GALLOGLY COLLEGE OF ENGINEERING
STEPHENSON SCHOOL OF BIOMEDICAL ENGINEERING
The UNIVERSITY *of* OKLAHOMA

UNDERGRADUATE ADVISING HANDBOOK

LAST UPDATED: SEPT. 2021

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Mission Statement

The Stephenson School prepares engineers to create new technologies that advance human health

Student Outcomes

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

3. An ability to communicate effectively with a range of audiences

4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Program Educational Outcomes

1. **Successful career advancement:** Graduates will be advancing in their careers in the healthcare industry or in related technical professions, or continuing their education in professional school (e.g., medicine, dentistry, law, business) or graduate school.

2. **Technical ability:** Graduates will be utilizing their skills as engineers to apply a creative approach to problem solving in their chosen career path.

3. **Positive contributors to society:** Graduates will be effective team members and communicators who infuse global perspective, economic evaluation, and safety into ethically responsible decision making.

General Advising Plan

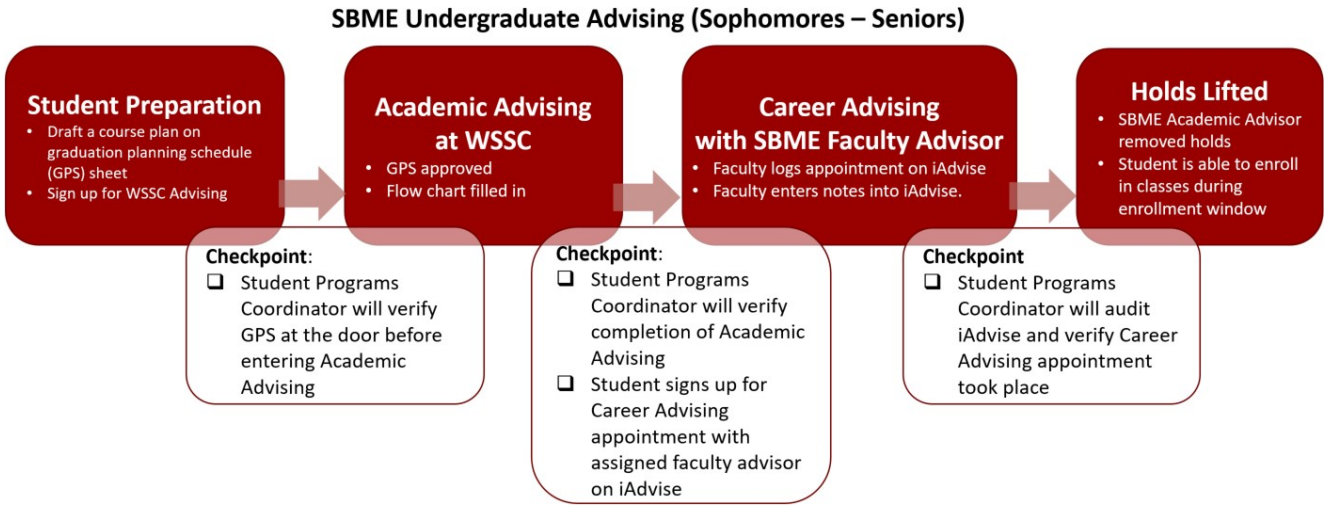
Freshman Advising

Freshmen (as defined by the program, not necessarily credit hours) are advised by University College or the OU Scholars office. In the rare case that a freshman comes in with sufficient credit hours to enroll in BME 2333 in their first year, they will be advised as sophomores (see below). Any freshman that wishes to be advised by an SBME Faculty Advisor may contact the SBME Student Programs Coordinator to seek an available appointment with an SBME Faculty Advisor.

The SBME Chair of Undergraduate Studies will meet with the advisors of University College and the Honors College twice per year to brief them on changes and answer any questions.

Overall Advising Plan

The overall advising process is done in three major steps: 1) student preparation, 2) academic advising at Williams Student Services Center (WSSC), and 3) career advising by an SBME Faculty Advisor at a separate time and location (See below).



