Department of Materials Science and Engineering, University of Illinois

HANDBOOK FOR STUDENTS ENROLLED IN MATSE GRADUATE PROGRAMS

Revised August 2025

The Department offers the M.S. and Ph.D. degrees in Materials Science and Engineering. The academic requirements of the Graduate College, the Department and its Concentration Areas are summarized in this handbook. Detailed information can be found on the following web sites:

MatSE Department (https://matse.illinois.edu/academics/graduate-programs)

University of Illinois Programs of Study (http://catalog.illinois.edu/graduate/)

Graduate College Handbook (https://grad.illinois.edu/handbooks-policies)

Students are also welcome to consult with the Associate Head of Graduate Programs for further interpretation of the requirements.

I. GENERAL REQUIREMENTS

Students may elect to complete the M.S. degree prior to entering the Ph.D. program or they may enter the Ph.D. program directly on being admitted to the Department's Ph.D. program. A student originally accepted for the M.S. program and desiring to transfer to the Ph.D. program needs the approval of the Graduate Admissions Committee (see Section III); if approved the student must submit a petition to the Graduate College for a degree program transfer.

All students must satisfy the Departmental requirements and maintain a minimum grade point average (GPA) equal to or greater than 3.0. Students falling below this level will be placed on probation and will have one semester to get their GPA above 3.00. Failure to maintain a GPA $\geq$ 3.00 will result in termination of graduate student status.

Conduct. The Department requires that students adhere to the high standards of conduct and integrity as defined in the University Student Code (http://studentcode.illinois.edu). Please take the time to read ARTICLE 1–STUDENT RIGHTS AND RESPONSIBILITIES. Among the important sections are the following:

1-107 Religious Beliefs, Observances, and Practices
1-108 Nondiscrimination Policy
1-109 Sexual Harassment Policy
1-110 Reasonable Accommodations for Students with Disabilities
1-201 Responsibilities of Students
1-302 Rules of Conduct
1-401 Academic Integrity
1-402 Infractions of Academic Integrity
1-403 Penalties for Infractions of Academic Integrity

Statement on integrity in research and publication from the Vice President for Academic Affairs can be found at (https://www.vpaa.uillinois.edu/cms/one.aspx?portalId=420456&pageId=440887) and further details concerning Academic Integrity are given in the Policy and Procedures on Integrity in Research and Publication (https://www.vpaa.uillinois.edu/userfiles/Servers/Server_420372/file/Integrity-in-Research-Publication-policy%20(3).pdf). Additional information is also available from the Office of the Vice Chancellor for Research (http://research.illinois.edu/regulatory-compliance-safety/research-integrity-and-ethics). One example is when a student *plagiarizes* material from another source, i.e., uses text, figures or results in his/her own work without citing the original source of the information. Violations can result in dismissal from the program.

In the event of alleged violations or of graduate student grievances, the Department follows Graduate College-approved policy and procedures to reach a resolution. Copies can be obtained from the Department office upon request.

Medical situations. If a student has a diagnosed medical issue that may affect performance in the program, they should inform the Associate Head of Graduate Programs. This information is asked so that accommodations, if needed, can be implemented ahead of time.

Transfer Credit. Students may petition to apply credit for courses taken elsewhere or excess courses for the B.S. degree at UIUC to their graduate degree at UIUC. Students should submit the petition to the Associate Head of Graduate Programs together with outlines of the relevant courses taken at other institutions and an official transcript from the appropriate institution. The following conditions apply: 1) the student must have completed at least 8 hours of coursework on the UIUC campus towards the degree; 2) the non-UIUC coursework must have been completed within the previous 5 years; 3) the credit shall not have been applied towards another degree, either at UIUC or another institution; and 4) generally, a maximum of 12 hours of transfer credit may be counted toward a graduate degree. All Ph.D. candidates, regardless of transfer credit, must complete at least 64 hours of credit while in residence. All M.S. candidates must complete at least 24 hours of credit in residence.

Time Limits. The Graduate College specifies that all requirements for the M.S. degree must be met within 5 years of entering the Graduate College. Candidates for the M.S. degree must spend at least 2 semesters in residence.

All requirements for the Ph.D. degree must be completed within 7 years after first registering in the Graduate College or within 6 years after entering the University with a M.S. degree. Candidates for the Ph.D. degree must spend at least two consecutive semesters in residence.

Extensions to the above time limits may be granted upon petition to the Graduate College. However, the Department reserves the right to reduce its level of financial support for a student who requires a time extension.

Annual Reviews. All graduate students are required to complete an online review form each year. The annual reviews are conducted to ensure timely progress toward the graduate degree. Instructions will be provided by the Department during the spring semester along with the announcement of the due date.

Credit for 590 and 599. Students can only apply credit obtained in these courses toward a degree administered by the Department if registered under the Course Reference Number (CRN) of a member of the Graduate Faculty in the Department. Students who wish to take research under a person who is not a member of the Graduate Faculty in the Department must have the approval of the Department Head and be assigned an Academic Advisor within the Department. Except under unusual circumstances these students will register for 590 and 599 courses using the CRN of the Advisor within the Department.

