

MATERIALS SCIENCE, PH.D.

Doctor of Philosophy in Materials Science

The Materials Science PhD Program is an interdisciplinary, interdepartmental, and intercampus doctoral program linking the three universities that comprise the University of Alabama System – the University of Alabama (UA), in Tuscaloosa, the University of Alabama at Birmingham (UAB), and the University of Alabama in Huntsville (UAH) – through the Tri-Campus Materials Science PhD Program.

Admissions

In addition to the minimum Graduate School admission requirements, to be considered for regular admission an application must include:

1. A CV/resume
2. Three (3) letters of recommendation

Approved Shared Content from /shared/grad-admission-criteria/
Last Approved: Apr 23, 2024 12:18pm

See the Admission Criteria section of this catalog for more information.

Curricular Requirements

Per UA Graduate School requirements, enrolled doctoral students must complete a minimum of 48 coursework hours, of which 80% or 38 credits must be grade-based and 20% or 10 credits pass/fail, and 24 hours of dissertation research. Graded courses must be in the 5xx/6xx level; pass/fail courses may include department graduate seminar enrollment, non-dissertation research credit, etc.

The materials science program requires a minimum of 6 credits (two courses) in each of the three themed topic areas:

1. Structure and Properties of Materials
2. Characterization and Testing
3. Thermodynamics and Processing.

Of the coursework credits, an enrolled doctoral students must take a minimum of 6 credits (i.e., two courses) outside of their home department to ensure an interdisciplinary education.

Core/Required Courses	Hours
Core/Required Courses	
Structure and Properties of Materials	6
Characterization and Testing	6
Thermodynamics and Processing	6
Elective Courses ¹	30
Dissertation Research	24
Total Hours	72

¹ Courses must be advisor approved. At least 6 elective hours must be from outside the student's home department

Transfer Credit

Transfer credit requests are evaluated by the Graduate School and the Graduate Program Coordinator and follow Graduate School policy.

Doctoral Plan of Study Requirement

Please see the Graduate School Policy on Doctoral Plans of Study

Comprehensive/Qualifying Exams

After completing the core competency course requirements, the student is now eligible to complete the Dissertation Proposal Examination. The guidelines for the proposal examination are as follows:

1. The student will prepare and present a research proposal to the graduate committee that integrates the graduate course work and a literature review of the topic that demonstrates scholarly proficiency and capacity for independent, original investigation in his/her specialized field of research. This proposal should be given to the committee within two semesters after completing the core competency course requirements. This should be completed in less than three years of continuous graduate school attendance.
2. The research proposal will be written following the current National Science Foundation (NSF) grant proposal guidelines. Prior work completed in the lab by the student should be used sparingly. **The proposal is not a summary of research completed but is an accounting of what is being planned.**
3. The proposal is given to the supervisory committee **a minimum of three (3) weeks before the scheduled oral defense date** whereupon the student will answer questions related to relevant course work and the research proposal which satisfies the oral examination requirement for the doctoral degree examination.
4. The committee will read the proposal and each committee member can provide up two (2) written questions within ten (10) days of receiving the proposal. These questions provide the written portion of the doctoral degree exam. The committee chair will coordinate the collection of these questions, assemble them, and then disseminate them to the student. These questions are based upon fundamental materials science principles that can be derived from the proposal and prior course work in the plan of study. **The student will provide a written response to each question and submit them to the committee chair within five (5) days of receiving them.** The committee chairperson will then disseminate the student answers to the committee members for evaluation. As a courtesy to the committee, the primary advisor should submit the student responses to the committee at least five (5) days prior to the oral exam date.
5. At the oral examination of the proposal, the student will present a series of slides (which should be numbered) based on the written proposal. It is recommended that the number of slides be no more than twenty (20). This presentation can be open to the public and is recommended to be thirty (30) minutes. At the conclusion of the presentation, the public is excused and the oral examination by the committee members occurs. The closed-door examination is not to exceed ninety (90) minutes. The committee will ask questions related to the topic of the proposal to ascertain the student's competency of the subject, ability to compile information to conduct doctoral-level research, and follow-up questions (if necessary) related to the written responses to the questions previously provided by the committee.

Upon completion of the oral examination, the student will be excused, and the committee will discuss the quality of the student's written proposal and oral responses to the questions centered on the proposal topic as well as responses to the written questions provided earlier. A majority vote of the committee approves the student to candidacy.

If the student does not receive a majority vote, the student is eligible to resubmit a revised proposal, if directed by the committee, and the

examination procedure is repeated within the next following semester. If the student is unable to receive a majority vote upon the second proposal examination, the student is ineligible to receive a doctoral degree from the program. If the vote is tied, this is equivalent to not receiving a majority positive vote.

Admission to Candidacy Requirements

To be admitted to candidacy students must successfully pass the MSE Qualifying Exam. An up-to-date Plan of Study detailing courses completed and transferred is required. Students may then start enrolling in Dissertation Research Hours upon attaining candidacy.

Continuous Enrollment Policy

Graduate School Policy

Dissertation Requirements

Students should form their dissertation committee during their first year of enrollment. A doctoral committee requires a minimum of five (5) approved graduate faculty members, with the majority being from the UA campus. The make-up of the committee must also include at least one (1) faculty member from either the UAB and/or UAH campus.

Dissertation submission deadlines, document formatting, and graduate semester enrollment requirements follow the Graduate School calendar and policy including submitting the Public Notice of a Dissertation Defense form at least two-weeks prior to the scheduled dissertation date.

Time Limits for Degree Completion Requirements

Graduate School Policy

Student Progress Requirement

Students are expected to progress through their degree program in a timely manner and with consultation with their advisor.

