

DOCTOR OF PHILOSOPHY (PHD) DEGREE IN THE FIELD OF BIOENGINEERING

Program Learning Outcomes for the MS and PhD Degrees in the field of Bioengineering

Upon completing the MS and PhD degrees in the field of Bioengineering, students will be able to:

1. Acquire a graduate-level understanding of foundations in Bioengineering and apply this material across a variety of sub-disciplines.
2. Integrate knowledge from different sources to solve a defined Bioengineering problem.
3. Acquire deep knowledge in a sub-discipline in which they will pursue their thesis.
4. Demonstrate professional skills in both oral and written communication.

Requirements for the MS and PhD Degrees in the field of Bioengineering MS Degree Program

The MS degree is a thesis master's degree. For general university requirements, please see [Thesis Master's Degrees \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-thesis-masters-degrees/\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-thesis-masters-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/). Students pursuing the MS degree in the field of Bioengineering must complete:

- A minimum of 30 credit hours to satisfy degree requirements.
- A minimum of 18 credit hours from foundation, supporting, and advanced coursework. MS students must earn additional credit hours they need for graduation by registering for the research course BIOE 500 during the terms in which they are engaged in research.
- A minimum program GPA of 3.00.

In addition, students must:

- Show evidence on their undergraduate transcript of completion of a class in systems physiology, cell (or physical) biology, and statistics. (If courses were not taken for an undergraduate degree, they must be completed at the beginning of the MS degree program.)
- Fulfill a teaching requirement.
- Submit an original research thesis.
- Defend the thesis in a public oral examination.

The requirements listed in the General Announcements (GA) satisfy the minimum requirements for this degree program. In certain instances, courses (or requirements) not officially listed here may be substituted upon approval of the program's academic advisor or, where applicable, the department or program's Director of Graduate

Studies. Course substitutions or any exceptions to the stated official curricular requirements must be approved by the [Office of Graduate and Postdoctoral Studies \(https://graduate.rice.edu/\)](https://graduate.rice.edu/). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

Code	Title	Credit Hours
Total Credit Hours for the MS Degree in the field of Bioengineering		30

Requirements for the PhD Degree in the field of Bioengineering PhD Degree Program

For general university requirements, please see [Doctoral Degrees \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/). Students pursuing the PhD degree in the field of Bioengineering must complete:

- A minimum of 90 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours from foundation, supporting, and advanced coursework with high standing. In addition to foundation, PhD students must earn additional credit hours they need for graduation by registering for the PhD research course, BIOE 500, during the terms in which they are engaged in research.
- A minimum program GPA of 3.20.

In addition, students must:

- Show evidence on their undergraduate transcript of completion of a class in cell (or physical) biology. (If courses were not taken for an undergraduate degree, they must be completed at the beginning of the PhD degree program.)
- Complete 9 credit hours of Bioengineering foundations coursework.
- Serve as a teaching assistant in up to two undergraduate or graduate courses.
- Submit a written thesis proposal to the department and successfully defend their thesis proposals by the beginning of their fifth semester in residence.
- Submit a thesis that provides evidence of their ability to carry out original research in a specialized area of bioengineering.
- Defend the thesis in a public oral examination.

Graduate students take required courses and electives in the following areas:

- Biomaterials
- Biomedical Imaging
- Instrumentation
- Mechanobiology and Biophysics
- Microfabrication
- Microfluidics and Design
- Optics and Diagnostics
- Quantitative, Computational and Theoretical Bioengineering

- Synthetic Biology and Genome Engineering
- Tissue Engineering

The requirements listed in the General Announcements (GA) satisfy the minimum requirements for this degree program. In certain instances, courses (or requirements) not officially listed here may be substituted upon approval of the program's academic advisor or, where applicable, the department or program's Director of Graduate Studies. Course substitutions or any exceptions to the stated official curricular requirements must be approved by the [Office of Graduate and Postdoctoral Studies](https://graduate.rice.edu/) (<https://graduate.rice.edu/>). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

Code	Title	Credit Hours
Total Credit Hours Required for the PhD Degree in the field of Bioengineering		90

Policies for the PhD Degree in the field of Bioengineering

Department of Bioengineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Bioengineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2024_25/Bioengineering_Graduate_Handbook.pdf.

Transfer Credit

For Rice University's policy regarding transfer credit, see [Transfer Credit](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer) (<https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer>). Some departments and programs have additional restrictions on transfer credit. Requests for transfer credit must be approved for Rice equivalency by the appropriate academic department offering the Rice equivalent course (corresponding to the subject code of the course content) and by the Office of Graduate and Postdoctoral Studies (GPS). Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Additional Information

For additional information, please see the Bioengineering website: <https://bioengineering.rice.edu/>.

Opportunities for the PhD Degree in the field of Bioengineering

Additional Information

For additional information, please see the Bioengineering website: <https://bioengineering.rice.edu/>.