Students must prepare a draft of their 4-year plan on the Graduation Planning Schedule (GPS) spreadsheet before attending academic advising at WSSC. The checksheet (http://www.ou.edu/checksheets/engineering) corresponding to the student's 1st year at OU will be the governing document, and the Flowchart (https://www.ou.edu/coe/sbme/about_sbme/flowcharts) is an additional document of value in preparing the GPS.

Academic advisors at WSSC will not sign off on advising unless a GPS is completed. Academic advising will take place in Felgar Hall, in WSSC, during predetermined advising windows during an approximately 2-week period (approximately mid-September for fall semester and mid-February in the spring semester). After the academic advisor signs off, the student may sign up for a time slot on iAdvise for career advising with their assigned faculty advisor. Students unsure of their assigned SBME faculty advisor, may contact the SBME Student Programs Coordinator.

Career Advising with SBME Faculty Advisor

Sophomores, Juniors, and Seniors who have been admitted to the major, will be assigned to one SBME Faculty Advisor who will provide career advising until graduation. Faculty advisor assignment is randomly assigned, and

by the need to balance the number of advisees per faculty member. The Faculty Advisors' primary role is to discuss overall career directions, research opportunities, summer plans (e.g., REUs, internships, study abroad), leadership opportunities, pre-med strategies (e.g., shadowing physicians), and other professional development topics. Course plans and curriculum are only a small focus of the career advising meeting with the faculty advisor.

If the student wishes to change their faculty advisor, they may contact the SBME Student Programs Coordinator, who will coordinate with the SBME Undergraduate Studies Committee to review the request.

Scheduling Appointments & Using iAdvise

Faculty must complete the FERPA training (OnPoint.ou.edu), before participating in advising. If you have issues while using iAdvise, please contact the Student Programs Coordinator.

Faculty Advisors will schedule blocks of time during the advising period (beginning ~2 to 3 weeks before enrollment opens) for students to sign up for appointments. Faculty Advisors will offer select windows on different days at different times of the day to accommodate students with varying course and work schedules to attend faculty advising. Note: students cannot make same day appointments. If it is after 3:00 pm, they are only able to make it for the day after the following day. The Student Programs Coordinator will verify that all students have signed up for a career advising appointment and send out reminder e-mails as necessary during the sign-up period.

If a student is unable to attend their scheduled appointment, that student must consult the Student Programs Coordinator for an alternate appointment with a faculty advisor. Some professors may also designate other faculty colleagues to see their advisees should they be out of town, or otherwise unavailable during an advising period (sabbatical, leave, etc.).

Faculty advising windows will be scheduled, in conjunction with the Student Programs Coordinator, to allow creation of online appointments on iAdvise. Faculty are required to document every official advising session in iAdvise by logging the appointment and creating notes within the appointment. These notes are accessible to WSSC Advisors. These notes may include overall discussions with students about academic interests, internships, etc. The notes further serve as secondary documentation that the advising took place.

Removal of Advising Holds

Students must complete curriculum advising at WSSC and career advising with their assigned SBME Faculty advisor before holds are removed for enrollment. The Student Programs Coordinator will routinely audit iAdvise to verify that students attended career advising appointments. Students that have attended iAdvise appointments will be noted and the Student Programs Coordinator will e-mail batches of the OU IDs of the students to the BME Academic Advisor (Craig Swan). The BME Academic Advisor will remove holds for the students, and the students will be able to register for classes once their registry window is open. The Student Programs Coordinator will follow-up via e-mail with any students (cc their Faculty Advisor) who were logged as having missed career advising.

Williams Student Services Center (WSSC)

Curriculum advising is typically completed at WSSC. WSSC can answer student questions about degree requirements, prerequisites, and enrollment.