Course signups for newly arrived students. Newly arrived graduate students should sign up for at least 12 hours of course credit including the seminars, colloquium, and Introduction to Laboratory Safety course listed at the end of this document. Students on the Ph.D. track should include MSE 500, Thermodynamics of Materials (or CHEM 544 or PHYS 504). Once they choose an advisor, they should add two hours of course credit for MSE 599 (thesis) to achieve a total of 14 hours of credit. Note that the deadline for online course add/drops is the first week of September. However, changes can be made after that date by picking up a form from the department office.

Advisor selection/assignment. Students in the M.S. track will be assigned an academic advisor by the Associate Head of Graduate Programs at the beginning of their first semester. Students in the Ph.D. track must select a thesis advisor by the end of September of their first year (starting Fall semester), as announced at the new student orientation. If a Ph.D. student selects a thesis advisor who is neither a Department faculty nor an affiliate, they will require an academic advisor from the Department who will chair their preliminary and final examinations. In such a case, the student should consult with their thesis advisor to suggest names of two Department faculty members who can serve that role and the Associate Head of Graduate Programs will assign the academic advisor.

Full-time student status. There is a minimum of 8 credit hours (including thesis research, MSE 599) to be considered as a full-time student for fall and spring semesters. If there are other University or related policies that apply to a particular student and require greater than 8 credit hours for full-time student status, those policies will override this minimum. International students will have to register for a minimum of 12 hours for their visa status.

II. DEPARTMENTAL REQUIREMENTS

MSE 529/559 Requirement. All students in both the M.S. and Ph.D. programs are required to register for (0 or 1 hour) and receive satisfactory grades in either Hard Materials Seminar (MSE 529) or Soft Materials Seminar (MSE 559) every semester in residence. Usually, having more than 2 unexcused absences for a given semester will lead to an unsatisfactory grade for that semester. Specific requirements, including attendance requirements, for a given semester will be announced by the instructor of the course. An approval from the Associate Head of Graduate Programs is required if there is a schedule conflict that prevents a student from registering for one of these seminar courses and satisfying its requirements. A request for such an approval must be made before the semester with conflict begins. Credit hours allowed to count toward degree requirements are indicated below for each degree.

1. M.S. Degree

All students must satisfy the MSE 529/559 requirement (see above). Allowed credit for participation in seminars (e.g., group meetings with thesis advisor MSE 590; Hard Materials Seminar MSE 529; or Soft Materials Seminar MSE 559) is a maximum of 4 hours. All M.S. students must register (for 0 or 1 hour) and complete satisfactory attendance at the weekly Colloquium on Materials Research (MSE 595) every semester in the first two years of residence; up to 2 hours may be counted toward the M.S. degree. Students must also complete MSE 492, "Fundamentals of Laboratory Safety," in their first semester of study but *credit earned in this course does not count toward the degree*. All M.S. students involved in research (e.g., as independent study) must also register for and complete MSE 590C Graduate Introduction to Research during or prior to their first semester of research involvement.

Non-Thesis Option: The non-thesis M.S. degree requires the completion of a minimum 36 hours of graduate level course work. At least 14 hours of credit must be at the 500 level and 18 hours of MSE courses are required.

Thesis Option: The M.S. degree with thesis option requires the completion of a minimum 32 hours of graduate level credit consisting of 8 hours of thesis credit (MSE 599) and 24 hours of course work. At least 14 hours of credit must be at the 500 level and 18 hours of MSE courses are required. In addition, candidates for the M.S. degree with thesis option must submit a thesis that is approved by their Advisor and signed by the Department Head to complete degree requirements. See also, Section IV. Policy on change to thesis option within the MatSE M.S. Degree program.

2. Ph.D. Degree

The Ph.D. degree requires the completion of 96 hours of graduate work beyond the B.S. degree. A student entering with a B.S. degree must complete 96 hours of graduate work: 52 hours of thesis work and 44 hours of course work. A student entering with an M.S. degree must complete 64 hours of graduate work: 44 hours of thesis work and 20 hours of course work. Students must receive a total of 24 hours of credit at the 500-level (i.e., 10 hours beyond those credited towards a M.S. degree) and take at least 20 hours of MSE courses (10 hours beyond the M.S. degree).

Other than MSE 492, 529/559, 595 and 599, the only course that all students in the Ph.D. program are required to take is one on statistical thermodynamics. The course can be selected from the following list. Similar courses taken at other schools may qualify; students requesting transfer of such credit shall supply a course outline and title of the text used for approval by the Associate Head of Graduate Programs who will consult with the instructor of MSE 500 as to the equivalence. *Because graduate-level credit in thermodynamics is part of the requirement for the Ph.D. qualifying examinations (as described in section I below), the student should enroll in one of the following classes in the fall of the year that they enter the Ph.D. program.* This allows the student, in the event that they do not obtain a grade of "B" or higher, to audit the same course the following fall, which is within the 2-year time frame for completing the qualifying examinations. Students are strongly recommended to take MSE 500 for this requirement.

MSE 500, Statistical Thermodynamics of Materials: Atomistic concepts of statistical thermodynamics and their relationship to classical phenomenological thermodynamics. Application of the methods of statistical thermodynamics and statistical mechanics to describe the structure, phase behavior, and properties of both hard and soft materials.

