Biomedical Engineering Graduate Program
PhD Graduate Student Handbook
Academic Year 2023-2024

Biomedical Engineering Graduate Program
School of Biological and Health Systems Engineering
Arizona State University
PO Box 876106, 501 E. Tyler Mall, ECG 334
Tempe, AZ 85287-6106

480-965-3028

SBHSE@asu.edu

Updated 05-12-2023
# TABLE OF CONTENTS

- **Introduction** .................................................................................................................. 5
- **ASU Charter** ...................................................................................................................... 5
- **Diversity, Inclusion, and Indigenous Land Acknowledgement** ........................................... 5
- **Academic Integrity** ............................................................................................................. 6
- **Discrimination, Harassment, and Retaliation** .................................................................... 6
- **Introduction** ......................................................................................................................... 6
  - Objective of the Handbook ................................................................................................. 6
  - Program Contacts ................................................................................................................. 7
- **General Graduate Student Expectations** ........................................................................... 7
- **General Graduate Faculty Responsibilities** ......................................................................... 7
- **General Safety** .................................................................................................................... 7
- **College and University Procedures and Policies** ................................................................. 7
- **Path to the PhD Degree** ...................................................................................................... 8
- **Goal of the Doctoral Program** ........................................................................................... 8
- **Prospective Students** .......................................................................................................... 9
- **General Admission Requirements** .................................................................................. 10
  - Regular Admission ............................................................................................................. 10
  - Regular Admission with Deficiencies ................................................................................ 10
  - Pre-requisite Coursework .................................................................................................... 10
    - Mathematics and Basic Sciences .................................................................................. 10
    - General Engineering Fundamentals ............................................................................. 11
  - Provisional Admission ......................................................................................................... 11
- **Non-Degree Seeking Pathway** .......................................................................................... 11
- **Other Admissions Information** .......................................................................................... 12
- **Tuition, Fees, and Residency** ............................................................................................ 12
- **Requirements for the Doctor of Philosophy Degree** .......................................................... 12
  - Grading .............................................................................................................................. 13
  - Repeating ASU Courses .................................................................................................... 13
  - Good Standing .................................................................................................................. 13
  - Misconduct ........................................................................................................................ 13
  - Graduate Credit Courses .................................................................................................. 13
  - Transfer Credit .................................................................................................................. 13
Access to SBHSE Staff and Facilities

- ISAAC and Building Access
- Office Equipment
- Copier and other Office Resources

Course Load

- Dissertation Supervisory Committee Composition
- Interactive Plan of Study

Course Requirements

- Total Requirements
- Teaching Practicum

Foreign Language Requirement

Comprehensive Examination

- Purpose and Committee Composition
- Exam Timeline and Preparation

Dissertation Prospectus

- Guidelines and Tips for the Dissertation Prospectus

Admission to Candidacy

Completion of the Written Dissertation

Format Approval

Oral Defense of the Dissertation

- Level of Pass or Fail

Applying for Graduation

Enrollment

- Continuous Enrollment in a Doctoral Degree Program
- International Students in the Final Semester
- Requesting a Leave of Absence
- Medical/Compassionate Withdrawal
- Other Dissertation and Student Requirements upon Graduation

Financial Support

- Graduate Research Assistantships
- Teaching Assistantships
- Scholarships
- Policies Related to Financial Support of Graduate Students
- Intellectual Property
- Conflict of Interest

Access to SBHSE Staff and Facilities

- ISAAC and Building Access
- Office Equipment
- Copier and other Office Resources
Additional University and Student Support Resources ................................................................. 28
FSE Academic Program Support ................................................................................................. 28
University Resources .................................................................................................................. 28
University-Wide Academic and Career Support ..................................................................... 28
Business and Finance Services ................................................................................................. 28
Counseling Services .................................................................................................................... 28
Disability Accommodations ....................................................................................................... 29
Health and Fitness ...................................................................................................................... 29
International Students .............................................................................................................. 29
Veterans and Military .................................................................................................................. 29
Introduction

Our graduate educational goal is to prepare graduates to work as biomedical engineers for the broad range of opportunities available in industrial, commercial, and academic organizations and to prepare graduates for continued learning experiences either in a formal graduate or professional program or in continuing education. Students will have core knowledge in, engage in independent research in, and disseminate knowledge in one or more of the following areas: biomaterials, biosensors, biomarkers and biomimetic materials; biomedical imaging; molecular, cellular and tissue engineering; neural and rehabilitation engineering; and/or synthetic and systems biology. Our alumni will be enabled to advance in their fields in academia or industry with their chosen careers as researchers, entrepreneurs, and engineers. We aim to provide exceptional graduate training in Biomedical Engineering that benefits our students, our community, our stakeholders, and society in line with the university’s Charter. **We extend a warm welcome to all to the School of Biological and Health Systems Engineering (SBHSE) at Arizona State University!**

ASU Charter

ASU is a comprehensive public research university, measured not by whom it excludes, but by whom it includes and how they succeed; advancing research and discovery of public value; and assuming fundamental responsibility for the economic, social, cultural and overall health of the communities it serves.

Diversity, Inclusion, and Indigenous Land Acknowledgement

The School of Biological and Health Systems Engineering (SBHSE) in the Ira A. Fulton Schools of Engineering (FSE) recognizes the historical systemic racist structure embedded within academia. SBHSE commits to breaking down traditional structures to build an inclusive culture and community for our students, faculty, and staff to thrive within local and global biomedical engineering communities. SBHSE also recognizes diversity in many dimensions as a strength in innovation and developing the next generation of engineers.

The School of Biological and Health Systems Engineering challenges injustices and social inequities of any kind through education. Guided by ASU’s charter, this is an integral part of our standing as an institution and demonstrated by how we uphold, value, and cherish the diversity of our students and faculty members.

SBHSE also acknowledges the twenty-two Native Nations that have inhabited this land for centuries. Arizona State University’s four campuses are located in the Salt River Valley on ancestral territories of Indigenous peoples, including the Akimel O’odham (Pima) and Pee Posh (Maricopa) Indian Communities, whose care and keeping of these lands allows us to be here today. SBHSE acknowledges the sovereignty of these nations and seeks to foster an environment of success and possibility for Native American students and patrons. We are advocates for the incorporation of Indigenous knowledge systems and research methodologies within biomedical engineering. SBHSE welcomes members of the Akimel O’odham and Pee Posh, and all Native nations to our programs.
Academic Integrity

At Arizona State University academic honesty is expected of all students in all examinations, papers, academic transactions and records. The possible sanctions include, but are not limited to: appropriate grade penalties, loss of registration privileges, disqualification and dismissal. ASU strictly adheres to the academic integrity policy. This policy sets forth the ASU Student Academic Integrity Policy and appeal procedures. The policy can be found on the University Provost website. Additional information and resources can be found on the Ira A. Fulton Schools of Engineering website regarding Academic Standards and Academic Integrity. Students and faculty are also expected to adhere to the Arizona Board of Regents Code of Conduct.

Discrimination, Harassment, and Retaliation

ASU prohibits all forms of discrimination, harassment, and retaliation. To view ASU’s policy please see https://www.asu.edu/aad/manuals/acd/acd401.html.

Title IX of the Education Amendments of 1972 is a federal law which provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy ACD 401 make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. For information on resources, visit the sexual violence awareness, prevention, and response website here.

Title IX protects individuals from discrimination based on sex in any educational program or activity operated by recipients of federal financial assistance. As required by Title IX, ASU does not discriminate on the basis of sex in the education programs or activities that we operate, including in admission and employment. Inquiries concerning the application of Title IX may be referred to the Title IX Coordinator or to the U.S. Department of Education, Assistant Secretary, or both. Contact titleixcoordinator@asu.edu or 480-965-0696 for more information. Office located at 1120 S. Cady Mall, INTDSB 284. For information on making a report please go to www.asu.edu/reportit/.

