

## IRA A. FULTON SCHOOLS OF ENGINEERING

Leading engineering discovery and innovative education for global impact on quality of life.

The School of Biological and Health Systems Engineering (SBHSE) currently offers graduate and undergraduate degrees in **Biomedical Engineering (BME)**. BME is the application of engineering principles and design concepts to medicine and biology, with the goal of improving the quality and effectiveness of patient care.

Current Barrett BME students, as well as Barrett students who are considering a major in BME, can make an appointment with their Honors Faculty Advisors via email:

**Christopher Buneo PhD**, Faculty Honors Advisor for SBHSE ([cbuneo@asu.edu](mailto:cbuneo@asu.edu))

**Stephen Helms Tillery, PhD**, Faculty Honors Advisor for SBHSE ([stillery@asu.edu](mailto:stillery@asu.edu))

### Honors Course Credit

Although there are currently no Honors Only courses offered in BME, there are several other options for BME students to receive honors course credit:

*Honors Enrichment Contract:* Most courses in the BME program are offered for honors credit through the honors contract. Students wishing to receive honors credit should confer with the course instructor at the beginning of the semester in order to develop a mutually acceptable plan for the honors contract activity. Most honors contracts involve either a project that extends the ideas and techniques covered in the course or outside research on topics relevant to the course work. Students have the responsibility to apply for the honors contract through the Barrett Honors College. The Honors College contacts the instructor to approve the contract only after the student has initiated the process. Please follow the following link for more information: <http://barretthonors.asu.edu/academics/honors-courses-and-contracts/honors-enrichment-contracts/>

*Non-BME Honors Section Courses:* These courses are designated by the department offering a specific course. The following courses are closely related to the BME curriculum and offer Honors Sections: BIO 181, ENG 102, ENG 105, MAT 265, MAT 266, MAT 267, MAT 275, PHY 121/122 and PHY 131/132. In order to receive honors credit, the Honors students would need to enroll in that designated section, with the exception of ENG 105, in which case, it just needs to be an IN--- PERSON section.

Note also that Honors students may use BME 492 Honors Research/BME 493 Honors Thesis as Biomedical Engineering related electives with credit towards the BSE degree, if approved by the Program.

### Honors Internship Opportunities

Information about Honors internship opportunities available through Barrett can be found here: <http://barretthonors.asu.edu/academics/internships/>

### Honors Thesis in BME

An honors thesis may be completed in one of two ways within BME. It can be completed either as a supplement to the BME Capstone course or as an independent study under the advisement of a BME faculty member (Thesis Director).

Capstone: Upon approval, the thesis may be completed as part of the student's BME capstone project.

This would be conducted as part of the standard capstone experience. In most cases, the Thesis Director will be the advisor for the Capstone Project.

**Students must do something extra for their project**, such as more extensive literature review, additional experiments, additional analysis, or a discussion of the social/economic/environmental impact of their project.

Independent Study: the thesis is an independent project performed under the mentorship of a BME faculty member.

In both cases, the student should enroll for the appropriate credit hours (see below).

**Committee Structure:** the minimum number of committee members is two, one of which must be the Thesis Director. Currently only the director **MUST** be an ASU faculty member (i.e. tenure-line faculty, research faculty, lecturer, professor of practice). The Second Committee Member may be faculty or non-faculty (including postdoctoral fellows), depending on the decision of the Thesis Director or the academic unit of the director. A third committee member is not needed **unless** specified by the director or the academic unit of the director **OR** unless an external examiner is added (who will be a third committee member).

## Enrolling for Honors Thesis in BME

It is highly recommended that the student identify a Thesis Director and meet to discuss their intention to work with them and the nature of the proposed honors thesis the semester before they intend to start.

For the both the Capstone and Independent Study options, Honors thesis work is conducted over 2 semesters for 6 credits as follows:

- Semester I – BME 492 Honors Directed Study (3 credits)
- Semester II – BME 493 Honors Thesis (3 credits)

These must be *taken in sequence and cannot be taken together in a single semester*, though an intervening semester is allowable in some cases.

Important: Prior to enrolling in BME 492 or 493, all students must complete a thesis/creative project information session. Students may meet this requirement by completing any of the following:

- A thesis preparation course within BME (not currently available but may be an option in the future)
- HON 498 “Thesis Prep Course,” a one-credit course offered on the downtown campus
- One of the Thesis Workshop Sessions periodically offered by Barrett
- The on-line workshop offered through Barrett via ASU Blackboard.

Please follow the following link for more information: <http://barretthonors.asu.edu/academics/thesis-and-creative-project/>

Following completion of a thesis/creative project information session, BME students can enroll for Honors Thesis credits by completing the appropriate form (<http://sbhse.engineering.asu.edu/academics/currentstudents/undergraduate/curriculum/undergraduate-faqs/>) and submitting it to one of the following:

**Keli Palmer Greenhagen**, *Assistant Director for Academic Services for SBHSE*

**Jessica Kentgen**, *Academic Success Specialist for SBHSE*

**Elizabeth Tripodi**, *Academic Success Specialist for SBHSE*

**Robbie Runk**, *Academic Success Specialist for SBHSE*

Students must be enrolled by no later than the Add/Drop date of each semester. Failure to do so may mean the student’s thesis studies are delayed.

