

Introduction to Biomedical Engineering

BME 1008 Class Number 11810 Section 9576

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

Location: McCarty Hall A room G186 (UF Campus Map Building #0495)

Academic Term: Spring 2020

Instructor:

Sarah Rowlinson

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(352) 273 - 9333

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

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

Professional Component (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

Relation to Program Outcomes (ABET):

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 informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Medium **	Introduced **
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

- January 10: Dr. Sarah Rowlinson, BME Lecturer & Undergraduate Coordinator, and BMEntors [Introduction to the BME Department]
- January 17: Dr. Dan Ferris, BME Professor [Neural Systems and Rehabilitation]
- January 24: Dr. Wes Bolch, BME Professor [Medical Physics]
- January 31: Dr. Curt DeGross, COM Professor and BME Affiliate Faculty [Pediatric and Congenital Echocardiography, Valve Development]
- February 7: Dr. Hugh Fan, ME Professor and BME Affiliate Faculty [Microfluidics and BioMEMS Technologies]
- February 14: Dr. Ana Martin-Ryals, ABE Assistant Professor and Undergraduate Coordinator [Biosensors]
- February 21: Dr. Lakiesha Williams, BME Associate Professor [Traumatic Brain Injury & Soft-Tissue Mechanics]
- February 28: Dr. Jen Nichols, BME Assistant Professor [Biomechanics, Musculoskeletal Modeling, and Predictive Simulation]

March 6: No Class – Spring Break
 March 13: Mr. Bill McElroy, HWCOE Engineering Leadership Institute [Engineering Professionalism & Ethics]
 March 20: Mr. Bill McElroy, HWCOE Engineering Leadership Institute [Engineering Professionalism & Ethics]
 March 27: Dr. Ruogu Fang, BME Assistant Professor [Big Data Analytics, Brain Informatics, and Medical Image Analysis]
 April 3: Mr. Bill McElroy, HWCOE Engineering Leadership Institute [Engineering Professionalism & Ethics]
 April 10: BME Design – Dr. Jen Nichols, BME Assistant Professor [Junior Design] and Dr. Eric Fuller, BME Lecturer [Senior Design]
 April 17: Dr. Kyle Allen, BME Associate Professor and outgoing Associate Chair for Undergraduate Studies; and Dr. Lee Murfee BME Associate Professor and incoming Associate Chair for Undergraduate Studies [BME Curriculum and Careers]
 April 22: Last Day of Classes
 April 23-24 Reading Days
 April 25 – May 1 Final Exams. BME 1008 DOES NOT have a final exam

Attendance Policy, Class Expectations, and Make-Up Policy

- **Attendance is required and will make up a substantial part of your final grade.** Every lecture will have a unique sign-in passcode that you will submit via canvas. Don't forget to submit the passcode immediately after it is provided, via either laptop entry or Canvas app on a smartphone. If you do not submit the passcode in a timely matter, you will not receive attendance credit. Do not share attendance passcode with peers not present
- If you are disruptive to the class, fall asleep, use your computer or phone or do crossword puzzles during class, attendance credit will be deducted.
- 20% will be deducted for quizzes and assignments submitted late
- 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. Please let the instructor know ahead of time of your absence!
 - It is not possible to “make-up” an excused absence, instead that particular day’s absence will not count towards your final grade (it will remain a non-grade in the gradebook)
- Final exams are determined by course meeting times, except for certain large courses. No student is required to take more than three final exams in one day. If two exams are scheduled at the same time, assembly exams take priority over time-of-class exams. When two assembly exams or two time of class exams conflict, the course with the higher number will take priority. Instructors giving make-up exams will make the necessary adjustments

Evaluation of Grades

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

Grading Policy

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 requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure 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.ua.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.ua.ufl.edu/public-results/>.

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 Honor Code (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Plagiarism

Plagiarism is a common infraction to the UF Honor Code. If you are confused as to what constitutes plagiarism, see here: <https://guides.uflib.ufl.edu/copyright/plagiarism>. Plagiarism on any of your assignments **will be reported to the Dean of Students as a UF Student Honor Code violation**. Also, note that **copying solutions for any assignment, regardless of the source (e.g. other students, pirated website solutions), will be treated as plagiarism**. If you have any questions or concerns, please consult with the instructor in this class. Note that failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures.

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
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.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: <http://www.counseling.ufl.edu/cwc>, 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](mailto:title-ix@ufl.edu), 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/>.

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://www.crc.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://care.dso.ufl.edu>.

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