



Introduction to Bioengineering!

BIOE 120

Fall 2026

Everitt 2233

Location:

Everitt Laboratory 2233

Class Time:

Monday

10:00- 10:50 AM

Instructor:

Dr. Ali Ansari, Bioengineering Department

Office Location:

Everitt Building Room 3244

Email:

aansari2@illinois.edu

Office Phone: 217-333-5333

Drop By/Office Hours:

Please feel free to come by whenever you need to, I am usually in my office. If this is something that may take a longer time to chat about, please send me an email! I will also schedule certain hours that I will be in my office for sure, so if you forget to send an email, I should be there for these. Scheduled Wednesday 3-4 PM, knock on my office door. Can also be via Zoom if need be, just let me know.

Learning Objectives

By the end of this course, you will be able to:

1. Discuss what Bioengineering is, what real world problems we have, and how your intended major intersects with Bioengineering.
2. Identify gaps in current technologies, some applications of bioengineering, and places innovations need to be made.
3. Proposing problem solving strategies that can be implemented in the clinical context.

Course Description:

Introduction to Bioengineering provides a broad introduction to the field, practice, and curriculum of Bioengineering. As a non-major course, it may feel that some of these concepts may not be as obviously relevant. I strongly believe that one of the strengths of bioengineering is that it is very multidisciplinary and has space for everyone to innovate and create. As such, we will aim to cover a large range of topics and concepts. These concepts may sound very intimidating and overwhelming, but the intent is to give you a set of tools to work with. Perhaps you won't use every tool in your bag for every situation, but knowing what each tool is and how to use them is always going to be useful. Try to frame this course in that way, and I hope that you will find this course to be both interesting and hopefully fun.

Method of Instruction

This class will be lecture and activity driven to maximize the amount of experience that the students can have in various branches of bioengineering and explore aspects of the field. There are no tests and no quizzes for this course.

Class Structure (units, topics, periods, texts, divisions):

Weeks 1-7: Introduction and Bioengineering Context

Weeks 7-12: Applications of Bioengineering and Specializations

Weeks 11-15: Careers and Bioengineering

Weeks 11-15: Applications/Microfluidic Module!

Assignments/Activities:

Formative Activities (Lesson based Learning):

Homework, In-Class Exercises

Summative (Cumulative) Activities:

Reflections and Seminar Attendance

Assignment

This course focuses on two main objectives: the first is familiarizing the students with the idea that the field is an intersection of a variety of different tracks and topics which are all equally viable, and then contextualizing them with the skills to be able to take that representation and use it to interact and measure certain phenomena.

Textbook:

There is no required textbook for this course.

Homework:

You will have frequent homework to make sure that you are attending and involved with the course material. This will also be including the different in class assignments that I will include in this category.

Quizzes/Tests:

There will be no quizzes in this class.

There will also be no tests. No finals. Please do not worry, if you can do the participation assignments well enough, you should be perfectly fine in the grade department.

Project:

You will have a single project that is a team based presentation that you will do with your peers to the rest of the class! I will give you more information as it become pertinent.

Scoring:

I wanted to try something a little different and new and make each point awarded equivalent. That means instead of having homework average being a certain percentage of the score, instead, it is weighed equivalently with a grand total of 500 points being awarded throughout the course. That means that there will be 200 points allotted for Professionalism and Participation, 50 points for the report assignment, 100 points for the project at the end of the course, with the last bit being 150 points for homework and other in class assignments and reflections.

Grading:

The performance of a student in each course is evaluated on the grade report by the use of the following symbols:

Grade	Point Range
A+	485-500
A	465.0-484.5
A-	450-464.5
B+	435-449.5
B	415-434.5
B-	400-414.5
C+	385-399.5
C	365-384.5
C-	350-364.5
D+	335-349.5
D	315-334.5
D-	300-314.5
F	0-299.5

Tentative Course Schedule:

Date			Lecture Topics Covered	Assignments Due
1	Mon	August 24th	Introduction and what is Bioengineering?	
2	Mon	August 31st	Labor Day!	
3	Mon	September 7th	Tracks and Sciences we touch and Problems!	
4	Mon	September 14th	Ethics I	
5	Mon	September 21st	Detections using Bioengineering	
6	Mon	September 28th	Surface Chemistry/Biochemistry	
7	Mon	October 5th	Problem Solving with BIOE	
8	Mon	October 12th	Therapeutics	
9	Mon	October 19th	Nanotech/Biotech/Neuro	
10	Mon	October 26th	Career Opportunities and Applications	
11	Mon	November 2nd	Microfluidics Module Part 1!	<u>Essay Peer Review Deadline</u>
12	Mon	November 9th	Microfluidics Module Part 2!	
13	Mon	November 16th	Microfluidics Module Part 3!	<u>Essay FINAL DEADLINE</u> <u>Lab Tour A</u>
14	Mon	November 23rd	YOU ARE FREE FALL BREAK!	
15	Mon	November 30th	Microfluidics Part 4!	Lab Tour B
16	Mon	December 7th	Final Presentations/Food maybe?	Final Presentation due at midnight.