Williams Student Services Center Contact:
865 Asp Ave, Felgar Hall 112
Norman, OK 73019-1052
(405) 325-4096
Toll Free: (800) 522-0772
Extension: 4096

SBME Academic Counselor: Craig Swan
E-mail: cswan@ou.edu
Phone: (405) 325-4096

SBME Faculty Advisors

Faculty Advisors Contact Information

Faculty Advisor	Office Location	E-mail	Office Phone
Handan Acar, PhD	GLG 319	hacar@ou.edu	(405) 325-2186
Sarah Breen, PhD	GLG 321	sabreen@ou.edu	(405) 325-3867
Wei Chen, PhD	GLG 309	wei-r-chen@ou.edu	(405) 325-1166
John Clegg, PhD	SRTC 2069	clegg@ou.edu	(405) 325-5318
Michael Detamore, PhD	GLG 101	detamore@ou.edu	(405) 325-2144 (405) 325-0392
Rebecca Scott, PhD	GLG 320	rebecca.scott@ou.edu	(405) 325-3861
Qinggong Tang, PhD	GLG 307	qtang@ou.edu	(405) 325-6246
Stefan Wilhelm, PhD	GLG 318	stefan.wilhelm@ou.edu	(405) 325-4982
Han Yuan, PhD	2PP 125 / GLG 308	hanyuan@ou.edu	(405) 325-4665

Each Student is assigned to a faculty member, who will remain their "SBME Faculty Advisor" during their academic career.

Student Programs Coordinator: Shayla Glover, MBA. shaylaglover@ou.edu, (405) 325-3947

SBME Office: Gallogly Hall, suite 101

General Curriculum

Degree Requirement Checksheet

Checksheets for the Gallogly College of Engineering, including past versions can be found here: http://www.ou.edu/checksheets/engineering. Students are required to fulfill the requirements for the year they entered. The most recent checksheet for Biomedical Engineering can be found in the Appendix 1.

BME 2333: Biomedical Engineering Fundamentals

BME2333 is essentially the gateway course into the Biomedical Engineering degree. Enrollment in BME 2333 requires a B or better in the following courses:

- CHEM 1315 or CHEM 1335
- CHEM 1415 or CHEM 1435 or CHEM 1425 (H)
- MATH 1914 or MATH 1823
- MATH 2924 or MATH 2423
- PHYS 2514

Overrides for Course Enrollment

Some graduate or 5000 level courses require instructor or sometimes departmental permissions prior to enrollment. If a student wishes to enroll in a graduate level/5000+ elective offered through the College of Engineering, e-mail the instructor of the course, cc your academic advisor (Craig Swan), and request permission to enroll in the course. Your WSSC advisor will be able to provide the override. To enroll in graduate level/5000+ in a science or other course outside the college of engineering (MATH, CHEM, PHYS, BIO, etc.), instructor permission is required, and the advisor for that department will have to provide the override. The instructor of the course or your WSSC advisor will be able to assist you in determining who that person is.

Potential Minor Degrees

Talk to your advisor about potential minors. Many intro classes and/or classes used for Science, Math, & Engineering electives can be used toward a minor degree. Some minors that compliment well with the BME degree are:

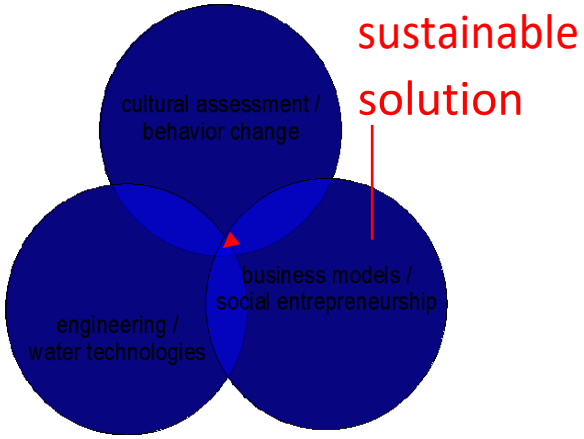
- Physics
- Mathematics
- Computer Science
- Biology
- Chemistry
- Health and Exercise Science
- General Business for Non-Business Majors
- Entrepreneurship for Non-Business Majors
- Water and Sanitation for Health and Sustainable Development

There is a list of many more minors available online: http://www.ou.edu/checksheets/minors

Water and Sanitation for Health and Sustainable Development

("the WaTER Minor")

The WaTER Minor is designed to prepare students for development work in emerging regions, particularly in the sectors of water, sanitation, and hygiene/health (WaSH). The Minor curriculum assumes that the sustainable solutions to human health and development are found in the nexus between the appropriate **technological, business and human factors** (see Figure below). Accordingly, students will take professional electives in each of the three major areas, especially in those areas that complement their Major field.



