Johns Hopkins University
Master of Science
in Engineering

Biomedical Engineering

Graduate Student
Advising Manual
2022-2023

Updated October 25, 2022

JOHNS HOPKINS
BIOMEDICAL ENGINEERING

Table of Contents

Welcome

Welcome to the Biomedical Engineering M.S.E. program! This manual serves as an overall guide for graduate students covering academics, policies, procedures, resources, and other matters that will help you successfully navigate your time with us. Although this manual will provide detailed information about our program, you must work directly with your focus area faculty lead (faculty mentor) and/or the program manager to ensure that your course planning and registration are both appropriate and compliant with our program requirements. Please note that this manual is an official document providing valuable recourses but information contained within may be subject to expired information. You are strongly encouraged to clarify any information herein with the Academic Program Manager, Samuel Bourne. In addition, it is the student's responsibility to read the entire manual, to take complete responsibility for fulfilling the requirements of our program, and to comply with the broader policies of the entire university. The entire BME team of faculty and staff are here to help answer questions and offer suggestions but ultimately, each student must take ownership of their program and outcomes.

Meet the BME M.S.E. Team

Sam Bourne
Academic Program Manager
sbourne@jhu.edu

Patrick Cahan, PhD
Co -Director, BME MSE Program
patrick.cahan@jhmi.edu

Web Stayman
Co -Director, BME MSE Program
web.stayman@jhu.edu

Focus Area Faculty Mentors:

Biomedical Data Science
Adam Charles, PhD
Assistant Professor
adamsc@jhu.edu

Computational Medicine
Joseph Greenstein, PhD
Lecturer
jgreenst@jhu.edu

Genomics & Systems Biology
Patrick Cahan, PhD
Associate Professor
patrick.cahan@jhmi.edu

Imaging & Medical Devices
Wojciech Zbijewski, PhD
Assistant Professor
wzbijewski@jhu.edu

**Immunoengineering / Translational
Cell & Tissue Engineering**
Kevin Yarema, PhD
Senior Lecturer
kyarema1@jhu.edu

Neuroengineering
Patrick Kanold, PhD
Professor
pkanold@jhmi.edu

JOHNS HOPKINS
BIOMEDICAL ENGINEERING

M.S.E. Degree Requirements

All incoming students, regardless of course-based track or thesis-based track must first complete the course-based requirements. Students are required to complete at least 30 credits of approved courses to satisfy the core requirements of the BME M.S.E. program. Courses are selected primarily through your chosen focus area; however, in addition to focus area-specific coursework, students may take other advanced courses in math and science disciplines with advisor approval.

Focus Area Information and Course Suggestions:

- **Biomedical Data Science**
- **Computational Medicine**
- **Genomics and Systems Biology**
- **Imaging & Medical Devices**
- **Immunoengineering**
- **Neuroengineering**
- **Translational Cell & Tissue Engineering**

Medical students, residents, and clinical fellows are eligible for the AI in Medicine focus area:

- **AI in Medicine**

Research for Credit and Seminar Courses:

Students also have the option to count up to six credits of research (three credits per semester with a confirmed lab) as well as up to two seminars (typically one credit each) towards their overall 30 credits. You must have a confirmed lab placement for each semester in which you wish to earn research credit. Research for credit is typically a short-term option that requires an approximate commitment of 12 hours per week to the lab. Students are responsible for acquiring their own lab and must have their research sponsor contact the program manager to confirm lab placement. Your research does not have to fall under a BME specific lab; all students are encouraged to seek out research projects of interest in other engineering or medical/clinical fields. Regardless of your lab, your research must align with the general principles of the biomedical engineering field. Once you have a confirmed lab, the program manager will guide you on selecting the appropriate research course for credit.

Seminar courses are selected through your focus area selection and should be discussed with your faculty mentor prior to registration.

General Course Planning and Selection:

Students are expected to select a focus area and follow the suggested courses listed under their chosen area. While we strongly encourage students to follow a specific focus area, the courses listed under each are suggested but not required. Please note that courses listed under each focus area may not always be available in any given semester. When considering a course for enrollment, you must: 1) read the entire course description to ensure that you qualify for registration and 2) take note of any necessary approvals and/or prerequisites in order to make certain determinations regarding your potential success in each course. Please consult with your faculty mentor or the program manager if you are having difficulty or any uncertainties about particular courses.