CHEM 544, Statistical Thermodynamics: Fundamentals of thermodynamics and statistical mechanics, covering equilibria, thermodynamic transforms, phase transitions, ensembles and non-equilibrium statistical mechanics, from single molecules to complex biological systems.

PHYS 504, Statistical Physics: Single-particle distribution functions; classical and quantum mechanical systems, Boltzmann equation, virial theorem, and equations of state for gases; formal theory: ensembles, identical particles, thermodynamics of simple systems, and distribution functions; nonequilibrium problems; conservation laws and hydrodynamic equations, sound waves, and transport coefficients; plasmas, normal Fermi fluid, superfluids, and systems with internal degrees of freedom.

Students receiving less than a "B" grade in one these courses (i.e. B- or lower) will be required to audit the same course the next time it is given and pass the final examination (and any other requirements as set by the course instructor). A failing grade in this retake examination will result in the student being dropped from the Ph.D. program.

All students must satisfy the MSE 529/559 requirement (see above). Allowed credit for participation in seminars (e.g., group meetings with thesis advisor MSE 590; Hard Materials Seminar MSE 529; or Soft Materials Seminar MSE 559) is a maximum of 8 hours (or 4 hours after the M.S. degree). All students must register (for 0 or 1 hour) and attend the weekly Colloquium on Materials Research (MSE 595) during their first two years of residence. Up to 4 hours can be counted toward the Ph.D. degree including the 2 hours for the M.S. degree. Students must also complete MSE 492 "Fundamentals of Laboratory Safety," in their first semester of study but *credit earned in this course does not count toward the degree*.

Thesis: A written thesis and successful completion of the final examination is required of all Ph.D. students.

Ph.D. Examinations

i. Qualifying Examinations

The qualifying examination evaluates students on their ability to explain and discuss the core knowledge in two subjects relevant to their discipline. The students must have the ability to understand spoken questions from the examiners and to give responses, both in words and by writing equations and figures on a whiteboard. This is the primary way that information and ideas are communicated in the career of a Ph.D. scientist or engineer. The most important preparation for the qualifying exam is practicing with peer and mentor groups. The underlying knowledge is gained by taking relevant courses and reviewing content as necessary.

The qualifying examination requirement consists of two oral examinations based on two topics selected by the student in consultation with his/her advisor, plus a grade of "B" or better in a graduate level course on thermodynamics (as described in section II.2. above). The Associate Head of Graduate Programs will assign the two examiners for the oral examinations and determine, if "other" is chosen, whether or not the topic is acceptable. The topics must be selected from the following list:

Biomaterials
Ceramic processing
Computational/ simulation methods
Electrochemistry
Electron microscopy and scattering
Electronic materials processing
Macromolecular solids
Optical properties of materials

Physical metallurgy
Polymer physics
Polymer synthesis
Solid state physics
Surfaces and colloids
Other (one only, requires approval by the Associate Head of Graduate Programs)

Descriptions of the material covered by these exams are listed on the MatSE web site (https://matse.illinois.edu/academics/graduate-programs/graduate-exams/graduate-exams-qualification-preliminary-and-final). Note that many of our 500-level classes – some of which provide recommended background for the qualifying exams – are offered only once every two years (https://matse.illinois.edu/academics/graduate-programs/graduate-courses), so plan accordingly. Only registered Ph.D. degree students in the Department of Materials Science and Engineering are eligible to take the qualifying examinations**.**

Examination Times. Qualifying examinations will be held following Fall and Spring semesters, with exams typically in January and May. A third exam period in August will be held for retake exams only. Students are required to take the qualifying exams for the first time no later than immediately after their third semester. Failed exams must be retaken in the next exam period. This means all retakes must be done no later than immediately after the fourth semester.

First-year students should consult with their advisor and submit their Qualifying Exam Planning Document one month before finals week of their first semester.

Students should submit their topics for examination to the Department's Graduate Programs Office (i.e., sign up) *at least one month prior to the above times*. All students are required to attend the Qualifying Exam Information Session prior to signing up. The signup form is available on the MatSE web site (https://matse.illinois.edu/academics/graduate-programs/graduate-exams). On the form, you are required to list the classes that you intend to take in order to complete the requirements of the Ph.D. degree. You should discuss this plan of study with your advisor before they sign the form.

Once a student has signed up, they may not cancel or postpone taking the qualifying exam unless dire circumstances occur. A student who faces such circumstances should consult with the Associate Head of Graduate Programs.

Admission to Stage II. To be allowed to advance to Stage II of the Ph.D. program (as defined by the Graduate College) a student must have:

a. GPA $\geq$ 3.00

b. Grade of at least B in either MSE 500, CHEM 544, or PHYS 504
(if the grade is B- or less, the student must audit the next class and pass the final exam)

c. Pass in both topics of the oral qualifying examinations.

Students having Research Assistantship appointments receive an increment in their stipend following admission to Stage II.