The Minor makes its home in the Gallogly College of Engineering and the OU WaTER Center, a Center which aims to promote peace by advancing health, education and economic development through sustainable water and sanitation solutions for impoverished regions. "WaTER" is an acronym for "Water Technologies for Emerging Regions".

Students seeking to pursue the WaTER Minor may be a student of any major.

The student must:

- arrange an advisory meeting and complete curriculum plan to determine appropriate coursework
- submit a one-page essay in response to the question: "Why I wish to pursue the 'Water and Sanitation for Health and Sustainable Development' minor"
- maintain a GPA of at least 2.75
- participate in one intercultural immersion trip of 3-6 weeks in length, in addition to completing required coursework. The trip will include experience with medical professionals and/or work on a water or sanitation project.

The WaTER Minor will:

- Prepare students for work in international development as participants and leaders in Peace Corps, USAID, State Department, service organizations (e.g., Engineers Without Borders), and faith-based organizations.
- Increase the awareness of tomorrow's societal leaders on the specific challenges and opportunities facing developing countries, including WaSH, and
- Give the student experience in hands-on humanitarian work for those in need, utilizing the skills and competencies that they have gained in their Major and Minor curriculums.

The Minor consists of 18 hours of coursework, including courses that may be double-counted with their Major requirements, such as Professional electives and General Education (GenEd) electives.

Required Core Courses (9 hours):

- CEES 4243G WaTER Technologies for Emerging Regions (3 hrs, Spring)
- CEES 4273G WaTER Technical Field Methods (3 hrs, May)
- CEES 3422 Intercultural Immersion Experience in an Emerging Region (2 hrs)
- CEES 3251 WaTER Center Integrated Seminar (1 hr, Fall after Immersion trip)

Recommended Elective Courses (9 hours):

ELECTIVE TRACK 1: ENGINEERING, PUBLIC HEALTH, NATURAL AND PHYSICAL SCIENCES:

- ENGR 4510G Global Environmental Health
- PHCH 3513 Public Health & Health Care Systems
- PHCH 3113 Introduction to Epidemiology
- PCHC 3613 Determinants of Health
- GEOG 4293 Hydrologic Science
- GEOG 4513/5513 Applied Climatology

ELECTIVE TRACK 2: POLICY, ECONOMICS, AND BUSINESS:

- ENT 3193 Fundamentals of Social Entrepreneurship
- IAS 3063 Politics of Developing Countries
- IAS 3323 The Political Economy of Development
- HSCI 3483 Technology, Politics, and International Development

ELECTIVE TRACK 3: SOCIAL / CULTURAL / BEHAVIORAL SCIENCES:

- IAS 3283 Culture, Power and Global Environment
- ANTH 4303 Women and Development in Africa
- IAS 2003 Understanding the Global Community
- GEOG 3443 Environment and Society
- ANTH 3423 Anthropology of Religion

For more information, contact:

Jim F. Chamberlain, Ph.D., P.E. | jfchamb@ou.edu | 405.325.5140

David A. Sabatini, Ph.D., P.E. | sabatini@ou.edu | 405.325.4273

Career Advising and Professional Development Topics

Research

Research is a balance between collaborative and individual work. Being involved to this experience as early as possible gives undergrad students a perspective of collaborative work. They can understand the way of scientific development and appreciate the published research. Also, by demonstrating their individual contribution to the collaborative work in a lab, they can apply variety of awards and fellowships. Students can have an opportunity to understand their own interest to graduate school, any particular field of science, and collaborative work. If the student finds interest in research, then this experience can be beneficial for obtaining research related recommendation letters from the principal investigators that they worked with. Moreover, based on their contribution, undergrad students' names can be added to the scientific papers, which is an important contribution for landing a high-level graduate college and application for awards and fellowships.