Course Level Requirements:

All BME M.S.E. students must register for the graduate level courses and will not earn degree credit for the undergraduate levels of the same courses. In some cases, a 400 level course may count towards your degree requirements **if and only if** no graduate level instance of the same course exists. **Any 400 level courses intended for your degree requirements must be approved prior to registration.** Course levels ending in 100-300 will not count towards your degree requirements at any time. As with all course plans and course selections, you must consult with the faculty mentor and/or the program manager to ensure that your enrollments satisfy the degree requirements.

Registering for Courses Outside of the Homewood Division:

Students may register for courses outside of their home division (Homewood) with certain approvals. If you are interested in a course offered through another division, you must first consult with your faculty mentor and/or the program manager to obtain additional information.

Optional Second Year of Research/Thesis Submission:

While all students who complete the course-based requirements can graduate, every student has the option to stay on for a second year of research concluding with a thesis submission. Each student must complete the same course requirements as previously noted but will begin a full year of research immediately following the conclusion of the spring semester of their first year. Students must also have a confirmed year two lab in order to transition into the research/thesis year. Students are expected to complete all coursework requirements in year one and conduct research on a full-time basis during year two. However, in some instances, coursework can be taken in tandem with your second year research. You must discuss any second year coursework with your faculty mentor/program manager as well as with your PI. Regardless of additional coursework selections, all second year students are required to register for research in every semester in which they remain a student. Students will select EN.580.801 for 9 credits in the fall and/or EN.580.802 for 9 credits in the spring.

Selecting a Thesis Advisor:

All students are responsible for finding their own labs. Students are encouraged to seek out labs of interest and make direct contact with the lab PI to discuss any possible opportunities. The BME department will make additional efforts to announce lab openings to students once those opportunities are made known to us. Additionally, we will attempt to host events in which we connect students with PIs and their labs through a series of presentations. Your thesis project does not need to be directly in BME and you are encouraged to seek out labs in other engineering or medical/clinical fields. Once you have a lab, please have your PI contact the program manager to confirm your lab placement.

* While you are encouraged to collaborate with mentors/peers within and/or beyond the JHU community of faculty, your thesis advisor must be a JHU faculty member. Additionally, as you prepare to write your thesis, you will need to identify a review committee that will be made up of three JHU faculty members. JHU non-faculty (including students, staff, and postdocs) and non-JHU affiliates cannot serve as your thesis advisor nor on your thesis review committee.

Second Year Funding Potential:

The BME department will provide an automatic 30% tuition reduction to all second year students with confirmed labs. Additional support from your lab is possible if your PI has available funding but PI funding is never guaranteed. Typical PI supports includes an additional 20% tuition support and a yearly stipend. Any supported amount must be discussed with your PI directly.

Academic Policies

Academic Performance Requirements:

All BME M.S.E. students must maintain a 3.0 or higher GPA on all degree-counted courses. Since graduate GPAs are not calculated, it is your responsibility to monitor your own GPA to maintain your academic performance. You are also encouraged to speak with the program manager regarding your GPA but your most useful tool will be monitoring your own calculation.

https://gradecalc.info/us/md/jhu/gpa_calc.pl

Students who fail to earn the required GPA by the end of the semester will be placed on academic probation. Students placed on academic probation are notified through electronic communication and will be required to meet with the program manager to discuss. Generally, students are given the following semester to rectify any GPA deficiencies but information specific to each notice of probation will be outlined in the submitted letter. Failure to rectify the academic probation can result in dismissal from the program.

Registration Requirements:

All students must register for every semester in which they attend. Students must comply with full-time registration requirements by enrolling in a minimum of nine credits each semester. Students who have completed all coursework requirements and are working on research to use towards a thesis submission must register for nine credits of research each semester.

Under certain circumstances and with the appropriate approvals, students in their final semester may apply for part-time status (domestic students) or a reduced course load (international students). In both cases, a student must register for a minimum of three credits but no more than eight. Any requests to change/modify your full-time status must be discussed with the program manager first.