Appeals Process. A student who fails the oral qualifying examination on the second attempt is allowed to appeal the assigned grade if and only if there is a strong evidence that clearly shows the grade received is not representative of the student's understanding of and fluency in the topics covered in the exam at the time when the exam was administered. If such a situation arises, the student should discuss the possibility of the appeal with his/her adviser then fill out the "Oral Qualifying Examination Appeal Request Form." This form can be obtained from the Department office upon request. Appeal requests must be made within 2 weeks of receiving the notice of second failing grade, in order to be considered by a committee of MatSE faculty appointed by the Department Head. If this committee decides that there is enough evidence to consider a third attempt at the examination, the student must make the third attempt within 30 calendar days of receiving the notice of the committee's decision as long as they remain registered as a student at the University. If the student fails the third attempt or if the committee does not approve the appeal request, the student will no longer be eligible for the Ph.D. program.

ii. Preliminary Examination

All Ph.D. candidates must pass a preliminary examination covering the student's proposed Ph.D. thesis research. It is strongly suggested that you complete the "prelim" by the end of the sixth semester (counting fall and spring terms) after admission to the Department.

The preliminary examination will be administered by a committee consisting of a minimum of four voting faculty members, including at least one member from outside of the student's Concentration Area (or Department). The Thesis Advisor will normally chair the committee, but if that person is not a member of the Graduate Faculty and/or the Department, the Academic Advisor will act as the chair. At least three of the voting members must be members of the Graduate Faculty and at least two must be tenured. A majority of the committee must be members of the Department faculty with greater than 50% appointments. The members of the committee must be approved by the Associate Head of Graduate Programs.

Students should submit the preliminary examination form to the Department's Graduate Programs Office *at least three (3) weeks prior to the proposed date*. It is the student's responsibility to identify a date on which all the committee members can meet for 2 hours, and to reserve a conference room and necessary equipment (e.g., projector). The form is available at https://matse.illinois.edu/academics/graduate-programs/graduate-program-forms. You are also required to attach an unofficial transcript. The purpose of the audit is to identify any remaining coursework requirements (especially, any omissions).

The student will write a proposal of no more than 4000 words – excluding references, figure captions, and data tables – and deliver it to each member of his/her committee *at least two weeks before the examination*. The proposal should include the following sections, with literature references inserted in journal format as specified by the American Institute of Physics or by the American Chemical Society. Due to the length limitation, the statements will need to be highly focused. It is not acceptable to use the manuscript of a publication as the proposal document.

a. A statement of the problem to be solved, i.e., the ways in which the leading edge of knowledge will be advanced by this thesis research.

b. A literature review that summarizes the present state of knowledge and the key unknowns. Work performed by other students in the group, if any, should be identified as such.

c. The results obtained to date by the student.

d. The proposed work, including the methods to be used and discussion of how and why the methods are expected to solve the problem defined in (a). It is important that the proposed work be carefully thought through; it is understood that not every detail can be anticipated.

The preliminary examination will be oral. The student will give a presentation, not to exceed 20 slides / 30 minutes in length, which includes the statement of the problem, key results from the literature and from the student's preliminary work, and the proposed work. Figures, tables, or other data should be referenced in compact format on the bottom of the slide (e.g., *Jones PRB 2005* or *This Work*) to make explicit whether they derive from the literature or from the student's own results. The committee members will discuss both the presentation and related knowledge in the field with the student. Note that the preliminary examination continues to build the skill area of *scientific fluency* that was essential on the qualifying examination.

The unanimous approval of the members of the preliminary examination committee is required for the student to pass. The members also serve on the final thesis examination committee; substitution is allowed if a member becomes unavailable. The committee members are meant to be a valuable resource to the student and should be consulted throughout the course of the student's research. It is strongly suggested that the student contact his/her committee members at least once per year to provide a report of progress and to solicit feedback and suggestions.

Students having Research Assistantship appointments receive an additional increment in their stipend after they pass the preliminary examination.

iii. Final Examination

All students are required to pass a final oral examination (the defense) before receiving the Ph.D. degree. The final examination will be administered by a committee which is appointed under the same rules as outlined above, and which will normally be comprised of the same members as the preliminary examination committee. Any changes require the approval of the Associate Head of Graduate Programs. The student must present a final unbound copy of the Ph.D. thesis to each member of the committee at least 2 weeks prior to the examination. The examination will be oral and will be based on, but not limited to, the research reported in the thesis. It will ordinarily consist of an oral presentation by the student, approximately 40 minutes in length, of the research described in the thesis followed by a discussion with the committee members. The committee chair, defending student, and at least one additional voting member of the committee must be physically present for the final examination. All voting members of the committee must be present in person or participate via teleconference or other electronic communication media for the duration of the final examination, and the deliberation and determination of the result. Passing the exam requires the unanimous consent of the voting members of the committee as well as the Department Head.

Students should submit the final examination request form to the Department Office *at least three (3) weeks prior to the proposed date*. It is the student's responsibility to identify a date on which all the committee members can meet for 2 hours, and to reserve a conference room and any other necessary equipment. The form is available on at https://matse.illinois.edu/academics/graduate-programs/graduate-program-forms. Prior to the exam, the student should pick up from the Department Office the Final Exam Result forms to be signed immediately following the exam.