Undergraduate students can work in the lab by helping a graduate student in the beginning. It is important to watch and understand the procedure for at least a couple of months. Students can help the procedure by doing simple lab works under a graduate supervisor. Students, who prefer to work in the same lab more than a semester, can start to be independent in the lab work and produce their results. Under these circumstances, these students can be encouraged to present their results as a poster or a presentation in the OU campus, undergrad related research seminars. If the student is at senior level and has produced results as an undergrad researcher in the same lab in more than two semesters, then those students should be encouraged to attend BMES undergrad symposium and present their results as a poster. Such attempt can increase the graduating successful graduate students from SBME.

Moreover, the students in the senior level and working in a research lab can be encouraged to apply graduate school fellowships from NSF and NIH.

Current research opportunities for undergraduates are listed on the SBME website: http://www.ou.edu/coe/sbme/undergrad/research

Research for Credit: BME 3440/3980 Research Credit Policy

Research as a BME or 'Science, Math, Engineering' elective

Mentored research credit (BME 3440 or BME 3980, honors) may count for a maximum 3 hours of BME elective OR a maximum of 3 hours 'Science, Math, Engineering' (SME) elective credit for a maximum total of 3 hours of research credit counting toward the degree.

To count as a BME elective, mentored research must be completed under the mentorship of either an SBME faculty member or IBEST faculty member. Mentored research in other departments may be applied toward a 'Science, Math, Engineering' Elective with advisor approval.

For research credit outside of SBME/IBEST, in the areas of science, engineering, or math, enrollment in a designated 'SME' section of BME 3440/3980 will be required. Students with external research advisors will provide written feedback as a 1-page summary to the BME 3440/3980 section advisor for official grade entry. Grading will be on an A/B/C/D/F scale as opposed to Pass/Fail.

An SBME faculty member shall be the instructor of record for students enrolling in BME 3440/3980 to perform research for a primary advisor in another department. In those cases, in addition to the 1-page

summary, a written statement (e.g., email) from the primary advisor to the SBME faculty instructor to assess the student's performance will be required.

The responsibility for identifying and documenting the primary advisor of each student enrolled in BME 3440/3980 and accurate recording of BME vs. SME credit will reside with the Undergraduate Studies Chair with the assistance of the Student Program Coordinator and will be documented in Degree Navigator.

Senior Thesis

Overview

The Senior Thesis is an option for seniors who are especially interested in research and/or intending to continue on to a PhD program. Students from this program will be selected and invited by their faculty advisor. These selected students will continue on an established research project and complete a written thesis at the end of the academic year. The thesis will be defended orally in front of a committee of 2-3 faculty, and revisions will be incorporated into the final written thesis, which will go on file with the department.

Benefits to the Student

1) For students interested in pursuing a PhD, the experience of writing and defending a thesis will be outstanding preparation for the PhD dissertation.

2) Excellent for the resume, and for personal statements and essays for fellowship and graduate school applications.

3) Closer connection with primary mentor and committee, which may lead to greater professional development and stronger recommendation letters.

4) Go more in depth into a problem, with greater opportunity to make an impact, and possibly produce a manuscript for publication in a peer-reviewed journal.

5) Opportunity to meet as a group with SBME faculty to discuss topics related to graduate schools (e.g., applying for NSF Fellowships, what to look for during grad school visits, choosing between offers, etc.)

Logistics

Selection/invitation process

- SBME will provide faculty with a list of rising seniors and their GPAs.
- Based on GPA, past research performance, and relevance to career goals, faculty shall invite prospective students no later than **September 1**.
- Students may request an invitation. However, faculty are encouraged to limit the number of senior theses in their group, so invitations will be highly selective.