Introduction

Objective of the Handbook

This handbook will provide you with the basic information needed throughout the course of study and assist you in navigating through the PhD program in SBHSE. The Handbook is the main source of information regarding policies, regulations, and academic requirements necessary to complete the PhD degree. We acknowledge that this handbook is not meant to be an exhaustive collection of all policies at ASU. Instead, students and faculty are encouraged to review the ASU Graduate Policies and Procedures regarding University policies on graduate programs. The relevant links are provided throughout this Handbook. You are responsible for being informed about all academic requirements of the graduate program. We also acknowledge that additional questions and concerns may arise that are not formally addressed in these sources. Our Advising staff, Graduate Program Chair, and Graduate Program Committee will be valuable assets as you progress through your degree. You are urged to maintain close contact with the Graduate Advisor and to seek additional information as the need arises.
DOCTOR OF PHILOSOPHY GRADUATE STUDENT HANDBOOK

Program Contacts

**Graduate Program Chair:** Sydney Schaefer, PhD  
(Email: sydney<dot>schaefer<at>asu<dot>edu)

**Assistant Director, Academic Services:** Elizabeth Tripodi, M.Ed.  
(Email: sbhse<at>asu<dot>edu)

**Program faculty:** [https://sbhse.engineering.asu.edu/faculty/](https://sbhse.engineering.asu.edu/faculty/)

General Graduate Student Expectations

It is the responsibility of the graduate student to know and to observe all procedures and requirements as defined in this handbook, the Graduate Catalog, the Schedule of Classes, and the Guide to the Preparation of Doctoral Dissertation. A copy of the Schedule of Classes is available online at [https://webapp4.asu.edu/catalog/](https://webapp4.asu.edu/catalog/). Graduate students are expected to be familiar with the Code of Conduct, which is available in the Office of Student Affairs. Violations of the Code of Conduct or incidents of dishonesty such as cheating in examinations, cheating in laboratory work or plagiarism is subject to university discipline whether committed by individuals or groups. **Graduate students are expected to demonstrate satisfactory progress.** They are also expected to maintain the highest degree of academic integrity, enthusiasm for their academic studies, and a high degree of professionalism. For more information about academic integrity, visit: [https://engineering.asu.edu/academic-integrity-for-students/](https://engineering.asu.edu/academic-integrity-for-students/)

General Graduate Faculty Responsibilities

Faculty members serving as members of the SBHSE Graduate Faculty, especially those who are endorsed to the level of chair or co-chair, accept the responsibility of mentoring graduate students, and are expected to know and to observe the procedures and requirements defined in this handbook and the other publications listed above.

General Safety

SBHSE is committed to providing a safe work environment for faculty, staff and students. Students are required to follow safe procedures in accomplishing their research and teaching assignments, in line with the Dean’s Office of Infrastructure and Safety for the Ira A. Fulton Schools of Engineering. This Office is a department devoted to providing safety and services for all of the engineering schools, faculty, researchers, staff, and students. The primary goal of the FSE DO Infrastructure and Safety Team is to provide a central hub of resources and information to assist faculty, researchers, staff, and students in their day-to-day and long-term activities while ensuring a safe work and research environment. The Team is coordinated by the Dean’s Office and is comprised of representatives in each of the engineering schools. Students are required to take a series of safety or safety refresher courses EVERY year.

College and University Procedures and Policies

All policies and procedures outlined in this handbook are in accordance with policy set by the [Graduate College](https://engineering.asu.edu/graduatecollege) and Office of the University Provost.
Path to the PhD Degree

The student must accomplish several activities and milestones in the process of acquiring the PhD degree. The diagram below summarizes the chronological steps that must be followed in this process, with a suggested timeline. Students will consult with their faculty advisor directly for a more individualized timeline that is determined by a number of factors. The median time to completion of our program is 5 years for students who are enrolled full-time.

A “typical” timeline

- Begin Coursework and File Program of Study (iPOS) Deficiencies completed by end of Year 1
- Select Dissertation committee End of Year 1 or Beginning of Year 2
- Complete Coursework and Comprehensive Exam During and End of Year 2
- Defend Dissertation Prospectus During Year 3
- Complete Dissertation Research Years 3, 4, 5
- Defend Dissertation Years 4 or 5

Note: Students must graduate within 10 years of admission. However, completion of degree may be considered for extension in special circumstances with faculty advisor and School approval, if approved by the Graduate College via a petition. Please see the Graduate Academic Advisor for more information.

Goal of the Doctoral Program

The School of Biological and Health Systems Engineering (SBHSE) provides a comprehensive education to a multicultural student body covering many areas in biomedical engineering, preparing large numbers of engineers who will engage in industry, health-related and biomedical research, education, and entrepreneurship, thus addressing a wide selection of societal needs. These efforts support the university’s mission of advancing research and discovery of public value, and assuming fundamental responsibility for the economic, social, cultural and overall health of the communities it serves.

The Doctor of Philosophy degree is the highest university degree. It is granted to students upon evidence of excellence in research and the demonstration of independent, creative scholarship culminating in a dissertation. Coursework in the doctoral program focuses primarily on the engineering science concepts in the student's major and in certain basic sciences. The graduate research program introduces the student to the techniques, procedures and philosophical attitudes necessary for exploring unknown areas in his/her chosen profession. After receiving the degree, the student is able to identify areas within his/her major suitable for research; identify the current state of knowledge in these areas using literature search resources; propose plans for
investigating the area; apply fundamental principles of science and engineering to complete the investigation, and teach these skills to others who follow. The student is taught the scientific method by intensely studying a specific research topic. This also yields a more in-depth knowledge of his/her professional major. Often included in the graduate educational experience is an opportunity to teach undergraduates by preparing selected lectures in undergraduate courses, assisting in undergraduate laboratories or serving as tutors or mentors.

We also acknowledge that selecting a PhD program involves a lot of decisions and factors. In addition to our cutting-edge research and world-class facilities, which you can learn about on our website, we want you to know that:

100% of our PhD graduates report **full-time employment within 6 months of graduation**.

*based on responses from the most recent (2019-20) ASU First Destination Survey

### Prospective Students

Of paramount importance to a successful doctoral program is the selection of a suitable research topic and faculty advisor. Prospective students are encouraged to visit the SBHSE website ([https://sbhse.engineering.asu.edu/](https://sbhse.engineering.asu.edu/)) to learn more about our research areas and our faculty expertise. Prospective students who are interested in pursuing their PhD in BME at Arizona State University should reach out directly to faculty of interest and inquire about available funding opportunities and to learn more about their ongoing research. Since most PhD students are financially supported by their faculty advisors (see “General Admissions Requirements - Other information”), there is not always a perfect match between the student and faculty member in terms of research interest. Thus, early communication between a prospective student and a faculty member prior to (or concurrent with) applying to the PhD program is encouraged.

In this PhD program, original work is required for the Doctor of Philosophy degree. One or more peer-reviewed research publications or presentations should result from the research project. Throughout their program of study, the student is encouraged to actively participate in efforts to acquire funding in support of the advisor's research program. The student should assist the research advisor in the preparation of grant proposals to local, state and national agencies seeking funding for the project, and should also consider applying for their own funding whenever appropriate.

The student-advisor relationship is a vital one during the PhD years, and often continues well beyond them. Each such relationship is unique, and usually offers personal and professional benefits beyond the conduct of the PhD research. These benefits might include meeting important post-degree job contacts, advice on professional development and training in non research-related professional skills (e.g. teaching). It is expected that in most circumstances student-advisor disagreements will be minor and will be amicably resolved by those involved. In the uncommon instances that attempts to resolve disagreements are unsuccessful, the student and advisor are encouraged to meet with the graduate student academic advisor and/or the program chair for further assistance in resolving any difficulties. Dissertation committee members may also serve as informal mentors throughout the course of the degree.

As such, we encourage students, once admitted to our program, to check in with their committee members more than once a semester to update them on their progress, seek advice, etc.
General Admission Requirements

Regular Admission

To be eligible for regular admission, the student must have a Bachelor's degree in Bioengineering, Biomedical Engineering, or equivalent coursework (see below). Applicants normally will have a minimum grade point average (GPA) of 3.25 out of a total possible 4.0 or equivalent. Students entering with a master's degree are required to have a minimum GPA in their master's degree coursework of 3.5 out of a possible 4.0. Foreign students must also submit test scores from the Test of English as a Foreign Language Exam (TOEFL), International English Language Testing System (IELTS), or Duolingo in compliance with the current requirements of the Graduate College. TOEFL scores should be close to 100 for admission.