Course Mechanics:

Policies:

As far as I am currently aware, these classes are intended to be in person. As such, your attendance is strongly recommended and expected. You are all full adults here, so if you will be missing, **you have to let me know in advance**. If you want to provide a reason, then that is fine, but if you warn me, I can prepare for it. If for some reason, the university moves back to digital formats, I shall upload all the material to the class website and it will be available to all students, whether on campus or attending remotely. Honestly, your safety is paramount to me, so please do whatever makes you feel safest.

For make up assignments and homework, please contact me **IN ADVANCE**, so I can prepare an assignment for you. If something unforeseen occurs, please contact me and we can figure out how best to address it. I also would like to meet with you in office hours/Zoom if a class is missed in this way. If unexcused absences start becoming a problem, then we may need to meet to discuss solutions, as will definitely impact your overall experience and grade.

If you are seriously ill or experiencing a family emergency that will impact two classes or less, contact Dr. Ansari via e-mail as soon as possible. If you need an extension on an assignment, arrangements must be made with Dr. Ansari before the assignment due date. If your illness or emergency lasts longer than three days (or two classes), you should request an absence letter from the Office of the Dean of Students: <https://odos.illinois.edu/community-of-care/resources/students/absence-letters> . Letters should be requested within 10 days of returning. If you test positive for COVID-19 at an on-campus testing facility it will be automatically recorded.

Expectations:

All assignments will have a reasonably-allotted window of time for completion/participation. If at any time you feel you can not access course materials or complete an assignment in the allotted time, please contact me via email with any requests for deadline extensions or assistance. I will hold weekly "office hours" and if you have classes during those times, I can be free other time periods as long as you let me know in advance. If you cannot make either of those, or feel uncomfortable meeting in person, you can contact me directly in Zoom via Office hours w/ Prof. Ali Ansari: Zoom ID:352 339 1708. Students may also email me to request specific meeting times and my current schedule and availability are posted in my Google Calendar. Any students who do not attend live/synchronous course meetings or events are expected to attend at least one "office hours" session (or one they schedule) within 7 days of missing the meeting/event. Please email me if this presents any issues and we will work together to find a mechanism that works better for you.

Class Participation:

Students are expected to engage with the course material to the extent possible based on their location and situation. We aim to foster an inviting and open environment that everyone can feel comfortable sharing in. As such, students are all expected to read/view all posted materials, and complete all assigned work and assessments in a timely manner to best facilitate this environment.

Inclusion and Disability Statements:

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the as soon as possible. To ensure that disability-related concerns are properly addressed from the beginning, students with disabilities who require assistance to participate in this class should contact Disability Resources and Educational Services (DRES) and see the instructor as soon as possible. If you need accommodations for any sort of disability, please speak to me after class, or make an appointment to see me or see me during my office hours. DRES provides students with academic accommodations, access, and support services. To contact DRES you may visit 1207 S. Oak St., Champaign, call 217-333-4603 (V/TDD), or e-mail disability@illinois.edu , <http://www.disability.illinois.edu/>

Mental Health:

Mental health is extremely important for everyone here, and I urge to take it into account. Significant stress, mood changes, excessive worry, substance/alcohol misuse or interferences in eating or sleep can have an impact on academic performance, social development, and emotional wellbeing. The University of Illinois offers a variety of confidential services including individual and group counseling, crisis intervention, psychiatric services, and specialized screenings which are covered through the Student Health Fee. If you or someone you know experiences any of the above mental health concerns, it is strongly encouraged to contact or visit any of the University's resources provided below. Getting help is a smart and courageous thing to do for yourself and for those who care about you. Please also feel free to chat with me if there is anything I can do to try to help. You all deserve the absolute best, and I want you to treat yourself that way. :)

- Counseling Center (217) 333-3704
- McKinley Health Center (217) 333-2700
- National Suicide Prevention Lifeline (800) 273-8255
- Rosecrance Crisis Line (217) 359-4141 (available 24/7, 365 days a year)

If you are in immediate danger, call 911.