Committee:

- 2 faculty minimum, 3 preferred. Established no later than **October 1**.
- One faculty member serves as the Faculty Advisor for the Senior Thesis program. The Faculty Advisor serves as the contact point for Senior Thesis students and their advisors and other committee members if any questions or issues arise.

Course credit: Students enroll in BME 3440/3980 for both semesters.

- Students must complete at least 6 hours of research credit (BME 3440/3980) in total (including Freshman – Junior years) by the end of their undergraduate career to satisfy the Senior Thesis requirement.
- As long as these 6 total hours are achieved, students may elect to take only 1 hour of BME 3440/3980 in one or both semesters in the Senior year (e.g., to stay under 18 hours).
- The Fall semester grade will include the Semester Report (see below), and the Spring semester grade will include the Final written thesis.

Requirements/Expectations of students:

- Full academic year commitment, with a time commitment of ~10-15+ hours/week.
- Work must be novel and independent (as opposed to "service work", e.g., to make materials or collect data on a given piece of equipment for a grad student's project). The committee is responsible for ensuring these criteria are met.
- Semester report (5 pages maximum) due to committee in early December (before dead week) as a "check point." Satisfactory progress is required to continue to the following Spring (determined by committee). For students with unsatisfactory progress or who elect to opt out, the exit is to discontinue the Senior Thesis in the Spring semester.
- Written thesis submitted to the committee in April no later than 3 weeks before dead week ends. Target = 20-30 pages, limit = 60 pages, double spaced (Tables, Figures, References excluded). Content may include work prior to the senior year. Format comparable to a Master's thesis.
- Oral defense (public) defended before dead week (written thesis must be submitted at least 1 week prior to oral defense). Any revisions to the written thesis must then be submitted in final form by the end of dead week. This final thesis will form the basis for the grade for the course in the Spring semester (grade assigned by primary advisor, with input from committee).
- Expected, but not required, to attend the SBME department seminars (course schedule permitting). Will sign attendance log along with the grad students to document attendance.
- Expected to attend a lecture/discussion on thesis writing

Honors: Honors students will need to enroll in 3 hours of BME 3980 for their Honors research requirement, before they can enroll they must return an Honors research form, which can be found at the following website:
http://ou.edu/content/dam/honors/docs/Honors%20Research%20w_Instructions.pdf

Honors students must provide the Honors College with a copy of their final thesis paper.

Internships and Co-Ops

SBME has developed a Co-Op course which can count for credit toward the BS degree. A Co-op (cooperative education) experience is an excellent way to obtain industrial experience and perspective while progressing in the BME degree. The typical co-op program will have you working for a company full-time during three semesters while you are away from campus, but still a student in SBME. During the co-op, you are paid for your work. This typically extends your time for the bachelors by a year, however it provides an opportunity to grow professionally. Co-ops are a great way to gain work

experience before you graduate, get your foot in the door in industry, and help you stand out while looking for a job after graduation.

BME students can receive 'BME 4281: Engineering Co-Op Program' course credit for Co-Op/Internship experiences. Participation in the Co-Op Program is optional and open to students enrolled full-time in BME who have completed all the requirements of the first and second year of their degree program with a minimum 2.50 GPA. The student must make the request for BME 4281 course credit *before beginning* the experience.

The Co-Op experience can be considered as either a 'Science, Math, Engineering' elective, or BME elective depending on the nature of the work. In coherence with other GCoE Co-Op programs, BME 4281 counts for a total of 3 credit hours, when taken for 3 semesters (Spring, Summer, Fall).

As part of their application for course credit, students must submit an endorsement letter from the Co-Op supervisor outlining the Co-Op duties, and commit to submit two written status reports and make an oral presentation at OU in the semester following the Co-Op. The SBME faculty members, via the SBME Undergraduate Studies Committee, will review technical details of the request for course credit and approve the course credit if the Co-Op experience meets the technical plan and documentation requirements agreed to in the petition.