Submission of GRE scores is optional for Biomedical Engineering PhD Program applications. Applications are evaluated using a holistic review process that considers the multiple, intersecting factors – academic, nonacademic, and contextual – that uniquely define each applicant. This process can include, but does not require, consideration of GRE scores. Thus, an absence of GRE scores will not be viewed negatively during the application review process. Applicants who chose to have their scores considered as a supplement to their application should submit them to ASU's Graduate Admission Services and indicate in their personal statement how the scores supplement their application.

Regarding letters of recommendation, applicants are encouraged to seek doctoral-level references from their own academic and/or professional institutions who can speak to their academic potential.

Regular Admission with Deficiencies

Regular admission may also be given to students with a Bachelor of Science degree in another discipline. In this case, however, the student may be required to take a number of undergraduate courses to eliminate deficiencies. These courses are in addition to the graduate program of study. The letter of admission specifies the deficiencies that must be completed before the student is awarded the graduate degree. Students will be required to complete any deficiencies at the first opportunity after admission preferably within the first year.

Students without a Bachelor's degree in Biomedical Engineering and without the equivalent of the following courses in their undergraduate program of study are deficient in some skills needed for graduate study in Biomedical Engineering. These courses must be completed in addition to the required graduate coursework. In addition, the student's supervisory committee may outline additional transition program requirements to ensure that the student can successfully pass the Comprehensive Examination.

Pre-requisite Coursework

Mathematics and Basic Sciences

Mathematics: Calculus through "Ordinary Differential Equations" (e.g. MAT 270, 271, 272 AND 274; typically at least 13 semester hours credit total).

Physics: One year of calculus-based physics including laboratory (8 semester hours).
Biology: Minimum of one "General Biology" course (4 semester hours).

Physiology: Minimum of one "Physiology" course (4 semester hours).

Chemistry: Minimum of one Chemistry course including laboratory (4 semester hours).

**General Engineering Fundamentals**

Students without the equivalent courses must complete additional course work in **four** of the following six topics:

- Thermodynamics
- Fluid Mechanics
- Mechanics of Rigid Bodies
- Electrical Networks
- Signals and Systems
- Materials Science and Engineering

*Any other course work that is a prerequisite for a course in the student's graduate program of study.*

Students should be aware that their research advisor might advise or recommend other course requirements, and that students and their advisors may work with the Graduate Academic Advisor to resolve potential deficiencies based on their transcripts, depending on the nature of prior coursework and the anticipated research. These courses vary depending on their specific field of research. For example, BME 334 “Heat and Mass Transfer” is a common prerequisite for Chemical Engineering related courses of study, ECE 334 “Electronic Devices” for Electrical Engineering related fields, and ECE 313 or ECE 314 “Deformable Solids” for Mechanical Engineering related research. Additionally, students without undergraduate degrees in Biomedical Engineering or a closely related engineering discipline may have to take additional engineering course work in preparation for the comprehensive examination.

**Provisional Admission**

Applicants with scholastic records below the standards for regular admission may be admitted provisionally in certain special cases at the discretion of the departmental graduate committee with the approval of the chair of the graduate committee and the department chair. A student admitted with provisional status must follow the provisional terms as outlined in the admission letter, typically earning a 3.25 out of a 4.0 in the first semester in nine (9) graduate level credits.

Full-time provisional students must take a minimum of nine (9) hours during their first semester in residence. Part-time provisional students may take fewer than nine (9) hours of coursework during their first semester. Failure to do this will result in suspension from the program. Students who meet this requirement are reclassified as a regular graduate student and the regulations governing academic performance for regular students apply. **It is the student's responsibility to see that their status is changed from provisional to regular after having successfully completed these requirements.** Please contact your Graduate Advisor when you have fulfilled the provisional requirements.

**Non-Degree Seeking Pathway**

It is not uncommon for prospective students interested in our PhD program to have deficiencies in their prior coursework with respect to the degree pre-requisites, especially if the student comes from another discipline. In some cases, and for other possible reasons, students can enroll in a
non-degree seeking pathway. To do so while progressing towards admission to our PhD program, students must take 4 BME graduate (500-level) courses and obtain a cumulative Graduate GPA of 3.5 on these 4 graduate courses in the first attempt. BME courses must be 3 credits each. Please note that BME 790, BME 590 and BME 591 seminar credits do not count towards this requirement. The BME graduate courses completed will be transferred to the program upon admission. If interested, students may apply to the non-degree pathway here or contact SBSHE advising for details. Applications will not be processed until final grades are reviewed for all the graduate courses.

Other Admissions Information

Eligible applicants are admitted into the PhD program under the supervision and financial support of a faculty advisor with a primary appointment in the School of Biological and Health Systems Engineering (SBHSE) and with membership to its graduate faculty. Eligible applicants can be admitted under the supervision and financial support of a faculty member with a primary appointment outside of SBHSE, either in another academic unit within ASU or at an established clinical partner, who agrees in writing to the processes and procedures outlined in this Handbook. In all cases, financial support is provided through the faculty advisor in the form of a Graduate Research Assistantship (GRA) during the academic year at minimum, with the advisor’s funding confirmed by their research administration official prior to admission. The only acceptable forms of funding for student stipends, tuition, and benefits are: 1. financial support from the faculty advisor; 2. external academic fellowships (e.g., NSF GRFP, GEM Fellowship); and 3. ASU-funded fellowships. In the case of fellowships, the faculty advisor commits to supplementing the fellowship if needed to meet SBHSE minimum stipend level, tuition, and benefits, in addition to funding any years remaining after the completion or loss of the fellowship. Unacceptable forms of funding include self-funding through an industry salary or personal/family finances (e.g., quarters from Aunty).

Tuition, Fees, and Residency

Tuition is set by ASU and the Arizona Board of Regents each year. View the general Tuition and Fees Schedule, or calculate a more specific estimate of charges using the ASU Tuition Estimator. Information on residency requirements can be found at Residency for Tuition Purposes.

All amounts shown in the Tuition and Fees Schedules or in other University publications or web pages represent tuition and fees as currently approved. However, Arizona State University reserves the right to increase or modify tuition and fees without prior notice, upon approval by the Arizona Board of Regents or as otherwise consistent with Board policy and to make such modifications applicable to students enrolled at ASU at that time as well as to incoming students. In addition, all tuition amounts and fees are subject to change at any time for correction of errors. Finally, please note that fee amounts billed for any period may be adjusted at a future date.

For details about current and past Graduate Program Fees, click here. As noted below in Financial Support, fees are typically covered by the student themselves.

Requirements for the Doctor of Philosophy Degree

The Graduate College sets certain general requirements for the Doctor of Philosophy degree. In addition to these general requirements, the department sets specific program requirements, which exceed those imposed by the Graduate College. This section outlines both the general requirements specified by the Graduate College and the additional requirements specified by the Biomedical Engineering Program.
Grading
Grades are assigned in graduate courses in compliance with the current definitions as set by the university. For more information, please see: https://students.asu.edu/grades

Repeating ASU Courses
Graduate students (degree or nondegree) may retake any course at any level at ASU, but all grades remain on the student transcript as well as in GPA calculations.

Good Standing
A student who has been admitted to a graduate degree program in Engineering, with either regular or provisional admission status, must maintain a 3.0 or higher grade point average (GPA):
1. in all work taken for graduate credit (courses numbered 500 or higher),
2. in the coursework in the student’s approved program of study, and
3. in all coursework taken at ASU (overall GPA) post baccalaureate.

A student will be placed on academic probation if one or more of the student's GPAs listed above falls below 3.0. Students will be notified by email when placed on academic probation.

A student will earn academic good standing by obtaining a 3.0 or better in the GPAs listed above by the time the next nine hours are completed. Coursework such as research and dissertation registration that are for Z or Y grade cannot be included in these nine hours.

A student may be recommended for dismissal from a graduate program if the student fails to increase all of the GPAs listed above to 3.0 or better by the time he/she completes at least nine credit hours.

A student may appeal actions concerning dismissal by petitioning the departmental unit in which they are enrolled.

Misconduct
The highest standards of academic integrity are expected of all students. The failure of any student to meet these standards may result in suspension or expulsion from the university and/or other sanctions as specified in the academic integrity policies of the individual colleges. Violations of academic integrity include, but are not limited to, cheating, fabrication, tampering, plagiarism, falsification or misrepresentation of data or facilitating such activities. The university and Fulton Schools of Engineering academic integrity policies are available online.