Residency Requirements:

Once students begin their graduate course of study toward a degree, they must complete a minimum of two consecutive semesters of registration as a full-time, resident graduate student. To qualify as a resident student, the student must be present on campus and working toward fulfilling the requirements for the degree. Complete information available here:

http://homewoodgrad.jhu.edu/academics/graduate-board/new-grad-board-residency-page/

JOHNS HOPKINS
BIOMEDICAL ENGINEERING

General Registration Information

Non-Degree Counting Courses:

Students may take any available course(s) as part of their interest in personal enrichment. Although these courses do not count towards your M.S.E. degree, you must remain in good academic standing in all courses. Non-degree counting coursework must remain secondary to your M.S.E. degree requirements.

Auditing Courses:

Students may audit courses with the approval of the course instructor and their advisor. Credit hours from audited courses do not count towards degree requirements or towards full-time status. The BME program follows all standard WSE policies regarding auditing:

https://engineering.jhu.edu/education/graduate-studies/graduate-academic-policies-procedures/

(Information under Homewood Grade and Registration Change Guidelines.) This includes: "Changing a course registration from "Audit" [student receives no letter grade] to "Credit" [student receives letter grade], or from "Credit" to "Audit" is permissible during the Office of the Registrar's official add/drop dates. Registration changes beyond this deadline are not permissible. Changing a final grade ("A" through "F", "Pass"), "Incomplete" grade, "In-Progress" grade or "Missing" grade to "Audit" is not permissible at any time."

Double Counting Courses:

Standard WSE policy and limitations on double counting apply:

https://engineering.jhu.edu/education/graduate-studies/graduate-academic-policies-procedures/

Below is a basic description of the double-counting policy, for information purposes only; the official WSE policy is on the website, and the BME M.S.E. program adheres to that policy.

Coursework Applied to a Bachelor's Degree:

Students either in a WSE combined (bachelor's/master's) program or seeking a WSE master's degree after having earned a WSE or Krieger School of Arts and Sciences bachelor's degree may double-count two (2) courses (400-level or higher) to both programs with the permission of the student's M.S.E. academic advisor. WSE master's degree candidates may not double-count courses applied to a bachelor's degree earned at a different institution.

Coursework Not Applied to a Bachelor's Degree:

For students who are either in a WSE combined bachelor's/master's degree program or have already earned a Whiting School of Engineering or Krieger School of Arts and Sciences bachelor's degree and are seeking a WSE master's degree, any graduate-level coursework (as defined by the WSE graduate program) not applied to the undergraduate degree may be applied to the graduate degree, regardless of when that course was taken (i.e., before or after the undergraduate degree has been conferred) with the permission of the student's M.S.E. academic advisor.

Transfer Courses:

Standard WSE policy and limitations on M.S.E. transfer credits apply: https://engineering.jhu.edu/education/graduate-studies/graduate-academic-policies-procedures/

In addition, both the program manager and the BME MSE Director must approve use of each transfer course toward satisfaction of a specific BME degree requirement in writing.

Grading Requirements:

All courses applied to your degree requirements must earn a letter grade (A-F) with exceptions only for research and seminar courses that can be graded P/F (pass/fail). Audited courses cannot count towards your degree. Non-degree courses can be taken for letter grade, audit, and/or P/F (if applicable) pending instructor approval.

Registration Information:

The registration periods for new students and continuing students will differ. New students matriculating in the fall term typically register in July prior to the start of their first term. Continuing students will receive registration information from the department each semester. You can find general graduate registration information through the Office of the Registrar:

https://studentaffairs.jhu.edu/registrar/students/graduate-registration/

Intersession Registration:

Students are not required to register during intersession and no courses from that term can count towards your MSE degree.

Summer Registration:

Although continuing students are not required to take courses during the summer, a non-graded independent study course is automatically added as a summer registration for compliancy purposes. Students will not earn grades nor degree credit for this registration.