Equity & Inclusion Statement:

This classroom has a zero tolerance for any kind of discrimination or intolerance. It has no place here or anywhere else on campus let alone outside of it. As you all have the right to fully respected and treated fairly and kindly, if at any point you do not feel welcome or comfortable, please tell me immediately and we will work together to make sure that is remedied as soon as possible. If you don't feel comfortable speaking to me, please don't hesitate to reach out to any of the other professors or deans or even the Director of Graduate Studies who may be able to help you. Additionally, I intend on making this an inclusive and accepting environment that hinges on your comfort in the classroom. This means, if there are issues that affect your learning, as perhaps learning English as a second or so language, and thus requiring more time in reading, presenting, or difficulties in hearing, or anything else, please do not hesitate to talk to me, as I can possibly help deal with this.

The Grainger College of Engineering is committed to the creation of an anti-racist, inclusive community that welcomes diversity along a number of dimensions, including, but not limited to, race, ethnicity and national origins, gender and gender identity, sexuality, disability status, class, age, or religious beliefs. The College recognizes that we are learning together in the midst of the Black Lives Matter movement, that Black, Hispanic, and Indigenous voices and contributions have largely either been excluded from, or not recognized in, science and engineering, and that both overt racism and micro-aggressions threaten the well-being of our students and our university community.

The effectiveness of this course is dependent upon each of us to create a safe and encouraging learning environment that allows for the open exchange of ideas while also ensuring equitable opportunities and respect for all of us. Everyone is expected to help establish and maintain an environment where students, staff, and faculty can contribute without fear of personal ridicule, or intolerant or offensive language. If you witness or experience racism, discrimination, micro-aggressions, or other offensive behavior, you are encouraged to bring this to the attention of the course director if you feel comfortable. You can also report these behaviors to Campus Belonging Resources (<https://diversity.illinois.edu/diversity-campus-culture/belonging-resources/>). Based on your report, Members of the Office of the Vice Chancellor for Diversity, Equity & Inclusion staff will follow up and reach out to students to make sure they have the support they need to be healthy and safe. If the reported behavior also violates university policy, staff in the Office for Student Conflict Resolution may respond as well and will take appropriate action.

Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office for Student Conflict Resolution (<https://conflictresolution.illinois.edu> ; conflictresolution@illinois.edu ; 217-333-3680) for disciplinary action.

Accommodating Religious Holidays:

Additionally if you have a religious holiday that is placed during the semester please let me know ahead of time so I can also accommodate that as well. This does not count as an unexcused absence, but you will have to make up anything that you may miss, but we can discuss it if it does happen. Religious observances are an example of a planned absence. Students should complete the Request for Accommodation for Religious Observances form (https://cm.maxient.com/reportingform.php?UnivofIllinois&layout_id=19). In order to best facilitate planning and communication, please request for absence letters as early as possible.

Academic Integrity:

The University of Illinois Urbana-Champaign Student Code should also be considered as a part of this syllabus. Students should pay particular attention to Article 1, Part 4: Academic Integrity. Read the Code at the following URL: <http://studentcode.illinois.edu/>

Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policy: <https://studentcode.illinois.edu/article1/part4/1-401/>

Ignorance is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

Masking Policy:

In accordance with the University's rule that makes masks optional, please feel free to make your own discretion on whether to mask or not. I will most likely be masked as to prevent me from getting you all sick, but in return for the freedom to choose, I only request one thing. DO NOT COME IN TO CLASS SICK. Send me an email before class and let me know what is happening. If you are sick and come in, I reserve the right to ask you to leave. Anything due we can discuss at a later point. Your health and wellbeing is paramount, and I intend to maintain it as much as possible.

Sexual Reporting Obligations:

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: <https://wecare.illinois.edu/resources/students/#confidential>

Other information about resources and reporting is available here: <https://wecare.illinois.edu>

Use of Generative AI Technology:

Generative AI, such as ChatGPT, Bard, and Microsoft Copilot/Bing Chat, can answer questions and generate text, images, and other media. The appropriate use of generative AI varies from course to course. In BIOE 120, there are times when generative AI may be useful in the course. If you choose to use generative AI as permitted below, you must document and attribute all AI contributions to your coursework and take full responsibility for the contributions including the accuracy of the information and reliability of sources. When using generative AI, keep a journal documenting prompts, AI responses, and your usage. Your instructor may ask you to provide this documentation.

You may use generative AI in BIOE120 for the following:

- Revising your own text for spelling and grammar
- Conducting basic research on the course and assignment topics

You MAY NOT use generative AI in BIOE120 for the following:

- Writing entire sentences, paragraphs, or papers to complete class assignments

If you have a question about the use of Generative AI, please reach out to your instructors. Failure to abide by these guidelines is a violation of academic integrity. We will investigate suspected uses of generative AI that do not follow these guidelines and apply sanctions as outlined in the Illinois Student Code.

Thank you very much for reading this far, I am extremely excited to teach you all and wish you all a wonderful semester!