Graduate Credit Courses
Courses at the 500, 600 and 700 levels are graduate credit courses. Courses at the 400 level satisfy graduate degree requirements when appearing on an approved plan of study. There is a limit of 6 credits of 400 level courses that can be included on the plan of study.

Transfer Credit
Transfer of credit is the acceptance of credit from another institution for inclusion in a program of study leading to a degree awarded by ASU. Transfer of credit can also apply to credits taken at ASU as a non-degree student.
Transfer credits may not be applied toward the minimum degree requirements for an ASU degree if they have been counted toward the minimum requirements for a previously-awarded degree.

The number of hours transferred from other institutions may not exceed 12 hours and must be at 500 level with a B or better and within 3 years of admission. Up to 12 semester hours of credit taken at another institution must not have been counted toward a previous degree and may be counted toward the minimum semester hours required for a specific ASU doctoral degree program. In all cases, the inclusion of transfer courses on a program of study is subject to approval by the academic unit and the Graduate College.

Students with a Master's Degree in Biomedical Engineering from another institution may transfer up to 30 semester hours of credit towards the course requirements for the Doctor of Philosophy degree with the approval of the departmental graduate committee and Graduate College. The overall course credits, however, must conform to the above requirements. The student must have credit for the Biomedical Engineering core courses, and sufficient Biomedical Engineering graduate electives regardless of the institution where they were taken. The Graduate College requires at least 54 hours of the program of study are taken at ASU. The determination of applicable courses will be made by the Chair of the committee and should be completed within the first semester of coursework.

Certain types of graduate credits cannot be transferred to ASU, including the following:

1. credits awarded by postsecondary institutions in the United States that lack candidate status or accreditation by a regional accrediting association;
2. credits awarded by postsecondary institutions for life experience;
3. credits awarded by postsecondary institutions for courses taken at noncollegiate institutions (e.g., government agencies, corporations, and industrial firms);
4. credits awarded by postsecondary institutions for noncredit courses, workshops, and seminars offered by other postsecondary institutions as part of continuing education programs;
5. credits given for extension courses; and
6. credits completed before the posting of a bachelor's degree.
7. Acceptable academic credits earned at other institutions that are based on a unit of credit different from the ones prescribed by the Arizona Board of Regents are subject to conversion before being transferred to ASU.

Transfer credits must be acceptable toward graduate degrees at the institution where the courses were completed. Only resident graduate courses (at the institution where the courses were completed) with an “A” (4.00) or “B” (3.00) grade may be transferred. A course with the grade of pass, credit, or satisfactory may not be transferred. Additionally, transfer credits must be within the six-year time limit to be used on a master's plan of study.

Official transcripts of any transfer credit to be used on a plan of study must be sent directly to the Graduate Admissions Office from the Office of the Registrar at the institution where the credit was earned.

**Course Load**

Course load is not to exceed 13 semester hours (without approval) of credit during each of the two semesters, 6 semester hours during each 6-week summer session or 9 semester hours of credit during the 8-week summer session or a petition must be submitted. All students must register for a minimum of one credit each semester to continue as a graduate student at ASU.

All graduate research assistants and associates (RA/TA’s) must enroll for 12 credit hours (this may
include research credit hours) during each semester of their employment. This departmental requirement generally exceeds the Graduate College minimum. The hours cannot include audit enrollment. A half-time (50%) graduate assistant or associate working 20 clock hours per week may not register for more than 12 hours of coursework each semester; a one-third time (33%) assistant or associate for more than 13 hours and one-quarter time (25%) assistant or associate for more than 15 hours. A graduate assistant or associate (RA/TA) may petition to take more than 13 credit hours for a semester.

During the summer session, graduate assistants and associates must be enrolled in at least one credit in coursework related to their degree program in each of the summer session terms. During the summer sessions, graduate assistants employed 25% time may enroll for a maximum of 6 semester hours during a 6-week session or 9 hours during an 8-week session; those employed 50% may enroll for a maximum of 5 hours during a 6-week session or 7 hours during the 8 week session and those employed 100% time may enroll for a maximum of 3 hours during the 6 week session or 4 hours during the 8-week session.

All graduate students doing research, working on thesis or dissertations, taking comprehensive final examinations or using university facilities or faculty time, must be registered for a minimum of one hour of credit that appears on the program of study or is an appropriate graduate level course. For additional information, visit the Graduate College handbook for RA/TA’s at https://graduate.asu.edu/ta-ra

Dissertation Supervisory Committee Composition

As described in the Graduate Catalog, each student interacts with one committee appointed by the dean of the Graduate College: the Dissertation Supervisory Committee. Under most circumstances, this committee will oversee the Comprehensive Examination as well as the Prospectus and Dissertation Defense. The circumstances in which this would not be the case would be, for example, if the student’s research evolves over the course of their degree and/or requires additional or different expertise within or outside of SBHSE. The Dissertation Supervisory Committee should be formed by the end of the third semester. The form to complete one’s committee can be found here. This committee will oversee the student’s curriculum and research. The committee chair is generally the research advisor (aka faculty advisor), unless the research advisor is not endorsed to the level of Chair by the Graduate College; if this is the case, the research advisor should serve as co-chair and a co-chair with relevant research expertise will be selected (who has a primary appointment in SBHSE). The committee chair (or co-chair, should the primary faculty advisor be outside of SBHSE) must be a tenured or tenure-track faculty member in SBHSE or a member of the Graduate Faculty in Biomedical Engineering (BME) with endorsement to co-chair or chair. When the primary faculty advisor is endorsed to the level of co-chair, a 2nd co-chair from among the tenured tenure track SBHSE faculty must be appointed, preferably one with knowledge of the student’s research area. Non-BME faculty may receive endorsement to chair as decided by the Graduate Committee based on a number of criteria, including but not limited to prior history of BME PhD student mentorship to completion (i.e., graduation), student success (i.e., the timeline to completion), and other programmatic involvement by the faculty member. Upon the recommendation of the head of the academic unit, the dean of the Graduate College appoints the student’s dissertation committee. The committee should consist of five (but up to six, in some cases) members; one of these members will serve as the chair (or two as co-chairs), along with other faculty or experts in the student’s field of research. Fifty percent (50%) of the committee must be tenured tenure-track SBHSE faculty. The members of the dissertation committee must have the necessary knowledge and skills to administer the student’s Comprehensive Examination, to advise the student during the formulation of the research topic, and to provide input throughout the completion of the research and the dissertation. The committee must be approved by the dean of the Graduate College before
the student may apply for the Comprehensive Examination. If the head of the academic unit recommends changes in membership for the committee after the committee has been appointed, the student must submit a change of committee form to the Graduate College and receive the approval of the dean of the Graduate College.

While it is desirable that all members of a student’s supervisory committee be physically present with the student at the final oral defense of a thesis or dissertation, there are situations (e.g., faculty travel, faculty emergencies and/or faculty leave) that may necessitate holding a defense with one or more committee member(s) absent. The Graduate College office has established the following policies and procedures for such cases, as described here:

1. A minimum of 50% of the student’s official committee must be physically present with the student at the defense. If at least 50% of the committee cannot be physically present, the defense must be rescheduled.

2. The chair or one co-chair must be physically present at the defense. If this is not possible, the defense must be rescheduled. The student cannot submit a committee change after the defense is scheduled.

3. A committee co-chair or member who cannot be physically present at the defense may participate in the defense in one of three ways. These options are listed in the order of preference:
   a. The absent committee member videoconferences into the defense location.*
   b. The absent committee member teleconferences into the defense location.*
   c. The absent committee member provides a substitute to be physically present (approved by the committee chair, the head of the academic unit & the Graduate College) for the defense only. The substitute must be someone who is approved to serve on graduate supervisory committees for that program. The absent committee member should provide the substitute questions, in writing, to be asked at the defense. The substitute, although respecting the opinions expressed by the regular committee, must be free to use his/her judgment in voting on whether the student passes or fails the defense.

*The defense location must have the necessary equipment to accommodate video/teleconference materials.

*Students must provide a copy of their document and any other supporting presentation materials to the substitute committee member at least 5 working days in advance of the defense.