III. POLICY ON TRANSFERRING INTO THE MATSE GRADUATE DEGREE PROGRAM

Current MatSE M.S. students who have completed at least two semesters of studies are eligible to apply for admission to the Ph.D. program. Students in other graduate degree programs at Illinois who have a strong record of scholarship in Materials Science and Engineering may also apply for transfer to the MatSE M.S. or Ph.D. program, provided that there is a compelling reason for a change in program of study. All transfer applications will be judged in comparison to the entire pool of applicants to the corresponding degree program. Interested students should submit the following to the department office:

1. One-page statement of purpose
2. Resume
3. Three letters of reference
4. Updated GRE and/or TOEFL scores, if available
5. A copy of M.S. thesis (or a near complete draft), if currently enrolled in M.S. program with thesis option

Transfer requests have the same deadlines as the graduate degree program applications indicated on the Department website. Note that Spring transfer requests are considered only by request of a MatSE faculty member or an affiliate faculty. Fall requests are considered along with all current year applications. Students are strongly encouraged to consult the Associate Head of Graduate Programs prior to requesting degree program transfer.

IV. POLICY ON CHANGE TO THESIS OPTION WITHIN THE MATSE M.S. DEGREE PROGRAM

By default, students admitted to the M.S. program are enrolled in the non-thesis option. Requests to be considered for the thesis option require students who are currently enrolled in the MatSE M.S. program to have joined a research group and secured a Research Assistantship. Please note that current Department policy does not allow MatSE faculty to provide Research Assistantships to non-thesis M.S. students. Requests can be made by contacting the MatSE graduate office. A letter indicating support with a Research Assistantship from the sponsoring faculty member is required. A committee of Department faculty will evaluate the request and decide. Additional information or documentation may be requested by the committee if necessary. Interested students are strongly encouraged to contact and discuss with the Associate Head of Graduate Programs prior to making a request.

V. POLICY ON M.S. NON-THESIS STUDENTS HOLDING RESEARCH ASSISTANTSHIPS

During the fall and spring semesters, M.S. students are not eligible to hold a MatSE departmental research assistantship (RA) unless enrolled in the thesis-based M.S. program, which requires approval by the MatSE graduate office. (Please see IV for more details on thesis option.)

During the summer term, M.S. students are eligible to hold individual departmental summer RAs to gain research experience through an independent study project. The project and the

assistantship are offered directly by a member of the MatSE graduate faculty, and with approval of the MatSE graduate office. Students are strongly encouraged to discuss potential summer RA projects with the Associate Head of Graduate Studies prior to beginning the appointment. MS students who carry out summer research project with an RA are also required to sign up for 1-4 credit hours of MSE 597 Independent Study, which will count towards degree credit. Up to 4 hours of MSE 597 total may be applied to the M.S. degree.

The percentage of effort and duration (number of months) of the summer RA should be discussed and agreed upon with the faculty member sponsoring the project over the summer. If an M.S. student carries out a research project with a summer RA, the RA will not be extended to the fall and/or spring semesters. Completion of a summer RA does not guarantee transfer into the MatSE Ph.D. program. If interested in transferring to the Ph.D. program, M.S. students must follow the policy as outlined in section IV of the MatSE graduate handbook.

VI. DEPARTMENT POLICY REGARDING EXTENDED ABSENCES

Students should consult with the department Graduate Programs Office and their advisor regarding academic and registration options in cases of extended absences of 2 weeks or longer during a Fall or Spring term. Students are responsible for notifying and discussing any extended absences with each course instructor for all courses enrolled for the term to confirm expectations. Students should also request a waiver of MSE 595 and/or MSE 559/529 and receive approval if they remain registered during their term of extended absence.

VI.A. Academic / Non-Employment related absences

VI.A.1. Absences of 2 weeks or longer: All graduate students expected to have an extended absence of 2 weeks or longer for medical, personal, or other reasons will be required to **make a formal leave request form** to the department after discussing it with their advisor. The students are also **required to complete an academic plan form with their advisor** which should be included in the request.

Students in some cases may be required to submit an academic leave of absence (LOA) with the Graduate College depending on the length and the nature of the absence. Students should discuss with their advisor and notify the department before the first day of classes of their period of non-enrollment if an LOA will be needed.

VI.A.2. Absence of less than 2 weeks: All graduate students who are considering an extended absence for academic / non-employment reasons that is expected to last less than 2 weeks must discuss the absence with their advisor and receive approval prior to departure from campus to confirm expectations and to ensure a plan is in place for satisfactory progress in the degree program. The department may require students to complete academic plan form form with their advisor.

Per Graduate College policy all academic leaves should be requested before the term begins and cannot be approved for a term in which the student had registered and withdrawn. **Enrolled students who need to take time away after the semester has begun are not eligible for academic leaves of absence.** Please review full details of the Graduate College LOA policy in the

Graduate College Handbook https://grad.illinois.edu/handbooks-policies (Section 2.5 Academic Leave of Absence).

Students are eligible for a total of two terms of academic leaves of absence (spring or fall semesters) during a student's degree program. These terms may be consecutive or approved individually. When an enrolled student withdraws from the current term, this term will not be counted towards an academic leave of absence. An academic leave of absence cannot be requested for a previous term.