JOHNS HOPKINS
BIOMEDICAL ENGINEERING

General Student Policies

Whiting School of Engineering:
https://engineering.jhu.edu/education/graduate-studies/graduate-academic-policies-procedures/

Homewood Graduate policies and resources:
http://homewoodgrad.jhu.edu/

Course Catalog:
http://e-catalog.jhu.edu/

Mandatory Certifications and Tutorials

All students are required to complete a series of introductory certifications and tutorials. These courses are required as part of the overall program but cannot be used to satisfy the course requirements for degree completion.

Responsible Conduct of Research for Engineering:

All MSE students are required to take the Responsible Conduct of Research course. You can access the online certification at any time after you matriculate but you will need to complete the certification within the first month of your first semester. Please use the following link to learn more as well as to take the online course:

http://engineering.jhu.edu/wse-research/resources-policies-forms/responsible-conduct-of-research/online-training-course-for-the-responsible-conduct-of-research/

Academic Ethics:

Graduate students are automatically enrolled in the online tutorial EN.500.603 Academic Ethics and Graduate Orientation, which teaches academic and ethical responsibilities. This online tutorial is normally be completed in the first eight weeks of the student's first semester. The Whiting School of Engineering will notify new students when the course is available.

*Additional compliance courses will be available during graduate orientation activities prior to the start of the semester.

Duration (Time to Completion Limit) and Completion Deadlines

The typical time to completion is 1 year for the course-based option and 2 years for the thesis-based option. Each option can be extended depending on student need but both options must be completed within 5 years from matriculation. A university-approved leave of absence does not count towards this limit. Please be aware that student visas granted by the US government to international MSE students typically have a maximum duration of two years.

Academic Deadlines:

Students who plan to complete their degrees must notify the program manager no later than the start of their final semester to ensure that all requirements have been completed prior to the academic deadlines for the semester. The deadlines to sub it certification material usually fall within the following time periods:

Fall – early October
Spring – early March
Summer – mid-July

Thesis submissions may be later – please check with the program manager for current deadlines. Students who have not completed their requirements by the first day of classes must register for the current semester.

General Graduation Information:

All degree requirements must be completed on or before the posted deadlines for each semester. Failure to complete all requirements by the posted deadlines will result in a delay in graduating until the following term.

Graduation Process (the program manager will send updated information and deadlines each semester):

1. Submit the Intent to Graduate form through SIS self-service by the posted deadline.
2. Complete the required paperwork and submit to the program manager
   a. Degree Completion Coversheet
   b. Course Completion Checklist
   c. Degree Completion Certification
3. *For thesis-track students only* The final thesis submission/approval deadline is later than the paperwork submission deadline. If you are submitting a thesis, you must complete the following steps on or before the posted thesis approval deadline:
   a. Collect the signatures of final thesis approval from your committee; this must be done before you officially submit your thesis to the library.
   b. Submit and receive approval of your ETD (electronic thesis or dissertation) on or before the posted deadline through the JHU ETD submission system: https://etd.library.jhu.edu/
   c. Information on formatting requirements and submission information can be found here: https://www.library.jhu.edu/library-services/electronic-theses-dissertations/

**If you have begun the process to graduate but you need to extend/modify your completion term, please contact the program manager immediately.

Resources

Notice of Non-Discriminatory Policy:

The Johns Hopkins University admits students of any race, color, sex, religion, national or ethnic origin, handicap or veteran status to all of the rights, privileges, programs, benefits and activities generally accorded or made available to students at the University. It does not discriminate on the basis of race, color, sex, religion, sexual orientation, national or ethnic origin, handicap or veteran status in any program or activity, including the administration of its educational policies, admission policies, scholarship and loan programs, and athletic and other University-administered programs. Accordingly, the University does not take into consideration personal factors that are irrelevant to the program involved.

Questions regarding access to programs following Title VI, Title IX, and Section 504 should be referred to the Affirmative Action Officer, 205 Garland Hall, 410-516-8075.