**Absent Committee Member Signature Instructions:** If a committee member will be absent from the defense, the academic advisor or committee chair/co-chair must notify the Graduate College as quickly as possible and before the defense takes place. In order to assign a substitute, please be prepared to provide the Graduate College with the full name and email address of the faculty member who will serve as the substitute.

Please contact the Graduate College office at (480) 965-3521 or send an email to Grad-GPS@asu.edu if you have questions or concerns regarding these procedures.

**Interactive Plan of Study**

The student is required to file an interactive plan of study (iPOS) with SBHSE and the Graduate College before the end of their 1st year and before completion of 50% of the PhD coursework. The plan of study (POS) will be available on MyASU. Changes in the planned program may be made with the approval of the student’s dissertation committee and the approval of the Program Chair(s) or Director of the School of Biological and Health Systems Engineering. A step-by-step guide is
available [here](#).

**Course Requirements**

**Total Requirements**

A minimum of eighty-four (84) semester hours is the total course/seminar/research/dissertation requirement. Total hours are 84 semester hours of graduate-level courses.

1. Doctoral students are required to complete 6 credits from each of the following 3 areas (at least 18 credits):
   - BME Courses (BME Prefix) – at least 6 credits
   - Life Science/Biology Courses – at least 6 credits
   - Quantitative Math or Engineering – at least 6 credits (from the approved list found [here](#))

2. Technical Electives - at least 9 credits (courses relevant to research focus)

3. BME 591: Seminar - at least 5 credits

4. BME 780: Teaching Practicum - at least 3 credits

5. BME 799: Dissertation - EXACTLY 12 credits (override required; student is eligible to enroll after successfully defending the prospectus defense.)

6. BME 792: Research - at least 37 credits

**Teaching Practicum**

The teaching practicum is a mentored teaching experience that the student participates in cooperation with a faculty member of their choosing (typically their faculty advisor, even if their advisor is outside of BME). At a minimum, the student will experience several elements of teaching: preparation and delivery of at least 3 class sections, holding office hours, selection/creation and evaluation of student work, design, preparation and evaluation of one examination, and exposure to inclusive pedagogical teaching principles. In addition, the student and the course instructor will come up with a specific plan for providing the student with feedback regarding his or her performance during the experience. Once the experience is completed, the student and the instructor will file brief reports with the graduate director describing the practicum.

In order to register for practicum, the student will first have to file a Teaching Practicum Course Definition form with the advising office. This ensures that the student and faculty member have reached agreement over expectations for the practicum experience. The form is available [here](#). Students completing their Teaching Practicum will be enrolled in a corresponding Canvas course that semester for the submission of their deliverables.

**Foreign Language Requirement**

None.

**Comprehensive Examination**

**Purpose and Committee Composition**
The comprehensive examination is designed to test the student's mastery of the field of their completed coursework in the context of their research area. In other words, these examinations will test the extent to which a student can demonstrate knowledge and understanding in BME coursework and corresponding prerequisites as they pertain to the student's specific research area, and demonstrate sufficient foundational knowledge to develop a research plan in their selected sub-discipline of Biomedical Engineering as the next step. The Comprehensive Exam is separate from the Prospectus, and should not focus on or evaluate the student's proposed dissertation research. Students are evaluated by their Dissertation Supervisory Committee based on the student’s understanding of the biological, quantitative, and methodological aspects of the questions and the student’s formulated solutions/answers.

As described above, the Dissertation Supervisory Committee should consist of five (but up to six, in some cases) members; one of these members will serve as the chair (or two as co-chairs), along with other faculty or experts in the student’s field of research. Fifty percent (50%) of the committee must be tenured/tenure-track SBHSE faculty. In some cases, the faculty advisor is outside of SBHSE and has only been endorsed by the Graduate Committee to the level of co-chair; in these instances, a tenure/tenure track SBHSE faculty must agree to serve as co-chair, and they as co-chair will be present and listed. The members of the Dissertation Supervisory Committee must, at the time of the exam, have the necessary knowledge and skills to administer the student’s Comprehensive Examination.

Exam Timeline and Preparation

The student is expected to take the comprehensive examination after completing their required core coursework (typically during the fourth semester). Though not required, students are encouraged to informally meet with their committee members to discuss their coursework and degree progression. The comprehensive exam is administered in two parts: a written part and an oral part. It is the responsibility of the student to communicate with committee members directly to select the date/time of the oral examination, which in turn identifies the start date of the written examination (2 weeks prior to the oral examination). Students are encouraged to use scheduling tools like When2Meet or Doodle, and to plan well in advance (2-4 months out) to accommodate committee members' schedules. Oral comprehensive exams are closed to the public, with only committee members present.

Once a date and time is identified for the oral examination in consultation with their committee members, the student requests a room for the selected date and time with the Comprehensive Exam Scheduling form. (Students are encouraged to email sbhse@asu.edu for further assistance if they do not get a response within 48 hours of completing the form, excluding weekends). At this time, the Graduate Academic Advisor identifies and confirms one Graduate Program Committee member to attend the oral exam as an ombudsperson (typically based on a rotation system, but may also be selected based on research expertise). The purpose of this ombudsperson is to clarify any procedures related to conduct of the exams, and to facilitate/interpret discussion at the end of the exam if necessary. Dissertation Supervisory Committee members who are also Graduate Curriculum Committee members can serve a dual role, in the sense that they can be both a Dissertation Supervisory Committee member and ombudsperson. However, the Dissertation Supervisory Committee Chair cannot serve as the ombudsperson as well; in this case, an ombudsperson from the Graduate Curriculum Committee will be selected.

In the meantime, the Dissertation Supervisory Committee Chair (typically the faculty advisor) solicits 1-2 essay and/or quantitative questions from each committee member. The Chair then compiles and finalizes questions in consultation with the rest of the committee, meaning that the Chair pares down and merges questions and feedback from the committee into five to six distinct questions (which may or may not have multiple parts, e.g., part a, b, c). It is expected that there is sufficient balance in terms of quantitative/qualitative content and level of difficulty across the questions.
The Exam Committee Chair or co-Chair then submits the questions to the Graduate Program Chair via email no later than 1 week prior to the written exam. This is to provide the questions to the Graduate Program Committee member who will be serving as the ombudsperson in the exam. In the future, this process may allow for Graduate Program Committee review of questions for alignment with the purpose of the exam, relative consistency in rigor across the PhD Program itself, etc., once these criteria have been developed with SBHSE faculty input.

The Exam Committee Chair (or co-Chair) sends the list of questions to the student by 9 am the day of the exam, cc’ing the Graduate Academic Advisor and the entire Exam Committee for record-keeping and assurance. If the Exam Committee Chair (or co-Chair) is unavailable, a member of the committee may do so. The student completes the exam as instructed, and sends their completed exam back to the full Exam Committee by the stated deadline (one week after receiving the written questions by 5pm). The Exam Committee has one week to review and assess the written exam. During the interim that week, the student may prepare additional slides to present at the start of the oral exam to help clarify their written answers, correct any responses, etc. Students cannot solicit feedback from their committee members regarding their written answers during this period; however, students are encouraged to prepare and review their oral arguments during this period.

At the oral exam, committee members will follow up on the student’s written answers with questions, and may ask further questions based on the student’s written and oral responses within the oral exam itself. As noted above, there will be a member of the Graduate Program Committee present to serve as an ombudsperson during the oral exam to ensure the exam is administered fairly and in line with its purpose. Once the exam is finished, the student will leave the room and the committee will deliberate. The committee is encouraged to utilize a set of grading criteria when evaluating the student’s performance. The committee will render a decision of pass or fail for both the written and oral exam based on majority. A decision of “fail” for either the written or the oral component of the exam must be documented and submitted to the Graduate Academic Advisor along with the Examination Record Form; this documentation should be also shared with the student for transparency and possible remediation. Suggested remediation in writing is encouraged at the time that the decision is communicated to the student (e.g., suggested coursework or time spent in another lab). Timeline for re-examination should also be considered and communicated to the student at this time. Failure in the comprehensive examination is considered final unless the committee administering the exam and the head of the academic unit recommend and the dean of the Graduate College approves a re-examination. A re-examination of any failed component (written or oral) must be administered no sooner than three months and no later than one year after the date of the original examination, initiated again through the same process as outlined above. It is up to the committee’s discretion on how similar the re-examination content is relative to the first exam attempt. Only one re-examination total is permitted. Students failing the re-examination will be removed from the doctoral program.

