

# Ph.D. in Materials Science and Engineering

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The program is offered in two options, the Materials Science option (<http://catalog.njit.edu/graduate/science-liberal-arts/physics/materials-science-engineering-phd/>) and the Materials Engineering option (p. 1). These options are administered by the JHCSLA (Jordan Hu College of Science and Liberal Arts) and NCE (Newark College of Engineering) colleges, respectively. A joint committee involving JHCSLA and NCE faculty will be in charge of overseeing this program.

## Materials Engineering Option

Degree Requirements

### Ph.D. coursework requirements

Ph.D. students with a recognized Master's degree or equivalent in materials engineering or a related field are required to take four 700-level 3-credit courses (12 credits).

Ph.D. students with a recognized Baccalaureate degree in materials engineering or a related field are required to take eight 600-level or 700-level 3-credit courses (24 credits) of coursework beyond the Baccalaureate degree as well as four additional 700-level 3-credit courses (12 credits), for a total of twelve 3-credit courses (36 credits).

Master's project (course 700), Master's thesis (course 701), or more than two independent study courses (courses 725 and 726) cannot be used to satisfy these coursework requirements.

A Ph.D. student may substitute a 600-level course for a 700-level course only after the academic advisor appeals on behalf of the student to the Office of Graduate Studies and receives approval. A Ph.D. student's dissertation committee may request the student to take additional courses.

In addition to the minimum degree credits specified above, students must register every semester for ChE791, Graduate Seminar. Part-time students may request that this requirement be waived.

### *Dissertation advisor and committee*

Students must select a dissertation topic and advisor within 6 months of joining the program. Before making a decision, students are encouraged to discuss research topics with several active research faculty members of the department.

The doctoral dissertation committee is led by the Dissertation Advisor. It must include at least five members, including at least four members of the department faculty, which include the faculty members with joint appointments in the department of Chemical and Materials Engineering, and at least one external member. It is recommended for the external committee member to be from outside of the university.

### *Qualifying examination*

All PhD candidates must pass a qualifying examination. Students must take the examination by the end of the second semester after enrolling in the PhD program. If repeated examination is necessary, the examination must be passed by the end of the third semester after enrolling in the PhD program.

Pre-requisites for the qualifying examination:

- Average grade of 3.5 for all four core courses and a minimum grade B in each of the core courses taken at NJIT
- Equivalent grade for the same subject course based on the MS transcript from an institution other than NJIT may be acceptable, as decided by the Graduate Studies Committee
- Students whose subject courses differ from those offered at NJIT, so that their MS transcript grades are not deemed acceptable as equivalent to the NJIT core courses by the Graduate Studies Committee are required to take final examinations for each of the core courses during their first two semesters after enrolling into PhD program to satisfy the present requirement.
- A student can take the final examination in each core course up to two times to satisfy the present requirement.
- Failing the present requirement is equivalent to the failing the qualifying examination.

Qualifying examination format

The examination is administered by an Examination Committee including at least three members of the CME graduate faculty. The Examination Committee is appointed by the Graduate Studies Committee each semester. The Examination Committee does not include the student's current or potential PhD thesis adviser.

Three months before the examination date, an assignment is given to a student to prepare for the qualifying examination. The assignment is given by the student's current or potential PhD thesis adviser in coordination with Examination Committee. The assignment identifies a research topic to be addressed in two parts of the examination:

- A written paper, comprising a literature review (no longer than 20 pages excluding references; 12 pts font, double spaced) on the identified research topic. The review needs to

- Identify an open research problem,
- Outline state of the art, and
- Propose an approach for future research in this area.
- If pertinent, results of preliminary work may be included.

- An oral presentation no longer than 20 min, followed by questions. The presentation will be open to the public; committee deliberations following the presentations will be restricted to the committee members only.

The result of the examination is determined by the Examination Committee based on the review of the written paper, oral examination, and feedback from the current or potential PhD thesis adviser.

A student is allowed to repeat the qualifying examination only once.

#### ***Ph.D. dissertation registration requirements***

- Ph.D. students who pass the Qualifying Examination (QE) must then register for 3 credits of pre-doctoral research (792) per semester until they defend successfully the dissertation proposal.
- Ph.D. students who defend the dissertation proposal successfully must then register for the 1-credit dissertation course (790A) each semester until they complete all degree requirements.
- Students may take courses simultaneously with the 790 or 792 courses as per Ph.D. program guidelines or dissertation committee recommendation.
- With the exceptions approved by the Graduate Studies Committee, full-time students who do not meet the following deadlines will be dismissed from the Ph.D. program.
  - The required coursework for the Ph.D. program and the (major part of the) QE must be completed successfully by the end of the second year in the program.
  - The dissertation proposal must be defended successfully either by the end of the third year in the Ph.D. program or four semesters after registering for the first time in the 792 pre-doctoral research course, whichever occurs earlier.

The dissertation must be defended successfully no later than by the end of the sixth year in the Ph.D. program.