

# 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.

## Admission Requirements

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

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 Courses	Hours
<b>Core Courses</b>	
Structure and Properties of Materials	6
Characterization and Testing	6
Thermodynamics and Processing	6
<b>Elective Courses*</b>	<b>30</b>
<b>Dissertation Research</b>	<b>24</b>
<b>Total Hours</b>	<b>72</b>

\*advisor approved and at least 6 hours must be from outside the home department

## Transfer Credit

Materials Science Ph.D. students that have earned an MS degree can apply a portion of those graduate credits towards the total number of doctoral credits required. For these hours to be credited, students must show equivalent standing of the former courses to ones offered on the campuses and their relationship to materials science as well as having earned a B or higher in that course. Students should consult their respective home institution's Graduate Catalog for specific details. The petition form for these credit transfers can be found on each Graduate School's website. Students who seek approval for these equivalent credit hours should discuss these courses with their primary advisor and/or

committee prior before formal approval is done by the home campus Director of the Materials Science Ph.D. program and the Graduate School Dean. Transfer credit requests are evaluated by the Graduate School and the Graduate Program Coordinator and follow Graduate School policy.

## Doctoral Plan of Study Requirement

The Plan of Study form should be completed within the first 18 months of enrollment in the program and is required prior to the admission to candidacy. Students must work with their research advisor to complete and submit the Plan of Study. Changes in coursework after a Plan of Study has been submitted and approved will require the submission of a new Plan 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 to 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

Admission into the Graduate School and the Materials Science PhD program does not include an offer for financial assistance. Financial assistance for your graduate education, if not from you, is provided by **individual faculty members** with active research grants (in the form of a Graduate Research Assistantship) or, on rare occasions, by academic departments (in the form of a Graduate Teaching Assistantship).

Being admitted to the program places you on a list of students eligible to receive a financial offer from the faculty members associated with the program. If a faculty member does have funds, such as a grant or contract, the faculty members will review the accepted student listing and potentially reach out to assess availability of those students. As faculty funding varies, it is recommended that applicants be proactive and email potential faculty with whom they have an interest in working with to inform them that you have been accepted (include your CWID and resume). In that email you can inquire whether the faculty member is looking to hire a new student and bring yourself to his/her attention.

Unfortunately, the Materials Science Program does not have assistantships to offer; funding mechanisms are through faculty grants and contracts.

If you are in need for financial assistance, but no financial offers are granted currently, you are welcome to defer your enrollment for up to one year through the application portal to maintain eligibility for consideration during that period.

If you have any questions concerning this process, please contact the admission officer in the graduate school.