Dissertation Prospectus
Guidelines and Tips for the Dissertation Prospectus

The final outcome and intent of the prospectus should be viewed and interpreted as a contract between the PhD student and their dissertation committee on what is expected in their final defense of their dissertation. Thus, regardless of the results of their subsequent research (e.g., null findings), the student’s level of work should be considered acceptable so long as they completed what was agreed upon by them and their committee when they successfully pass their prospectus. The prospectus should be completed no later than 1 semester before planned defense of dissertation (though defense at this late date should be highly discouraged).

As such, it is a recommendation that the Prospectus be scheduled within 1 year following the
successful passing of the Comprehensive Exam. This is not a hard rule but a recommendation by the Graduate Program Committee. A written component (rough draft of a research proposal) should be shown to the student’s research advisor for approval of content prior to scheduling the oral presentation. The oral presentation of the dissertation prospectus is made to the student’s dissertation committee.

The student will work with their advisor(s) to generate specific aims and write their dissertation proposal around it, in the format of a NIH R21 Research Strategy (6 pages) plus a one-page Specific Aims. Examples of this format can be found here. References are not included in the page limit, and should be provided in a separate “References” section in the overall prospectus document. Though not required, students are encouraged to informally meet with their committee members as well to discuss their research ideas, preferably several times during the time period between the Comprehensive Exam and the Prospectus. The content of the written + oral prospectus should cover what the student plans to complete for their dissertation, as well as a detailed plan of how they will achieve this plan.

It is the responsibility of the student to communicate with committee members directly to select the date/time of the prospectus. Students are encouraged to use scheduling tools like When2Meet or Doodle, and to plan well in advance (2-4 months out) to accommodate committee members’ schedules. Prospectus exams are closed to the public, with only committee members present.

Once a date and time is selected in consultation with the committee members, the student requests a room for the selected date and time with the Prospectus Scheduling form. (Students are encouraged to email sbhse@asu.edu for further assistance if they do not get a response within 48 hours of completing the form, excluding weekends).

Students must also prepare a presentation of their prospectus, to be presented during the prospectus exam itself. The student’s presentation should take advantage of appropriate audio-visual aids and should be limited to no more than 50 minutes. Copies of the written dissertation prospectus must be distributed to all members of the student’s dissertation committee no later than one week prior to the oral presentation.

In the oral examination, the student is expected to defend their prospectus and justify that the proposed research is of the acceptable quality and magnitude consistent with quality doctoral education. Following the oral presentation of the research proposition, members of the student’s dissertation committee will remain to ask questions of the candidate regarding his/her/their proposed research.

Generally, the oral discussion of the dissertation prospectus is limited to three hours. If necessary, however, the proceedings may be adjourned and rescheduled for a mutually convenient date within one week. Only one adjournment is permissible.

After questioning, the candidate is excused from the room while the dissertation committee conducts its deliberations. The decision regarding whether or not the dissertation prospectus is acceptable is the decision of the dissertation committee alone. The student’s dissertation committee conveys its evaluation of the acceptability of the dissertation prospectus to the chair of the departmental graduate committee by signing the Dissertation Prospectus part of the Comprehensive Examinations and Approval of the Ph.D. Dissertation Prospectus form available here.

If the student’s dissertation prospectus is considered acceptable as a “pass”, the chair of the departmental graduate committee will recommend to the Graduate College that the student be advanced to PhD candidacy status. At this stage the student may also apply for a Master’s In Passing.

If the student's dissertation prospectus is unacceptable (a decision of “fail” by the committee), the chair of the dissertation committee formulates recommendations for future action and submits them to the Graduate Academic Advisor, who will notify the Graduate Program Chair. Either of two
recommendations is possible:

- A re-examination may be scheduled and the entire process repeated as described above, or
- The student may be removed from the doctoral program.

Master’s in Passing for Direct-to-PhD students

Direct-to-PhD students (i.e., those without a prior MS degree in BME) can apply for a master’s in passing (MIP). The master’s degree in passing will be the MS degree. The degree must be requested by the student through their Graduate Academic Advisor. The student must have completed 30 credits (following the BME MS degree requirements) with at least a 3.0 GPA, the PhD Comprehensive exam, and their prospectus per the Graduate College requirements. After completing 30 credits, their PhD Comprehensive Exam (form and report are required to be submitted to the academic advisor), and their Dissertation Prospectus, students can work with their academic advisor to have the proper form submitted to Graduate College. Once that is approved, the student will need to complete the MS iPOS that lists the 30 credits completed and apply for graduation.

Once the MIP is awarded, students are still active in the PhD program unless they withdraw from the program.

Admission to Candidacy

PhD students achieve candidacy status in a letter from the dean of the Graduate College upon:

1. Passing the comprehensive examinations; and
2. Successfully defending the dissertation prospectus.

Completion of the Written Dissertation

The written dissertation forms the culminating experience of the doctoral program. This document should reflect substantial effort on the part of the candidate to enhance the boundaries of knowledge in a field of relevance to biomedical engineering. The work should be novel and original, and of sufficient quality to merit publication in a peer-reviewed journal in the candidate’s chosen area of research. In addition to carrying out the research and writing it up, the BME Graduate Program and the Graduate College have several requirements that must be met. The written doctoral dissertation is based on an original and substantial scholarly work that constitutes a significant contribution to knowledge in the students’ discipline. The dissertation research must be conducted during the time of the students’ doctoral studies at ASU, under guidance of ASU Graduate Faculty and in accordance with the Graduate College policies and procedures. The composition of the dissertation is defined by the degree program with the approval of the Dean of the Graduate College. In the case of SBHSE, dissertations are typically organized with a general introduction, followed by studies written in the form of peer-reviewed publications, ending with a general conclusion (and any Appendices).

Format Approval

For format, Graduate College must review the final copy of the dissertation. Copies of the Format Manual are available at https://graduate.asu.edu/completing-your-degree/format. The student is required to submit appropriate signed forms and a complete copy of the thesis for format review at least 10 working days (two weeks if there are no holidays during the time period) before the oral
The student must submit two final copies of the thesis. The student is responsible for the binding fees. Binding services are available through Arizona Library Binding at 602-253-1861.

The process for completing the necessary degree requirements and steps can be found at the Graduate College website: https://students.asu.edu/graduation-apply.

**Oral Defense of the Dissertation**

The dissertation research experience culminates in a final oral exam, commonly known as the “dissertation defense.” The final oral examination in defense of the dissertation is mandatory and must be held on the campus of Arizona State University. The student will complete the online Doctoral Defense Scheduling Form once they have identified a date and time with their committee. This form enables our Advising Office to officially schedule the defense. (Students are encouraged to email sbhse@asu.edu for further assistance if they do not get a response within 48 hours of completing the form, excluding weekends).

A final public dissertation defense is required. The defense must be scheduled officially with the Graduate College. Defenses that are held without being scheduled with the Graduate College are considered invalid. At least 50% of the committee must be physically present at the oral defense. Students must be physically present at the oral defense of their dissertation. A virtual defense option is only available to students in approved online programs. During the semester that the students defend the dissertation they are required to register for:

- At least one semester hour of credit that appears on the Interactive Plan of Study; OR
- At least one semester hour of appropriate graduate-level credit, for example: Research (792), Dissertation (799), or Continuing Registration (795); OR

For additional deadlines and dissertation requirements, visit https://graduate.asu.edu/current-students/policies-forms-and-deadlines/graduation-deadlines

At the beginning of the examination, the student’s research advisor introduces the student and the topic of their research to the general audience. The student is then expected to present a brief seminar outlining the results of their research. The presentation should be limited to 45 minutes. Following the presentation by the student, the general audience is invited to ask questions. Following this question and answer session, the general audience is excused and the student’s dissertation committee continues to question the student in depth regarding his/her research findings. The student should be prepared to defend the research methodology used in the study and the results obtained.

The oral defense of the dissertation is limited to a period of three hours. If necessary, however, the proceedings may be adjourned and rescheduled for a mutually convenient date within one week. Only one adjournment is permissible. When the dissertation committee completes its questioning, the student is asked to leave the room and the committee discusses whether or not the student successfully defended their research and whether or not the completed dissertation is acceptable.