Financial Aid:

The Office of Student Financial Services has other financial aid sources available, including research assistantships and some fellowships. Any enrolled or accepted graduate student who is a U.S. citizen, U.S. permanent resident or eligible non-citizen may apply for federal and state financial aid. Sources of aid, eligibility requirements, applications, and other information are available at http://www.jhu.edu/finaid/grads.html

Libraries:

The JHU Libraries are both on campus and online. The Sheridan Libraries, on the Homewood campus, include quiet rooms, group study rooms, and a café. Library resources can be found here: http://www.library.jhu.edu.

Student Enrollment and Account Management (SEAM):

The Office of Student Enrollment and Account Management (*SEAM*) centralizes processes and systems for student accounts, registration, and financial aid.
https://seam.jhu.edu

University Experiential Learning (Student Employment Services):

Apply to positions across all JHU schools and divisions.

https://studentaffairs.jhu.edu/studentemployment/

Office of International Services:

OIS provides immigration, visa, and travel guidance to the Johns Hopkins University international community.

https://ois.jhu.edu

Student Disability Services:

The office of Student Disability Services advises Johns Hopkins students with disabilities on available services and accommodations.

https://studentaffairs.jhu.edu/disabilities/

Student Health and Wellness:

The Student Health and Wellness Center provides high quality, confidential health care to eligible students of the Homewood campus community.

https://studentaffairs.jhu.edu/student-health/

Life Design Lab (Career Services):

The Life Design Lab helps connect your academic pursuits to your post-graduate goals.

https://studentaffairs.jhu.edu/life-design/

Security:

While the Hopkins Security Department provides ample and appropriate security to the campus, they remind us that we must play our part. Please exercise common sense when entering and leaving your office, classrooms, and lab.

- Secure your computers, especially laptops!
- Back up your work onto separate disks or systems in case something happens to computer via virus, equipment problems, or theft. The University provides free anti-virus software that can be downloaded from the website at https://it.johnshopkins.edu/services/network/resnet/antivirus

Secure your laptop cases or any bag that might be mistaken for a computer bag.

- Lock your car and do not leave any items inside your car in plain sight. Secure them in your trunk or bring them with you.

- Secure your personal items such as your purse, wallet, books, equipment, and your coat or jacket.

- If you see someone suspicious in your lab or office, do not confront the individual; contact Security at 410-516-7777 right away. Your personal safety is most important.

- If you are uncomfortable walking through campus or to your car at night or otherwise are concerned for your safety, the Security department provides escort services to selected locations. Call 410-516-8700 to arrange for an escort.

Information Technology:

The Information Technology Department at Johns Hopkins, whose web site is located at http://it.jhu.edu is the online resource for all IT-related information. Their primary focus is to support the missions of the Johns Hopkins Institutions and provide technology solutions for faculty, staff, patients, and students in support of teaching, research, and patient care.

This Web site serves as a repository for all IT-related information at Johns Hopkins. You will find a lot of useful information within this site, including an overview of the IT Organization, its projects and services, support for applications and general questions, and news about emerging technologies and strategic imperatives.

Graduate Student Organizations:

Johns Hopkins has many student organizations. A list of some that are specifically geared to graduate students can be found here:
http://homewoodgrad.jhu.edu/life-at-hopkins/graduate-student-organizations/

In addition, the Graduate Representative Organization (GRO) can be found here:
http://studentaffairs.jhu.edu/gro/

The GRO maintains a list of student groups, which can be found here:
http://studentaffairs.jhu.edu/gro/clubs-groups/list-of-groups/

Transportation Services:

JHU Transportation Services include campus and non-campus shuttles, parking, pedestrian safety information, as well as other transportation needs.
https://ts.jhu.edu/

Off-Campus Housing:

The Off-Campus House office provides information to the Johns Hopkins Community relating to housing searches near most campuses.
https://offcampushousing.jhu.edu/

Campus Maps:

https://www.jhu.edu/maps-directions/

Social Media:

Connect with the Johns Hopkins Department of Biomedical Engineering on social media:
- Facebook: facebook.com/JohnsHopkinsBME
- Twitter: twitter.com/JHUBME
- LinkedIn: linkedin.com/school/johns-hopkins-biomedical-engineering
- YouTube: youtube.com/channel/UC2MiUb_q3ud7-znjLjGaVVQ
- Instagram: instagram.com/jhubme/