Please review full details of the Graduate College LOA policy in the Graduate College Handbook https://grad.illinois.edu/handbooks-policies.

Students are strongly encouraged to review and confirm respective deadlines to withdraw or cancel registration in a term to receive any applicable tuition refund as managed by the Office of the Registrar.

VI.A.3. International Students: Student RAs on visa who experience unavoidable health situations (car accident, medical crisis, etc.) deciding to seek medical care in their home country will be required to resign their RA during the time they are off campus. RA can be reinstated upon return to campus. Please refer to section VI. B regarding tuition waiver and remote work policies. Requirement for submission of LOA may still apply in cases where absence will be greater than 2 weeks.

VI.B. Employment related absences

In the event that the extended absence is longer than expected, resulting in the RA appointment not meeting the Graduate College minimum to generate a waiver (91 days of appointment for a fall or spring term, or 41 days for summer term), it is expected tuition and fee assessment will be incurred.

Please see Assistantship Policies in the Graduate College Handbook for dates used to meet criteria https://grad.illinois.edu/sites/grad.illinois.edu/files/pdfs/handbook.pdf#assistantship-policies
Tuition waivers are not anticipated if RA does not meet eligibility.

For additional information regarding your RA employment, see links below.

https://humanresources.illinois.edu/employee-experience/current-employee/?highlight=graduate+assistant

https://humanresources.illinois.edu/wp-content/uploads/2024/09/ler-Grad-Orientation-Fall-2024-FINAL.potx

VI.B.1. Absences of less than 4 weeks: All graduate students expected to have an extended absence less than 4 weeks for EMPLOYMENT related reasons should discuss expectations with their advisor prior to departure from campus to confirm expectations and ensure continued satisfactory progress in the degree program.

VI.B.2. Absences of 4 weeks or longer: PhD students expected to hold an RA for the term and planning to be away from campus for 4 weeks or longer must consult with HR regarding any impact to assistantship.

➢ **MatSE Remote Work Guideline (Graduate Students with RA)**

1. Remote work arrangements for graduate students are not standard practice* and require an exemption with detailed input and justification by both the student and the faculty advisor. The exemption process begins with a request submitted to the MatSE HR team (email Teresa Bice; tbice@illinois.edu). The request must be approved by the MatSE Department Head before any remote work begins.
2. An alternative option to remote work arrangement is for the faculty advisor or the graduate student to pay the student's tuition bill (with possible 0 credit enrollment level; relatively low cost), which ensures the student remains in enrolled status and continues to be eligible for related benefits.

*The University provides no clear instructions or a pathway on fully remote work, and many departments currently disallow fully remote work for graduate students. As such, it is not guaranteed that a remote work arrangement, especially if it is outside the U.S., will be approved.

VII. DEPARTMENT POLICY REGARDING INTERNSHIP PARTICIPATION

All graduate students planning to participate in an internship and/or applying for CPT for an internship must contact the department graduate programs office.

All graduate students are allowed to participate in internship opportunities while enrolled in the MS or PhD program. Internship opportunities are not required for the graduate degree; however, such opportunities must be discussed with an advisor in regard to how the opportunity might integrate with the degree program (MS non thesis) or thesis research (MS thesis and PhD).

All students should request a waiver of MSE 595 and/or MSE 559/529 during the term of internship and receive approval.

VII.A. Students enrolled in the PhD program who plan to participate in an internship in a Fall, Spring, or Summer term must receive an approval from their advisor and be registered for the term in which the internship will take place.

PhD students with US citizenship or Permanent Resident status planning to participate in an internship are required to register for a minimum of 0 hours of MSE 599 during the term of internship to maintain student status and applicable health insurance. Students also have the option to register for MSE 585 Materials Engineering Practicum with department approval.

PhD students on F-1 visa status planning to participate in an internship are required to apply for Curricular Practical Training (CPT) via International Student and Scholar Services (ISSS) https://isss.illinois.edu/students/employment/f1cpt.html. Students must also register for the respective CPT course requirement, ENG 510, on a part time or full time CPT during the term (Fall, Spring, or Summer) of internship to maintain visa status and to maintain applicable health insurance. Students may also take MSE 599 for 0 or more hours in addition to ENG 510 with approval from their advisor. Please review the Grainger COE CPT/ENG 510 Course Policy https://grainger.illinois.edu/academics/graduate/cpt.

All PhD Students on paid internship should expect tuition and fee assessment for the respective term as a waiver generating assistantship is not expected during the term of internship. However, any assistance toward assessed tuition can be discussed with their advisor. Tuition and fees will be assessed based on the number of credit hours registered for the term. Please reference tuition and fee rates managed by the Office of the Registrar https://registrar.illinois.edu/tuition-fees/tuition-fee-rates/.

VII.B. Students enrolled in the MS program, non-thesis or thesis, who plan to participate in an internship in a Fall, Spring, or Summer term, must receive approval from their advisor and be registered for the term the internship will take place.