A great way to find internships and Co-Op experiences is by attending the annual SBME career fair. This is typically held during the month of April, so keep an eye out for e-mail announcements regarding the career fair time and location.

Preparation for Medical School

Pre-Medical students should contact the OU Pre-Med office for pre-med advising.

Pre-Med Office: 415 Cate Center #1, (405) 325-2457.

In addition to pre-med courses in the SBME program, students will need:

- CHEM 3153 – Organic Chemistry II
- PHYS 1311 and 1321
- PSY and SOC
- CHEM 3653 – Introduction to Biochemistry
- BIOL 3113 - Cell Biology or BIOL 4843 – Intro to Molecular Biology
- BIOL 3333 - Genetics
- BIOL 3103 – Principles of Physiology is recommended.

BIOL3113, BIOL4843, BIOL 3333, BIOL3103 can satisfy the 'Science, Math, Engineer' Elective credits required in the BME degree, as long as they are not already being used to satisfy the 'Upper-Level Biology' Elective.

Students should plan to take the MCAT in April of their Junior Year.

Study Abroad

Please see current information at: http://www.ou.edu/coe/student_life/studyabroad

Other Student Resources

Scholarships

CASH – the Centralized Academic Scholarship Hub – is where current OU students can apply for all merit and financial need-based OU scholarships from October 1 to February 1 each year.

College-wide scholarships, departmental scholarships, financial aid scholarships, study abroad scholarships, Sooner Parents scholarships, and campus awards are all housed in CASH. Undergraduate, graduate, liberal studies, international, and study abroad populations are encouraged to access the system to apply for scholarships.

To apply for scholarships through CASH, visit the Scholarships homepage.

Gallogly College of Engineering Diversity and Inclusion Program

Please see current information at: http://www.ou.edu/coe/diversity

University Counseling Center

Students are eligible for affordable counseling services at Goddard Health. For counseling related to mental health, please visit: http://www.ou.edu/ucc

OU Advocates - Dial 911 (on campus) or (405) 615-0013 (off campus or by cell) and ask for OU Advocates regarding sexual assault issues.

Appendices

Appendix 1: 2021-2022 Degree Requirement Checksheet

REQUIREMENTS FOR THE BACHELOR OF SCIENCE
GALLOGLY COLLEGE OF ENGINEERING
THE UNIVERSITY OF OKLAHOMA

Academic Year	General Requirements	Program
For Students Entering the Oklahoma State System for Higher Education **Summer 2021 through Spring 2022**	Minimum Total Credit Hours ..... **129** **Minimum Retention/Graduation Grade Point Averages:** Overall - Combined and OU ..... **2.00** Major - Combined and OU **2.00**	**Biomedical Engineering** **B108** Bachelor of Science

OU encourages students to complete at least 33 hours of applicable coursework each year to have the opportunity to graduate in 4 years.

Accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific graduation requirement, a grade of C or better is required in each course in the curriculum, including all prerequisite courses.

Two college-level courses in a single world language are required; this may be satisfied by successful completion of 2 years in a single world language in high school. Students who must take a language at the University will have an additional 6-10 hours of coursework.

Courses designated as Core I, II, III, IV or V are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list.

