

# ***Graduate Study in Biomedical Engineering at Yale:***

## ***Advising Guidelines***

*August, 2021*

### **I. INTRODUCTION**

Welcome to the Department of Biomedical Engineering (BME) at Yale, part of the School of Engineering and Applied Sciences (SEAS). In BME, our scope of innovative research ranges from basic science via novel biotechnology through to clinical applications. Our doctoral program seeks to develop students' research independence and creativity while strengthening their technical background. The excellent student-to-faculty ratio ensures ongoing interaction between students and faculty. Research and teaching focuses on a fundamental understanding of biomedical engineering problems. We are a welcoming and inclusive community of scholars, where highly motivated individuals from diverse backgrounds come together to pursue academic excellence. As you embark on your educational journey, we wish to share a word on the exceptionally important matter of graduate advising.

Advising takes several forms at Yale: PhD students conduct research under one or possibly two faculty advisers, and also receive guidance from a thesis committee and the departmental Director of Graduate Studies. In this document, we describe these advising structures, and provide guidance as to the expectations and responsibilities of all parties. We note as well other excellent documents on this topic, e.g. the Yale Graduate School of Arts and Sciences [Guide to Advising Processes for Faculty and Students](#). In addition, please consult the SEAS document on [Qualification Procedures \("QP"\)](#). The goal for this document is to clearly and efficiently address and emphasize the importance of advising in graduate study.

### **II. ADVISING STRUCTURE**

PhD students within the Department are advised by (typically one, but occasionally two) thesis advisers, a thesis committee consisting of at least two (preferably three) other professors, and the Director of Graduate Studies.

Working with the student, the PhD adviser proposes the topic of study, usually arranges for funding of the project (including student salary, benefits, and tuition), and commits to overseeing and guiding the student over the course of the project. The adviser serves as the primary point of contact for matters concerning thesis research, and as the primary advocate for internal / external recognition and professional advancement. The PhD adviser is a key mentoring figure in the intellectual and professional development of the student.

The thesis committee consists of at least two other professors from Yale, who provide additional guidance, particularly within areas important to the thesis project but typically further from the expertise of the adviser. Given the diversity of BME research, it is common for some members of the committee to come from departments outside of SEAS. Once the student has advanced to candidacy (usually in the fall of year 3), the student presents a progress report at least once per year to the thesis committee, and the committee approves the final timeline to degree as proposed by the student and adviser. The thesis committee can also weigh in on matters of disagreement between the student and the adviser.

The Director of Graduate Studies ensures students are informed of departmental policies and procedures, and that students complete departmental requirements in a timely manner. The DGS may help guide the selection of adviser and thesis committee, advise on professional / career opportunities, and is always available to provide support on matters of disagreement or conflict.

### III. TIMELINE TO DEGREE

Year 1: Four courses are taken each term, with one (per term) being ENAS 990 *Special Investigation*. Core course requirements are listed on the departmental web page (see [Graduate Study/General information on the Ph.D. program](#)). A provisional adviser and committee are assigned upon matriculation to Yale, and a final decision on an adviser is usually made by the end of the second semester (occasionally a summer rotation is added). In most cases, one or both *Special Investigations* is conducted under the adviser. It is the student's responsibility to seek out and discuss potential projects with faculty members. Thesis research begins during the summer.

Year 2: Course requirements are generally completed, consisting of ten total courses, with at least two Honors grades and a High Pass average (outside of the *Special Investigations*). One required Teaching Fellow experience is completed. (An exception is made for students not yet passing the SPEAK test.) Thesis research continues. By the end of year 2, the student and adviser decide on the composition of the PhD committee.

Year 3: A written Prospectus is submitted and an Area Exam is completed, by the end of the fall term. Students must display mastery over relevant background material and depth of understanding on thesis topic and trajectory, in order to formally advance "to candidacy." The initial Dissertation Progress Report (DPR) is completed in the spring. Thesis research continues.

Years 4: The student gives a departmental seminar summarizing the research work.

Years 4-6: Thesis research continues, along with annual thesis committee meetings and DPRs.

Final Year: The Graduate School is notified of intent to graduate by August for a December degree, or February for a May degree, and a written thesis is submitted by October for a December degree, or March for a May degree. An outside reader for the dissertation is chosen. A thesis defense is scheduled, and thesis copies sent to internal reviewers at least one week prior to the defense.

### IV. INDIVIDUAL RESPONSIBILITIES

#### Student Responsibilities

- Complete all graduate school and departmental requirements by the deadlines listed above under "Timeline to Degree."
- Consult with adviser and DGS on the choice of elective courses, ideally chosen to support eventual thesis work. Many of these courses can be outside of ENAS.
- Prior to admission to candidacy, agree with adviser on a set of overall thesis goals, and on approximate annual milestones.
- Maintain clear communication with adviser, keeping them updated on progress, new and ongoing challenges, upcoming deadlines / events, and possible changes to the originally planned goals / milestones.
- Establish and maintain with adviser clear workplace expectations, including daily / weekly scheduling, vacations, etc.
- Be proactive on all fronts, taking ownership of thesis work, developing and offering opinions, and seeking and accepting advice and criticism.

- Be a good departmental citizen, contributing to shared tasks, mentoring undergraduate and other graduate students, attending talks and other events, and contributing to a positive climate.
- Throughout the course of graduate study, keep adviser and DGS (and others) aware of career goals and emerging opportunities and potential challenges.
- Maintain mental and physical health, work-life balance, and overall wellness. Take advantage of health and wellness resources at Yale.
- Report to adviser and/or DGS or other campus-wide resources (e.g., SHARE) any problems hindering academic work, including any perceived instances of discrimination or harassment.

#### Adviser Responsibilities

- Propose a set of overall thesis goals, and provide guidance on approximate annual milestones.
- Be knowledgeable and provide guidance on university and departmental requirements.
- Provide support, oversight, mentorship, and guidance to the student over the course of the thesis project.
- Establish clear workplace expectations, including daily / weekly scheduling, vacations, etc., keeping in mind a need for work-life balance, family responsibilities, and overall wellness.
- Establish clear communication with student, committing to regular meetings.
- Advocate on behalf of student, on matters ranging from internal / external recognition to professional advancement.
- Regularly discuss and provide guidance on career goals and professional/networking opportunities.
- Report to DGS and/or thesis committee members any concerns or problems regarding student responsibilities.

#### Thesis Committee Responsibilities

- Meet with student at least once per year. Prepare for meeting by reading relevant materials provided by student.
- Review prospectus and thesis within a reasonable amount of time.
- Approve timeline to graduation, as agreed upon by student and adviser.
- Moderate between student and adviser in cases of disagreement.
- Alert DGS to potential difficult situations, as appropriate

#### Director of Graduate Studies Responsibilities

- Be a strong advocate for the students.
- Inform and update students on policies, procedures, and requirements.
- Advise students on professional / career opportunities and strategies
- Ensure annual DPR completion and monitor student progress.
- Work with student leaders to organize departmental events.
- Advise and support students in cases of disagreement or conflict.
- Inform students in writing of academic deficiencies / failure to meet published requirements. Work with such students and their advisors toward a return to compliance.