## Getting more information about an Honors Thesis in BME

There are lots of resources available regarding the process and expectations for Honors Thesis. We recommend that you do some of the following:

- Explore Barrett Resources: Barrett has excellent online resources for defining an Honors Thesis projects. A guidebook to the thesis can be found at: <http://barretthonors.asu.edu/academics/thesis-and-creative-project/>
- Attend a Thesis Workshop: Barrett also arranges several workshops throughout the semester to help you get started with your thesis and to de-mystify the thesis process.
- Talk to BME Faculty: Many of the faculty have experience mentoring and advising students on their Honors Thesis. They can help guide you through the process and give you more information on what they might expect if you were to work with them.
- Review past thesis documents: Barrett Honors College has both a digital and physical library of documents previously prepared by Honors students. These are an excellent resource to help plan the structure of your document. You can view ASU Library Digital Repository here: <https://barretthonors.asu.edu/academics/thesis-and-creative-project/examples-and-past-projects>

You can schedule an appointment to view physical past projects in the Barrett Thesis Library by contacting Miranda Schultz by email (Miranda.Schultz@asu.edu) or 480-965-9155.

- Attend thesis defenses: Every student will publicly present their thesis outcomes as part of a defense. Attending a defense before you do your own will help you prepare. It will give you a sense of how you should present your outcomes as well as the kinds of questions you might expect. A schedule of upcoming defenses can be found at: <https://barretthonors.asu.edu/academics/thesis-and-creative-project/defense/defense-calendar>
- Talk to other BME Honors students: If they are currently going through the thesis process, or preparing for it, talking to other students can help you avoid pitfalls and plan for your thesis.
- Talk to the SBHSE Faculty Honors Advisors or Academic Advising Staff: Drs. Buneo and Helms Tillery can be contacted via e-mail at the addresses provided above. Appointments with advising staff (for Palmer, Kentgen, and Mapes) can be made through the following link: <https://fultonapps.asu.edu/advising/>

### Financial Support for Honors Thesis in BME

Barrett has support and funding for Honors Thesis work:

- Thesis Funding – Students may apply to receive up to \$750 to complete their thesis. This funding may be used to cover materials and supplies needed to complete the project.
- Honors Project Fund – Typically used for non-thesis related expenses such as presenting a paper at a conference or attending an annual meeting related to your major. The funds (\$750) may be used to cover such costs as travel, hotel, conference registration and supplies.

- *External Examiners Program* – As part of the thesis defense, students can apply to bring in an outside examiner or expert from another institution to serve as a thesis committee member. Students may receive up to \$1500 toward the associated expenses, such as airfare and hotel.

In addition to these sources of support, Capstone students are eligible to apply for funding from SBHSE to cover costs related to their projects. See Dr. Vin Pizziconi or Dr. Antonio Garcia for details.

### **Example Honors Thesis schedule**

#### Junior Year

##### *End of Spring Semester*

- Find a faculty member to advise you on your Honors Thesis (the Thesis Director)
- Work with your Thesis Director to define your project and to formulate an action plan for the project (the Prospectus)
- Prepare your Prospectus and submit to Barrett (Note: students that submit by the Spring priority deadline will receive an additional \$100 towards their thesis expenses). See: <https://barretthonors.asu.edu/academics/thesis-and-creative-project/student-guidebook>
- Enroll in BME 492 for 3 credits

#### Senior Year

##### *Start of Fall Semester*

- If you didn't do so during the previous Spring Semester, work with your Thesis Director to define your project and prepare and submit your Prospectus to Barrett: <https://barretthonors.asu.edu/academics/thesis-and-creative-project/student-guidebook>

##### *Fall Semester*

- Complete background review for project

##### *End of Fall Semester*

- Enroll in BME 493 for 3 credits

##### *Beginning of Spring Semester*

- Continue working on project and begin preparing thesis document

##### *Before Spring Break*

- Complete first draft of the thesis document and submit to Thesis Director for initial review
- Schedule your thesis defense - remember this is your responsibility – by completing the Thesis/Creative Project Defense Reporting Form –see: <https://barretthonors.asu.edu/academics/thesis-and-creative-project/defense>

- Note that a draft of the thesis should be sent to the entire committee for review at least two weeks before your defense

*After Spring Break*

- Prepare for your defense!
- Hold defense and, following a successful outcome 😊, get the Signature Title Page signed by all committee members
- Make any necessary changes to the thesis document based on feedback from committee

*Early April*

- Submit final thesis document to Barrett!