**Level of Pass or Fail**

**Pass:** Only minor format corrections need to be made (e.g., typographical errors, and pagination). At the conclusion of the defense, 1) the committee chair should indicate "pass" and briefly describe needed revisions, and 2) all committee members should report the examination results at the bottom of form and sign the dissertation approval page.
Pass with minor revisions: Extensive format/editorial corrections and/or minor substantive changes need to be made (e.g., rewrite some text, correct grammatical errors). At the conclusion of the defense, 1) the committee chair should indicate "pass with minor revisions" and briefly describe revisions, and 2) the committee members, not including the chairperson, should report the examination results at the bottom of the form and sign the thesis approval page. 3) After revisions are made, the chairperson should report the exam results at the bottom of the form and sign the dissertation approval page.

Pass with major revisions: Extensive substantive changes need to be made (e.g., chapter rewrite). 1) At the conclusion of the defense, the committee chair should indicate "pass with major revisions" and briefly describe revisions. 2) After revisions are made, all committee members should report the examination results at the bottom of the form, and sign the dissertation page.

Fail: The basic design and/or overall execution of the study are flawed or the candidate's performance in the oral examination is seriously deficient. At the conclusion of the defense, 1) the committee chairperson should indicate "fail", and 2) all committee members should report the examination results at the bottom of the form. The dissertation approval page should not be signed. While this is very rare, if a student fails their dissertation defense, per the Graduate College recommendation, the student will be dismissed from the program.

The results of the oral defense are conveyed to the student by the chair of the supervisory committee or dissertation committee, whichever is appropriate. The results are transmitted to the Graduate College on the "Announcement & Report for Doctoral Dissertation Defense" following the approval of the Director of the School of Biological and Health Systems Engineering.

Revisions to the dissertation are typical and must be completed in a timely manner. If students are unable to complete revisions to the document and submit to UMI/ProQuest by the deadline for the semester in which the defense is held, they must complete the revisions, remain continuously enrolled and present the final document to UMI/ProQuest within one year of the defense. Failure to do so will require the re-submission of the document for format review and may result in re-defense of the dissertation to ensure currency of the research.

Applying for Graduation

The student is eligible for graduation when the final oral examination is passed and the dissertation is approved by the supervisory committee and accepted by the Director of the School of Biological and Health Systems Engineering and the Dean of the Graduate College.

Application for graduation should be made no later than the date specified in the Graduate College calendar (Refer to Graduate College website for current information). All fees are payable at this time. The student applies for graduation on their My ASU graduation tab.

An additional late fee will be assessed if the student applies after the deadline. If a student does not complete all degree requirements by the date of graduation for which they have applied, the graduation may be moved to a future term. The student should contact the graduation office to make this arrangement.

For information on University defense and graduation deadlines, visit: https://graduate.asu.edu/completing-your-degree

Enrollment
Students must be enrolled for at least one hour of credit that appears on the plan of study or one hour of appropriate graduate-level credit during the semester or summer session in which they defend a dissertation.

**Summer:** During the summer session, enrollment in any one of the summer sessions will fulfill the requirement.

**Break Period.** Students with an oral defense scheduled during a break period must be enrolled in both the proceeding semester and the following semester, including summer term. If the break is between the summer and fall, enrollment during any one of the summer sessions will fulfill the requirement.

**Continuous Enrollment in a Doctoral Degree Program**

Once admitted to a doctoral degree program, the student is expected to be enrolled continuously, excluding summer sessions, until all requirements for the degree have been fulfilled. Students must be enrolled in courses that meet the program requirements, which may include coursework, 792 Research, or 799 Dissertation. Credits that do not meet program requirements will not count toward continuous enrollment. If no additional credit is required toward the doctoral degree, the student may enroll for 695 or 795 Continuing Registration.

Continuing Registration does not carry credit; no grade is given.

If a plan of study must be interrupted, the student may apply for leave status. The approved petition must be filed no later than the last day to register for classes in the semester for which the student is requesting a leave.

A student who interrupts a program without obtaining leave status may be removed automatically from the program.

**International Students in the Final Semester**

F1/J1 visa students who have less than 9 credits remaining in their final semester should submit a reduced course load e-form available at https://issc.asu.edu/f-1j-1-students/reduced-load.

**Requesting a Leave of Absence**

Graduate students planning to discontinue registration for a semester or more must submit a leave of absence request via their Interactive Plan of Study (iPOS). This request must be submitted and approved before the anticipated semester of non-registration. Students may request a maximum of two semesters of leave during their entire program. Students with a Graduate College-approved leave of absence are not required to pay tuition or fees, but in turn are not permitted to place any demands on university faculty or use any university resources. These resources include university libraries, laboratories, recreation facilities or faculty and staff time. For more information, please contact sbhse@asu.edu.

**Medical/Compassionate Withdrawal**

The medical and compassionate withdrawal process is focused on the student's academic record as it relates to the student’s health and wellness. Tuition refunds are not guaranteed, even with approval. A medical/compassionate withdrawal request may be made in extraordinary cases in which serious illness or injury (medical) or another significant personal situation (compassionate) prevents a student from continuing his or her classes, and incompletes or other arrangements with the instructors are not possible.
If you experienced other challenges during the semester, such as difficulty with classes, time management, work or family responsibilities, or other co-curricular commitments, be aware that these are not considered extenuating circumstances. In these cases, consult your academic advisor and utilize ASU resources to ensure that you receive the guidance and assistance necessary to remain on track to graduate.

Medical and compassionate withdrawal requests are reserved for extraordinary and emergency circumstances that prevent a student from completing their classes. All requests require specific and relevant professional documentation for consideration, and approval is not guaranteed. The decision is based on the specific circumstances and the professional documentation provided. Approval is made on a case-by-case basis and is made at the discretion of the college. The decision of the college is final. More information can be found here on the College website.

Other Dissertation and Student Requirements upon Graduation

Doctoral students must complete all program requirements within a ten-year period. The ten-year period starts with the initial enrollment into the doctoral program. Any exception must be approved by the supervisory committee and the dean of the Graduate College and ordinarily involves repetition of the comprehensive examinations.

Other dissertation requirements. The student must submit three copies of the dissertation for binding. Bound copies are placed in the University Library, department office, and Archives. Bound copies of the dissertation are also prepared for the student’s research advisor. Doctoral candidates must also submit one copy of the title page and one copy of the abstract (which must not exceed 350 words) to the bookstore.

Binding services are available through Arizona Library Binding at 602-253-1861. The student is responsible for the binding fees. Doctoral students must also pay to have their dissertations microfilmed by University Microfilms International (UMI).

Other requirements. Keys must be returned, all departmental property must be returned, samples and notebooks must be turned over to the advisor, wastes must be disposed of and the student’s desk must be cleaned out.

Financial Support

Financial support for graduate students in the School of Biological and Health Systems Engineering is available from several sources. These include Graduate Research Assistantships (GRA), teaching assistantships (TA), and academic scholarships. In all cases, program fees are typically covered by the student themselves, which vary based on a number of factors, such as residence status.

Graduate Research Assistantships

Graduate Research assistantship (GRA) appointments typically pay the student a stipend to participate in a particular research project that may serve as his/her thesis research topic. The research assistant may be appointed 50% time (20 hours per week) or 25% time (10 hours per week). Students receiving stipends for research activity that also constitutes the dissertation research spend considerably more time each week working on the project than that dictated by the assistantship. The vast majority of PhD students in our program are supported through faculty-sponsored GRAs from external funding sources. Health insurance and tuition are covered with a GRA appointment.
Teaching Assistantships

Some teaching assistantships (TAs) may be available to qualified individuals on a semester-by-semester basis, although the majority of the PhD students in our program are supported through GRAs. Selected students receiving teaching assistantships may be assigned appointments that are half-time (20 hours per week) or quarter-time (10 hours per week). Assignments may include sole responsibility for the teaching of undergraduate laboratories, assistance in the teaching of undergraduate laboratories or assistance in the grading of undergraduate homework. Occasionally the student may be asked to prepare specific lectures in undergraduate courses and administer examinations. Teaching responsibilities are in addition to the time spent on research for the graduate degree. A tuition waiver is usually given to students awarded graduate assistantships. In some cases, a doctoral student may be listed as instructor of record for a course, and deliver the entire course. In addition to the above requirements, a student must also complete their Teaching Practicum prior to being listed as instructor of record. A student may complete their Teaching Practicum in the same semester in which they are receiving a teaching assistantship.

