section, the form is self-explanatory
      - If you have any internal substitutes (maximum of 1), then indicate the substitution on the form. For example, Dr. Phillpot will substitute for Dr. Perry
  - Thesis defense date
    - Entire Supervisory Committee must attend and examine the student
      - One internal MSE members may be substituted if necessary
    - Supervisory Committee chair or another member of the committee must pick up the defense paperwork from ASO, the paperwork will include the ETD Signature Page
      - Final examination forms must be returned within 5 business days of the defense or ASO will process as a failed examination
      - If the ETD signature page is not completed at the final examination, then the student will be given the ETD page for completion. The student must submit the completed ETD page to ASO no later than three business days prior to the Graduate School Editorial Office's published deadline for Final Examinations

6. Graduation

Prior to the term of graduation, you should meet with ASO staff to conduct a graduation check. Additional requirements are below:

- Apply for the appropriate degree (Master of Science or Doctor of Philosophy) by submitting an online degree application through www.isis.ufl.edu by the posted Registrar's Deadline for the term
- Comply with Graduate School www.gradschool.rgp.ufl.edu rules and Graduate School Thesis/Dissertation and Final Examination Deadlines, refer to the Graduate School and the Editorial Office for the appropriate dates
- Register for the appropriate credits for your degree per the Graduate School. NOTE: students receiving formal funding (GRA, GSFA, etc.) must maintain appropriate registration for their tuition waiver
    - PhD - a minimum 3 credits of EMA7980, Doctoral Research if final term is fall/spring or 2 credits if final term is summer
    - MS Non-Thesis – a minimum 3 credits which are applicable to the degree if final term is fall/spring or 2 credits if final term is summer
        - Applicable courses would include
            - EMA5000-6000 level course
            - Course outside department, if maximum hasn't been taken
            - EMA6910, if maximum S/U credit limits or EMA6910 maximum hasn't been taken
    - MS Thesis - a minimum 3 credits of EMA6971, Master's Research if final term is fall/spring or 2 credits if final term is summer

If this is a terminal degree, then student must complete the Departmental Employment Questionnaire and Exit Interview Checklist and return them to ASO no later than the last day of classes for the term.

Attachment:

Below is the approved list of specialty courses students may designate to fulfill the specialty course requirement for Ph.D. degree.

Ceramics:

EMA 6109: Physical Chemistry of High Temperature Materials
EMA 6319: Applied Colloid Science
EMA 6445: Electroceramics
EMA 6446: Solid State Ionics
EMA 6448: Ceramic Processing
EMA 6540: Fundamentals of Crystallography
EMA 6715: Fracture of Brittle Materials
EMA 6804: Quantum Methods in Computational Materials Science

Electronic Materials:

EMA 6110: Electron Theory in Solids

EMA 6616: Advanced Electronic Material Processing
EMA 6412: Synthesis and Characterization of Electronic Materials
EMA 6416: Organic Electronics

Metals:

EMA6625: Advanced Metals Processing
EMA6510: Survey of Materials Analysis Techniques
EMA6106: Advanced Phase Diagrams
EMA6107: High Temperature Alloys

Polymers:

EMA 6165: Polymer Physical Science
EMA 6461: Polymer Characterization
EMA 6581: Polymeric Biomaterials

Biomaterials

EMA 6165: Polymer Physical Science
EMA 6461: Polymer Characterization
EMA 6581: Polymeric Biomaterials
EMA 6580: Science of Biomaterials
EMA 6xxx: Nanomaterials: from Theory to Applications
EMA 6xxx: Bioinspired Materials
EMA 6xxx: Nanomagnetism and Nanomedicine

- These forms can be found on the **Student-Forms** page of the MSE website www.mse.ufl.edu