

Introduction to Biomedical Engineering

BME 1008 Class Number 27573 Section 7901

Class Periods: Friday | Period 6 (12:50PM – 1:40PM EST)

Location: MCCA G186

Academic Term: Fall 2021

Instructor:

Sarah Furtney

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(352) 273 - 9333

Office Hours: by appointment, please book at <https://calendly.com/furtney>

Teaching Assistant/Peer Mentor/Supervised Teaching Student:

Course questions should be directed to Dr. Furtney, NOT the graduate assistant

- Mr. Quincy Barton

Course Description

Introduction to and overview of biomedical engineering. Lectures are given by faculty expert in an area of biomedical engineering. The goal is to give beginning students an appreciation for the breadth of the field and to guide them in making curriculum, major and career choices.

Course Pre-Requisites / Co-Requisites

Not applicable

Course Objectives

- Provide students with a broad overview of the Biomedical Engineering field
- Guide students in making early curriculum, major, and education choices regarding biomedical engineering
- Provide an overview of common areas available to BME graduates
- Provide students with knowledge of contemporary issues in BME

Materials and Supply Fees

None

Relation to Program Outcomes (ABET):

- The student will learn about professional and ethical responsibility
- The student will learn to communicate effectively
- The student will learn about contemporary BME research
- The student will learn to use the techniques, skills, and modern biomedical engineering tools necessary for biomedical engineering practice

| Outcome | Coverage* |
|---|------------------------|
| 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 | Low/ Introduced |
| 3. An ability to communicate effectively with a range of audiences | Low / Introduced |
| 4. An ability to recognize ethical and professional responsibilities in engineering situations and make | Medium / Introduced ** |

| | |
|---|-------------------|
| 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 | High / Introduced |

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

**Data is collected to assess this student outcome

Required Textbooks and Software

Canvas access via website and/or smartphone application

Recommended Materials

The following websites provide a nice overview of the BME field and current events:

- <http://bme.ufl.edu/> (Information on our faculty, research, and laboratories)
- <http://bme.ufl.edu/academics/undergraduate> (Information on the undergraduate UF BME curriculum)
- <http://www.bmes.org/> (Check out the undergraduate research section for career connections, news and press, and other resources)
- <http://whitaker.org/> (Check out undergraduate research programs and summer programs)
- <https://www.nibib.nih.gov/> (Information on recent advances in Biomedical Engineering and government funding in BME).
- <https://www.embs.org/> (Information on the IEEE Engineering in Medicine and Biology Society)
- <https://www.crc.ufl.edu/students/events-and-programs/> (UF Career Resource Center events)

Course Schedule

- August 27: Dr. Sarah Furtney, BME Instructional Assistant Professor & Undergraduate Coordinator [Introduction]
- September 3: Dr. Kyle Allen, BME Associate Professor [orthopaedic engineering for degenerative joint diseases]
- September 10: Dr. Kevin Otto, BME Professor & Senior Associate Chair [neural engineering, device-tissue interfaces, and neurostimulation]
- September 17: Dr. Meghan Ferrall-Fairbanks, BME Assistant Professor [quantitative systems biology for cancer treatment]
- September 24: Dr. Wes Bolch, BME Professor [medical physics]
- October 1: Dr. Michele Manuel, Materials Science and Engineering Department Chair & MSE Professor [biodegradable alloys]
- October 15: Dr. Ana Martin-Ryals, Agricultural and Biological Engineering Assistant Professor & Undergraduate Coordinator [biosensors]
- October 22: Dr. May Mansy, BME Instructional Assistant Professor [bioinstrumentation and learning assistant program]
- October 29: Dr. Yong Huang, MAE Professor [additive manufacturing of biological structures]
- November 5: Diversity and Inclusion in Biomedical Engineering
- November 12: Dr. Josh Furtney, Chief Resident UF Health Internal Medicine [BME clinical perspectives]
- November 19: Dr. Lee Murfee, BME Associate Professor and Associate Chair for Undergraduate Studies & Ms. Kelly Stalter, BME Academic Advisor [BME curriculum and careers]

- December 3: BME Design – Dr. Lee Murfee, BME Associate Professor [junior design], and Dr. Lakiesha Williams, BME Associate Professor [junior design] and Dr. Eric Fuller, BME Instructional Assistant Professor [senior design]
- Dec 8: Last Day of Classes
- Dec 9-10: Reading Days
- Dec 11-17: Final Exams, BME 1008 DOES NOT have a final exam scheduled during the assigned exam block

Attendance Policy, Class Expectations, and Make-Up Policy

- **Engagement with the course lecture sessions (synchronously or asynchronously) is required and will make up a substantial part of your final grade.** Every lecture will have a unique assignment submission in which you will provide information demonstrating that you have listened to the class discussion. Both Canvas and Zoom can be accessed via web browser or smartphone app. You can join the zoom class session and submit the associated assignment via either platform support.
- In-person attendance is NOT mandatory.
- For those attending in-person, follow common professional standards of being engaged and not disruptive in the classroom.
- Netiquette (net + etiquette) is the code of proper conduct applied to virtual online spaces. This code is dictated by common sense rules (manners) and social conventions. Refer to netiquette document provided in course files
- 20% will be deducted for coursework submitted late. The instructor can waive this penalty for accommodations and extenuating circumstances. Please communicate with your instructor! Deadline extensions can also be granted for accommodations and extenuating circumstances.
- Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

Evaluation of Grades

| Assignment | Percentage of Final Grade |
|-------------|---------------------------|
| Attendance | 20% |
| Quizzes | 35% |
| Assignments | 45% |
| | 100% |

Grading Policy

The following is given as an example only.

| Percent | Grade | Grade Points |
|-------------|-------|--------------|
| 93.4 - 100 | A | 4.00 |
| 90.0 - 93.3 | A- | 3.67 |
| 86.7 - 89.9 | B+ | 3.33 |
| 83.4 - 86.6 | B | 3.00 |
| 80.0 - 83.3 | B- | 2.67 |
| 76.7 - 79.9 | C+ | 2.33 |
| 73.4 - 76.6 | C | 2.00 |
| 70.0 - 73.3 | C- | 1.67 |
| 66.7 - 69.9 | D+ | 1.33 |
| 63.4 - 66.6 | D | 1.00 |
| 60.0 - 63.3 | D- | 0.67 |
| 0 - 59.9 | E | 0.00 |

More information on UF grading policy may be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Online Course Recording

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code.

On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Conduct Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

COVID-19

- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
- If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus.
- If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.
- Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.