Master of Chemical and Biomolecular Engineering

Focus Areas: Biotechnology or Nanotechnology

COURSES

PREREQUISITE COURSES
545.203 Engineering Thermodynamics
545.204 Applied Physical Chemistry
545.301 Kinetic Processes
545.303 Transport Phenomena I
545.304 Transport Phenomena II
550.291 Linear Algebra & Differential Equations*

These courses do not count towards degree or certificate requirements.

Undergraduate courses from other engineering or science disciplines may be substituted if there is significant overlap in material. Permission to substitute or waive course requirements will be at the discretion of the program chair.

RECOMMENDED CORE COURSES
545.602 Metabolic Systems Biotechnology
545.615 Interfacial Science with Applications to Nanoscale Systems
545.643 Chemical Reaction Engineering

FOCUS AREAS

Students should work with an advisor to choose an appropriate selection of courses in keeping with their desired focus area (Biotechnology or Nanotechnology) and career goals. Focus areas do not appear as official designations on a student’s transcript or diploma.

ADDITIONAL REPRESENTATIVE COURSES

Additional relevant courses are available from Chemical and Biomolecular Engineering and other related majors. The following are presented as aid to students in planning their class schedules. The students are encouraged to seek out other courses of relevance to the Master’s degree.

ELECTIVES

410.601 Advanced Biochemistry†
410.602 Molecular Biology†
410.603 Advanced Cell Biology II†
410.645 Biostatistics†
520.772 Advanced Integrated Circuits‡
540.632 Project in Design: Pharmacokinetics§
545.603 Colloids and Nanoparticles
545.614 Computational Protein Structure Prediction
545.615 Interfacial Science with Applications to Nanoscale Systems
545.619 Project in Design: Alternative Energy
545.621 Project in Design: Pharmacodynamics
545.622 Introduction to Polymeric Materials
545.628 Supramolecular Materials and Nanomedicine
545.630 Thermodynamics and Statistical Mechanics
545.637 Molecular Evolution of Biotechnology
545.640 Micro- and Nanotechnology
545.652 Advanced Transport Phenomena
545.661 Nanobioengineering Laboratory
545.662 Design Projects in Nanobioengineering
545.672 Green Engineering, Alternative Energy, CO2 capture/Sequestration
580.632 Ionic Channels in Excitable Membranes‡
585.605 Medical Imaging
585.606 Medical Image Processing
585.608 Biomaterials
585.609 Cell Mechanics
585.610 Biochemical Sensors
585.618 Biological Fluid and Solid Mechanics

Please refer to the course schedule (ep.jhu.edu/schedule) published each term for exact dates, times, locations, fees, and instructors.

* 550.xxx courses are offered through the full-time the Applied Mathematical and Statistics Department
† 410.xxx courses are offered through the part-time Advanced Academic Programs.
‡ 520.xxx courses are offered through the full-time Department of Electrical & Computer Engineering.
§ 580.xxx courses are offered through the full-time Biomedical and Engineering Department.