Additional Academic Requirements

Any ancillary requirements such as graduate teaching (aka practicum), seminar attendance, etc. will defer to the Ph.D. program requirements of the student's home department.

Academic Misconduct Information

Graduate School Policy

Withdrawals and Leave of Absence Information

Graduate School Policy

Academic Grievances Information

Graduate School Information

Grades And Academic Standing

Graduate School Policy

Graduate School Deadlines Information

Graduate School Information

Application For Graduation Information

Graduate School Policy

Acquisition of Financial Support

Students admitted to the Materials Science PhD program will be affiliated with the academic department of their advising professor. This unit will serve as the student's "home" department. Admission into the Graduate School and the Materials Science PhD program does not include a commitment of financial assistance from the program. Unfortunately, the Materials Science PhD program itself does not have assistantships or fellowships to offer.

Students in good standing in the Materials Science PhD program are generally supported by a graduate research assistantship (GRA) funded through their advisor, a graduate teaching assistantship (GTA) funded by their home academic Department, or by a fellowship which can be internal to UA or from an external source. Each type of assistantship provides an equivalent stipend and benefits along with paid tuition and fees. Funding amounts for fellowships will depend upon the fellowship program in question, but will follow all UA funding guidelines.

Being admitted to the program places the applicant on a list of students who are eligible to receive financial support from the faculty members associated with the program. Should a faculty member have funds, such as a grant or contract, that faculty member may elect to review the listing of accepted students and may potentially reach out to them to assess their availability for enrollment and support. Because faculty funding varies and potential advisors might not review the list in a timely manner, it is recommended that applicants proactively contact potential faculty with whom they have an interest in working (this is best done via email) to inquire whether the faculty member is currently seeking to add a new student. The prospective student may wish to include their CWID and CV (resume) in that communication.

Applicants in need of financial assistance, but with no financial offers, can apply for deferment of their enrollment for up to one year through the application portal to maintain eligibility for consideration during that period.

Any questions concerning this process should be directed to the admission officer in the graduate school.

Terms of Financial Support:

The terms of financial support depend upon the funding source and the criteria set forth by the applicant's home academic Department.

Fellowship Nominations:

Eligible students who excel in the program may be nominated by the Materials Science program, their advisors, or their home academic department for UA or external fellowships. Nominees are selected by the respective entity (i.e., program, advisor, or home department) based upon prospective nominee research productivity, academic performance, and contributions. Fellowship recipients are guaranteed paid tuition and fees, a stipend, and benefits commensurate with the fellowship applied for and is generally at least commensurate with those provided through GRA or GTA support.

Performance Expectations for Continuing Financial Support:

- The student must be in good academic standing in the Materials Science PhD program.
- The student must remain clear of all infractions outlined under Conditions for Termination of Financial Support
- The student must complete all mandatory annual training and abide by all rules and policies held by The University of Alabama, The UA Graduate School, UA Environmental Health and Safety, and their home department.
- Graduate teaching assistants must adequately perform all duties assigned to them in a timely manner as defined by the instructor

of record or their designee for all courses to which the student is assigned teaching, grading, and/or laboratory preparative responsibilities.

Conditions for Termination of Financial Support

Students in the Materials Science PhD program are subject to the Conditions for Termination of Financial Support outlined by their home department. Potential criteria for termination include the following:

- *Dereliction of duty.* Dereliction of duty includes but is not limited to: failure to comply with all UA safety and interpersonal conduct policies; absence from scheduled obligations without prior notification to the instructor of record or designee (for teaching assistants) or the research advisor (for research assistants); or failure to satisfactorily complete all activities associated with the funded position as defined by the instructor of record or designee (for teaching assistants) or by the research advisor (for research assistants) and the student's departmental memorandum of appointment (MOA).
- *Resolved finding of Academic Misconduct.* Penalties, including potential loss of financial support, will be determined with guidance from the UA Graduate School and/or the UA College of Arts and Sciences.
- *Failure to have a department-approved research advisor for more than one semester.* Students without an approved research advisor may not enroll in CH 660 or CH 699 courses and, therefore, cannot proceed toward degree completion. Students without an advisor may be relegated to the Plan I Master's Program with one additional semester of financial support, at the discretion of the Graduate Director and Department Chair.
- *Loss of good academic standing.* Students not in good academic standing have one probationary academic semester after notification of their change in academic status to return to good academic standing—with the non-passing grade exception noted below. Financial support will be terminated if good academic standing is not restored by the end of the probationary academic semester. Students who earn more than two grades of 'C' or at least one grade of 'D' or 'F' in graduate courses will have a compulsory academic performance review by the Graduate Committee. This review will determine whether the student should continue to receive financial support and/or be dismissed from the program at the end of the semester in which the non-passing grade is earned or at the end of the following semester. A decision will be rendered prior to the end of the semester in which a third 'C' and/or a 'D' or 'F' grade is reported.
- *Insufficient continuous research progress.* The dissertation committee determines by majority vote if a student is making adequate research progress commensurate with their time in the program during required annual reviews. If the committee determines the student is not making adequate research progress, the student will be granted one probationary semester (i.e., academic semester or full summer term) with financial support to remedy productivity deficiencies, as assessed by the dissertation committee. Failure to meet minimum research expectations by the end of the probationary semester will result in immediate termination of financial support and may prompt relegation to the Master's Program, at the discretion of the Graduate Director and Department Chair.

Students should consult the criteria for their home department for details. They can additionally contact the Department Chair or Graduate Director from their home department for specific policies.