MS students with US citizenship or Permanent Resident status planning to participate in an internship during their degree program are required to register for a minimum of 0 hours in MSE 585 Materials Engineering Practicum. Department approval is required prior to registration for MSE 585. MS thesis students may register for a minimum of 0 hours of MSE 599 in place of or in addition to MSE 585. Registration in MSE 585 or MSE 599 should ensure that student status and applicable health insurance are maintained.

MS students on F-1 visa status planning to participate in an internship are required to apply for Curricular Practical Training (CPT) via International Student and Scholar Services (ISSS). Students must also register for the respective course requirement, ENG 510. All MS students are required to register for ENG 510 on a part time or full time CPT during the term (Fall, Spring, or Summer) of internship to maintain visa status and to maintain applicable health insurance. MS thesis students may also register for MSE 599 in addition to ENG 510 with their advisor's approval. Please review the Grainger COE CPT/ENG 510 Course Policy https://grainger.illinois.edu/academics/graduate/cpt.

All MS students on paid internship should expect tuition and fee assessment for the respective term. Tuition and fees will be assessed based on credit range for the term. Please reference tuition and fee rates managed by the Office of the Registrar https://registrar.illinois.edu/tuition-fees/tuition-fee-rates/.

VIII. OPTIONAL GRADUATE CONCENTRATION AND CERTIFICATE PROGRAMS

Computational Science and Engineering (CSE): The CSE graduate concentration is designed to provide graduate students at both the Masters and PhD levels with a solid base in problem-solving using computation as a major tool for modeling complicated problems in science and engineering. Further information can be found at:

http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/#text

Energy and Sustainability Engineering: The Department provides students the opportunity to participate in the College-wide option in Energy and Sustainability Engineering (EaSE). The EaSE certificate program is designed to provide both a breadth and depth of knowledge for students who are enrolled in a departmental masters or Ph.D. program, where they build a core competence in a discipline. Participation in the EaSE option will not delay a student's progress towards the degree or add to the total course load. Further information can be found at:

https://energysystemsmeng.grainger.illinois.edu/ease/graduate-certificate-option

Entrepreneurship and Innovation Concentration: The Entrepreneurship and Innovation Concentration provides students with the skills, resources, and experiences necessary to become successful innovators, entrepreneurs, and leaders who tackle grand challenges to change the world. Further information can be found at:

http://catalog.illinois.edu/graduate/engineering/concentration/entrepreneurship-innovation/

Data Science & Engineering: The Data Science & Engineering (DSE) Graduate Concentration is designed primarily for graduate students at the Ph.D. levels with an interest in data intensive computing. Data science plays a major role in many areas of computational science and engineering. The DSE Concentration is open to domain scientists working in this area. This concentration requires students to complete 16 graduate credit hours spanning data science, from topics in mathematical foundations (MF), computational thinking (CT), statistical thinking (ST), as well as data management, description, and modeling (DX). Further information can be found at:

http://catalog.illinois.edu/graduate/engineering/concentration/data-science-engineering/

SUMMARY OF REQUIREMENTS FOR **M.S.** DEGREE IN MATERIALS SCIENCE AND ENGINEERING

Requirements	Thesis Option	Non-thesis Option
Credit Hours	**Hours**	**Hours**
Total Credit for the Degree	***32***	***36***
Thesis Research – MSE 599 (min-max applied toward the degree)	8	n/a
Course Work	24	36
MSE 492 (1 hour); credit does not apply toward the degree	0	0
MSE 595	0-2	0-2
Advisor group meetings (MSE 590) and area seminars (MSE 529, MSE 559) (subject to Other Requirements and Conditions below)	0-4	0-4
Elective courses – chosen in consultation with advisor (subject to Other Requirements and Conditions below)	18-24	30-36
Other Requirements and Conditions (may overlap):		
A minimum of 18 hours of MSE course work.		
A minimum of 14 500-level credit hours overall applied toward the degree (excluding 599).		
MSE 595 (0 or 1 hour) must be taken every semester in the first two years of residence. A maximum of 2 hours may be applied toward the degree.		
MSE 529 or MSE 559 (0 or 1 hour) must be taken every semester. A maximum of 4 hours may be applied toward the degree.		
The minimum program GPA is 3.0.		
The completed masters thesis must be approved by the advisor and the department head.		
Generally, students on a research assistantship will not be allowed in the non-thesis option.		

SUMMARY OF REQUIREMENTS FOR **PH.D. DEGREE** IN MATERIALS SCIENCE AND ENGINEERING

Requirements	Entering with approved M.S. degree	Entering with approved B.S. degree*
Credit Hours:	**Hours**	**Hours**
Total Credit for the Degree	***64***	***96***
Thesis Research – MSE 599 (min-max applied toward the degree)	44	52
Course Work	20	44
One of CHEM 544, MSE 500, PHYS 504 with a grade of B or higher	4	4
MSE 492 (credit does not apply toward the degree)	0	0
MSE 595	0-2	0-4
Advisor group meetings (MSE 590) and area seminars (MSE 529, MSE 559) (subject to Other Requirements and Conditions below)	0-4	0-8
Elective courses (subject to Other Requirements and Conditions below)	10-16	28-40
Other Requirements and Conditions (may overlap):		
MSE course work hours	10	20
500-level credit hours applied toward the degree (excluding 599)	10	24
MSE 595 (0 or 1 hour) must be taken every semester in the first two years of residence. A maximum of 2 hours (if entering with an M. S. degree) or 4 hours (if entering with a B. S. degree) may be applied toward the degree.		
MSE 529 or MSE 559 (0 or 1 hour) must be taken every semester. A maximum of 4 hours (if entering with an M. S. degree) or 8 hours (if entering with a B. S. degree) may be applied toward the degree.		
The minimum program GPA is 3.0.		
Ph.D. exam and dissertation requirements: Qualifying exam Preliminary exam Final exam or dissertation defense Dissertation deposit		

* These students may earn a Master of Science degree during the Ph.D. program.