Year	FIRST SEMESTER		Hours	SECOND SEMESTER		Hours
FRESHMAN	ENGL 1113	Principles of English Composition (Core I)	3	ENGL 1213 or EXPO 1213	Principles of English Composition (Core I) or Expository Writing	3
	CHEM 1315	General Chemistry (Core II-Lab) [1,3]	5	CHEM 1415	General Chemistry (Continued) (Core II-Lab) [1,3]	5
	MATH 1914	Differential and Integral Calculus I (Core I) [3]	4	MATH 2924	Differential and Integral Calculus II [3]	4
	ENGR 1411	Freshman Engineering Experience [2]	1	PHYS 2514	General Physics for Engineering and Science Majors (Core II) [3]	4
		Approved Elective: First-Year Experience (Core V) [5]	3			
		CREDIT HOURS	**16**		**CREDIT HOURS**	**16**
SOPHOMORE	MATH 2934	Differential and Integral Calculus III	4	MATH 3113	Introduction to Ordinary Differential Equations	3
	PHYS 2524	General Physics for Engineering and Science Majors	4	C S 1213	Programming for Non-Majors with Python	3
	BIOL 1124	Intro Biol: Molecule/Cell/Phys (Core II-Lab)	4	HIST 1483 or HIST 1493	United States to 1865 (Core IV) or United States, 1865 to the Present	3
	ENGR 2002	Professional Development	2	ECE 2723	Electrical Circuits I	3
	BME 2333	Biomedical Engineering Fundamentals	3	BME 2433	Signals and Systems for Biomedical Engineering	3
				ISE 3293	Applied Engineering Statistics	3
		CREDIT HOURS	**17**		**CREDIT HOURS**	**18**
JUNIOR	BME 3143	Biomechanics	3	BME 3123	Biotransport	3
	BME 3722	Numerical Methods in Biomedical Engineering	2	BME 3233	Biomaterials	3
	BME 3533	Biomedical Instrumentation	3	BME 4813	Quantitative Physiology	3
	BME 3531	Bioinstrumentation Lab	1		BME Lab 2	1
		BME Lab 1	1		BME Elective	3
		BME Elective	3		BME Elective	3
		Upper-Division Biology Elective (per BME faculty approval) [4]	3			
		CREDIT HOURS	**16**		**CREDIT HOURS**	**16**
SENIOR	BME 4713	Biomedical Engineering Design I	3	BME 4823	Biomedical Engineering Design II	3
		Science, Math, Engineering Elective (Per Advisor Approval)	3		BME Elective	3
		Approved Elective: Social Science (Core III) [5]	3		Science, Math, Engineering Elective, (Per Advisor Approval)	3
		Approved Elective: Western Culture (Core IV) [5]	3	P SC 1113	American Federal Government (Core III)	3
		Approved Elective: Artistic Forms (Core IV) [5]	3		Approved Elective: World Culture (Core IV) [5]	3
		CREDIT HOURS	**15**		**CREDIT HOURS**	**15**

[1] CHEM 1315 and CHEM 1415 can be substituted with CHEM 1335 (Fall only) and CHEM 1435 (Spring only), respectively.

[2] Engineering transfer students may take ENGR 3511 in place of ENGR 1411.

[3] The prerequisite courses for BME 2333 require a minimum grade of B.

[4] Pre-medical students should contact the OU Pre-Med Office, 415 Cate Center #1, (405) 325-2457. In addition to pre-med courses in above program, students will need: CHEM 3153, PHYS 1311 and PHYS 1321, PSY and SOC, Cell or Molecular Biology, and Genetics. Recommend BIOL 3103. Students should also plan to take the MCAT in April of their junior year.

[5] To be chosen from the University-Wide General Education Approved Course List. Three of these 12 hours must be upper-division (3000-4000).

Appendix 1: 2021-2022 Degree Requirement Checksheet continued

BME AREA CORE LABS

Code	Title	Credit Hours
BME 3111	Bioimaging Lab	1
BME 3121	Biotransport Lab	1
BME 3131	Bioelectricity Lab	1
BME 3141	Biomechanics Lab	1
BME 3151	Molecular, Cellular and Tissue Engineering Lab	1
BME 3161	Biomedical Micro-/Nano-Technology Lab	1

BME ELECTIVE COURSES

Choose from the following or other courses per advisor approval:

Code	Title	Credit Hours
BME 5213	Biomechanics I	3
BME 5233	Biomaterials	3
BME 5243	Biochemical Engineering	3
BME 5293	Transport in Biological Systems	3
BME 5373	Tissue Engineering	3
ECE 5843	Medical Imaging Systems	3
BME 5970	Special Topics/Seminar	1-3
ECE 4863/5863	Bioinstrumentation	3

Appendix 2: 2021 – 2022 Degree Flow Chart