At this time, students selected for teaching assistantships are nominated by their faculty advisors through an internal form managed by the Graduate Program Chair. The final selection process is overseen by SBHSE leadership, prioritizing 1) BME PhD students, 2) students whose advisors have a primary appointment in SBHSE, 3) students who have been supported for at least two years already by their advisor or an external fellowship, and 4) students who have passed both the written and oral portions of their Comprehensive Exam.

Scholarships

The Graduate College provides a variety of mechanisms to support funding for outstanding graduate students recommended by the program if funds are available (see http://graduate.asu.edu/financing). Students may apply for these awards provided by the Graduate College. Generally students receiving research assistantships or teaching assistantships qualify for out-of-state tuition waivers. Only a very limited amount of support is available. These are awarded to the students with the most outstanding academic credentials. The Fulton Schools of Engineering also provides scholarship opportunities, for which the applications typically close mid-Spring.

Policies Related to Financial Support of Graduate Students

It is the desire of the School to provide financial support for as many students as possible, most commonly through GRAs. Thus, a limited number of students receive written offers of financial aid in the form of a GRA prior to entering the program. Eligible applicants are admitted into the PhD program under the supervision and support of a faculty advisor with a primary appointment in the School of Biological and Health Systems Engineering and with membership to its graduate faculty. Eligible applicants can be admitted under the supervision and support of a faculty member with a primary appointment outside of the School, either in another academic unit within ASU or at an established clinical partner, who agree to the processes and procedures outlined in this Handbook. In all cases, financial support is provided through the faculty advisor in the form of a Graduate Research Assistantship (GRA) during the academic year, with the advisor’s funding confirmed prior to admission. Applicants without funding confirmation and commitment of funding from a faculty advisor or an external academic fellowship (e.g., NSF GRFP, GEM Fellowship, which must be confirmed in writing) will not be admitted. Any eligible applicant who chooses to maintain additional employment in industry must finalize all necessary legal agreements between their employer and ASU prior to being admitted into the program; often these agreements take one or more years to be completed. It is understood that any suspension from the graduate program...
results in the loss of financial support. Finally, departmental decisions on financial aid over the course of their degree program once admitted are based on consideration of all aspects of each individual student's situation within the framework of these guidelines.

**Intellectual Property**

Key intellectual property policies can be found within the Arizona Board of Regents Policy Manual as well as ASU’s Research and Sponsored Projects Manual. It is both the student’s and faculty advisor’s responsibilities to understand and remain in compliance with these key policies. These policies confirm and clarify ownership of research data and materials. For additional information, visit [https://www.asu.edu/aad/manuals/rsp/rsp604.html](https://www.asu.edu/aad/manuals/rsp/rsp604.html)

**Conflict of Interest**

In some cases, students can find themselves working on projects which are part of a commercial development, either of their own, or associated with a faculty member. Once a conflict of interest has been identified, the student and faculty member must complete the necessary COI steps in the MyDisclosures portal in the Enterprise Research Administration (ERA) system. Individuals should contact [MyDisclosures@asu.edu](mailto:MyDisclosures@asu.edu) with any further questions. Please note that University Counsel may also be involved, depending on the nature of the commercial development.

**Access to SBHSE Staff and Facilities**

**ISAAC and Building Access**

ISAAC (key card) provides access for the offices and laboratories in the Ira A. Fulton Schools of Engineering: Engineering Research Center (ERC), ISTB1, ISTB4, PEBE, Schwada (SCOB) Classroom Office Building, and Goldwater Center (GWC) are obtained by completing an online application, available at [https://fultonapps.asu.edu/isaac/](https://fultonapps.asu.edu/isaac/).

Please note that you must be either located on campus or logged in via an ASU recognized VPN program to access this website. The student's research advisor and an authorized department signor must approve the online form. ISAAC access will be granted to your [ASU Sun Devil ID Card](https://www.asu.edu/aad/services/idcard).

**Office Equipment**

Graduate students are not permitted to use office resources (computers, printers) without departmental approval. Students are urged to familiarize themselves with the extensive free computer facilities on campus available for word processing.

**Copier and other Office Resources**

The SBHSE copier is for faculty and staff use. Faculty may authorize their students to use the copier for teaching duties or for research. Large jobs (greater than 100 copies) require approval by the Business Operations Manager. No personal copying can be done on the SBHSE machine. Pay copiers are available at many locations on and off campus.

Misuse of departmental telephones, copiers, supplies, facilities is a serious offense that will lead to disciplinary action. At a minimum, students found to have used departmental resources for non-
department approved purposes will be required to reimburse the department for such uses.

**Additional University and Student Support Resources**

**FSE Academic Program Support**

Graduate students in the SBHSE have access to the Fulton Schools of Engineering Graduate Programs website, which houses college resources and advising information. Graduate students are also encouraged to explore student organizations through the Graduate and Professional Student Association (GPSA). A one-page guide to Financial, Social, Emotional, and Physical Health and Wellness Resources for ASU Graduate Students, developed by the GPSA.

Student grade grievance appeals must be processed, by commencement, in the regular semester immediately following the issuance of the grade in dispute (fall or spring commencements only), regardless of whether the student is enrolled at the university. This process does not address academic integrity allegations, faculty misconduct or discrimination. The Fulton Schools of Engineering grade appeal procedures are based on the university’s policy that can be found here. Students must begin with and complete the informal process prior to any decision on whether a formal hearing is warranted.

**University Resources**

- Graduate College
- Office of the University Provost

**University-Wide Academic and Career Support**

- ASU Libraries, including Noble Engineering Library
- Graduate Writing Center
- Career and Professional Development Services
- Graduate and Professional Student Association
- Fulton Schools of Engineering Student Clubs and Organizations

**Business and Finance Services**

- University Financial Aid and Scholarship Services (financial aid)
- Student Business Services (tuition, fees, and payments)
- Parking and Transit Services (permits, shuttles, public transit)
- Sun Devil Card Services (ID cards)
- University Technology Office (technology assistance)
- Sun Devil Dining (meal plans, M&G, hours)

**Counseling Services**

ASU Counseling Services provides confidential, time-limited counseling and crisis services for students experiencing emotional concerns or other factors that affect their ability to achieve their goals. Support is available 24/7.

In-person counseling: Monday-Friday 8 a.m. – 5 p.m.
ASU Counseling Services, Student Services Building 234 Tempe, AZ 85287
480-965-6146

After-hours/weekends
Call EMPACT’s 24-hour ASU-dedicated crisis hotline: 480-921-1006

For life threatening emergencies: Call 911

The Grad College has also compiled a one-page quick sheet on 10 Best Practices in Graduate Student Wellbeing.

Disability Accommodations

Reasonable accommodations are determined on a case-by-case, course-by-course basis to mitigate barriers experienced due to a disability (SSM 701-02). Students with disabilities who require accommodations must register with the Student Accessibility and Inclusive Learning Services and submit appropriate documentation. It is recommended students complete this process at the beginning of the term and communicate as appropriate with their instructor.

- Email: Student.Accessibility@asu.edu
- Phone: (480) 965-1234
- FAX: (480) 965-0441

Pregnancy: Students requesting services due to pregnancy (SSM 701-10) should be prepared to submit documentation regarding the pregnancy, any complications and clearance to return to school related activities. Student Accessibility can work with students to foster continued participation in a program, whether that be with academic accommodations such as absences or assistance requesting a leave, or through other requested accommodations.

Health and Fitness

All ASU students enrolled in in-person programs have access to Sun Devil Fitness facilities on all campuses. For more information about facilities, membership and group fitness classes, please visit: https://fitness.asu.edu

For information about health insurance and appointments with care providers, please see the ASU Health Services website: https://eoss.asu.edu/health

International Students

ASU’s International Student and Scholars Center can provide support and answers to questions about visas, employment, scholarships and travel. To find more information or schedule an appointment with an ISSC adviser, visit the website: https://issc.asu.edu/

Veterans and Military

The Pat Tillman Veterans Center provides guidance and support for students who are veterans, active-duty military or military dependents. For more information, please call the office at 602 496-0152 or visit: https://veterans.asu.edu/