MATSE GRADUATE STUDENT MENTORING GUIDELINES

FACULTY	GRADUATE STUDENTS	GRADUATE PROGRAMS
POSITIVE & SUPPORTIVE ENVIRONMENT	POSITIVE & SUPPORTIVE ENVIRONMENT	POSITIVE & SUPPORTIVE ENVIRONMENT
• Foster the overall wellbeing of students • Provide students a safe, supportive environment • Interact ethically and professionally with other members of the university community • Be responsive and receptive to students' requests for academic feedback and professional advice	• Interact ethically and professionally with other members of the university community • Seek guidance when feedback is needed • Communicate about needs and concerns regarding academic and professional progress	• Foster the wellbeing of students • Provide students a safe, supportive environment • Interact ethically and professionally with other members of the university community • Connect students with appropriate university offices and resources • Help resolve student problems and conflicts
ACADEMIC SUCCESS	ACADEMIC SUCCESS	ACADEMIC SUCCESS
• Guide students in developing academic and research skills • Convey clear expectations for academic and research progress • Provide timely, constructive feedback and periodic evaluations • Evaluate students' performance fairly and objectively • Promote students' timely academic and research progress • Advise students on requirements for academic integrity, responsible conduct of research and other relevant policies	• Be receptive to academic and research direction and feedback from advisers • Understand and fulfill degree requirements • Understand and execute ethical, professional norms • Understand and follow department, Graduate College and university policies, including academic integrity, student conduct and responsible conduct of research	• Provide information about degree requirements, academic policies and expectations • Share information about fellowships, awards and other academic opportunities • Monitor student academic progress, providing at least yearly evaluations and communicating these with students
CAREER DEVELOPMENT	CAREER DEVELOPMENT	CAREER DEVELOPMENT
• Foster the professional development of students to prepare for a wide range of future employment options • Assist students in achieving their career goals • Encourage engagement in professional communities and meetings to foster potential career opportunities • Advise students regarding the ethics of their profession	• Identify professional development needs and pursue appropriate opportunities • Take initiative for career exploration and the job search	• Promote student engagement in professional development programs • Foster the professional development of students to prepare for a wide range of future employment options • Direct students to resources that can help them pursue and succeed in their careers of choice

Appendix I: Preparing Future Faculty

For students with a possible interest in academic careers, there are many opportunities to develop your skills.

1. The Center for Teaching Excellence (https://citl.illinois.edu/)

2. The Graduate College Career Services Office offers workshops, symposia, and other events. http://www.grad.illinois.edu/careerdevelopment

3. The Howard Hughes Medical Institute provides a downloadable book for new faculty, "Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty" as well as other useful information. http://www.hhmi.org/developing-scientists/making-right-moves

4. A comprehensive book by Donald H. Wulff and Ann E. Austin, eds., Paths to the Professoriate: Strategies for Enriching the Preparation of Future Faculty, (Jossey-Bass, San Francisco, 2004).

5. Rising Stars is a workshop designed for doctoral students and postdoctoral scholars who are interested in pursuing academic teaching and research careers in Materials Science and Engineering (MSE) and related interdisciplinary fields. https://mse.engineering.cmu.edu/education/rising-stars-2024.html

Appendix II: Professional Skills

Business
Illinois Business Consultants, http://www.ibc.illinois.edu

Leadership
Illinois Leadership Center, http://leadership.illinois.edu/

Entrepreneurship
Technology Entrepreneur Center, http://tec.illinois.edu/

Appendix III: External Fellowship Opportunities

Current and prospective graduate students are encouraged to apply for external fellowships that they are eligible for. In addition to the list below, many governments and corporations award fellowships.

Fellowship office at the Graduate College (search for fellowships)
http://www.grad.illinois.edu/fellowships/about

National Science Foundation Graduate Research Fellowship Program
http://www.nsfgrfp.org/

National Defense Science and Engineering Graduate Fellowship
https://ndseg.sysplus.com/

SMART Fellowship
https://www.smartscholarship.org/smart

DoE Office of Science Graduate Student Research Program
https://science.osti.gov/wdts/scgsr

DoE Computational Science Graduate Fellowship
http://www.krellinst.org/csgf/

Hertz Foundation Graduate Fellowship
http://www.hertzfoundation.org/

Graduate Fellowships for STEM Diversity
https://stemfellowships.org/

Fulbright Program
http://us.fulbrightonline.org/home.html