

# ECE/BIOE 380 Biomedical Imaging Fall 2021

## Syllabus

### Instructor:

Instructor: [Pengfei Song, Ph.D.](#), Assistant Professor of Electrical and Computer Engineering, Bioengineering  
Email: [songp@illinois.edu](mailto:songp@illinois.edu)  
Phone: 217-300-9763

### Instructor Office Hours:

Tuesdays and Wednesdays, 3:00 – 4:00 PM, on Zoom:

Meeting URL: <https://illinois.zoom.us/j/89269915228?pwd=VmJpalNRcEhFUllaVW9iOUZKVHppQT09&from=addon>  
Meeting ID: 892 6991 5228  
Password: 251732

### Teaching Assistants and Office Hours:

Jenna Cario ([jcario2@illinois.edu](mailto:jcario2@illinois.edu))  
Monday: 5:00-6:00 PM; Friday: 4:00-5:00 PM. Location: Beckman 4225

### Pre-Requisites:

Math 285 or Math 286 or Consent of Instructor.

### Course Objective:

To introduce principles and survey technology and applications in the field of biomedical imaging.

### Course Website:

Accessible from <https://courses.grainger.illinois.edu/ECE380/FA2021/>

### Lecture:

Time: Tuesdays & Thursdays, 9:30 – 10:50 am Location: ECEB 3013 Credit: 3 hours

Lectures will be recorded by Echo360.

Attendance to all lectures will be required. Exceptions will be made on a case by case basis.

### Slack workspace:

Accessible from <http://ecebioe380fall2021.slack.com/>. You are strongly encouraged to use office hours to ask questions. You may also post your questions and/or find answers to similar questions asked by other students on Slack. The TA and I check Slack regularly but may not be able to provide responses or answer questions immediately.

### Recommended Textbook:

[The Essential Physics of Medical Imaging](#), 3<sup>rd</sup> Edition, by Bushberg *et al.*, LWW, 2011.  
[Fundamentals of Medical Imaging](#), 3<sup>rd</sup> Edition, by Paul Suetens, Cambridge University Press, 2017.

The lecture slides will be your main source of studying materials, but I strongly encourage you to read the assigned chapters associated with the suggested textbooks.

### Homework:

There will be 9 graded homework sets for this course. Homework assignments will be distributed on-line and will be graded with Gradescope. Solutions will be posted on the course website. Late homework will **NOT** be accepted. You are allowed to drop one homework score from being used in calculating the final grade. Detailed homework assignment schedule and deadline are given in the class schedule document.

Please register on Gradescope using your real name and your Illinois email account with your netID. The site is FERPA compliant. The entry code to the course on Gradescope is KYXX57.

### Software:

For this course, we will occasionally use MATLAB for completing some problems in the homework sets. If you have never used MATLAB, please contact the TA for introductory material on how to acquire and use MATLAB.

**Exams:**

Two mid-term exams will be given in class (regular class meeting hours) as noted in the attached class schedule.

A final exam will be given 8:00-11:00 a.m., Monday, Dec. 13 (during finals week). All exams will be closed book and closed notes.

An excuse from the Dean's office is the only acceptable excuse for missing an exam.

**Grading:**

Your final grade in this course will be based on your total score on all the components of the course. The total score is broken down into the following components:

Exam #1	20%
Exam #2	20%
Final Exam.	30%
Homework	30%
<b>Total</b>	<b>100%</b>

**Approximate Grade Scale**

A+, 95-100	B+, 87-89.9	C+, 77-79.9	D+, 67-69.9	
A, 92-94.9	B, 83-86.9	C, 73-76.9	D, 63-66.9	F, 0-59.9
A-, 90-91.9	B-, 80-82.9	C-, 70-72.9	D-, 60-62.9	

**Note:** At the end of the semester, the course grade scale may be adjusted to reflect large breaks between groups of students.

Absences and Excused Grades:

An unexcused absence from a semester exam will be assigned a zero grade. An excused absence requires a letter from the Dean's office. An excused absence from a semester exam will receive an EX grade. At the end of the semester, the EX grade will be replaced with the average of your grades on the other semester exam and the final. If you miss both semester exams (excused), you can only replace one of the EX grades and the other one will be zero. If you miss the final exam, you will get a zero grade.

Case 1: missing Exam #1 only (excused), Exam #1 score will be replaced with the average of the Exam #2 and Final score.

Case 2: missing Exam #1 and #2 (both excused), one EX grade will be replaced with the Final score, and the other EX grade will be replaced with zero.

Case 3: missing Exam #1 and Final (both excused), Exam #1's EX grade will be replaced with the average of Exam #2 score and zero (or half of Exam #2's score).

Case 4: missing all exams (all excused), you will receive zero grade for all exams.

I may consider offering makeup exams on a case by case basis but I expect this to be very unlikely.

Grade Disputes:

Grade disputes on homework will be settled at the discretion of the TA. Grade disputes on all the exams will be settled at the discretion of the instructor. In both cases, the problem in question will be RE-GRADED, making it possible for you to receive a lower score. To dispute an exam grade, you must explain your dispute IN WRITING and send to the instructor within one week from the returning of your exam. All exams will be graded by the course instructor.

**Other statements:****COVID19-related Policies**

Following University policy, all students are required to engage in appropriate behavior to protect the health and safety of the community. Students are also required to follow the campus COVID-19 protocols.

Students who feel ill must not come to class. In addition, students who test positive for COVID-19 or have had an exposure that requires testing and/or quarantine must not attend class. The University will provide information to the instructor, in a manner that complies with privacy laws, about students in these latter categories. These students are

judged to have excused absences for the class period and should contact the instructor via email about making up the work.

Students who fail to abide by these rules will first be asked to comply; if they refuse, they will be required to leave the classroom immediately. If a student is asked to leave the classroom, the non-compliant student will be judged to have an unexcused absence and reported to the Office for Student Conflict Resolution for disciplinary action. Accumulation of non-compliance complaints against a student may result in dismissal from the University.

All students, faculty, staff, and visitors are required to wear face coverings in classrooms and university spaces. This is in accordance with CDC guidance and University policy and expected in this class.

Please refer to the University of Illinois Urbana-Champaign's COVID-19 website for further information on face coverings. Thank you for respecting all of our well-being so we can learn and interact together productively.

In order to implement COVID-19-related guidelines and policies affecting university operations, instructional faculty members may ask students in the classroom to show their Building Access Status in the Safer Illinois app or the Boarding Pass. Staff members may ask students in university offices to show their Building Access Status in the Safer Illinois app or the Boarding Pass. If the Building Access Status says "Granted," that means the individual is compliant with the university's COVID-19 policies—either with a university-approved COVID-19 vaccine or with the on-campus COVID-19 testing program for unvaccinated students.

Students are required to show only the Building Access Screen, which shows compliance without specifying whether it was through COVID-19 vaccination or regular on-campus testing. To protect personal health information, this screen does not say if a person is vaccinated or not. Students are not required to show anyone the screen that displays their vaccination status. No university official, including faculty members, may ask students why they are not vaccinated or any other questions seeking personal health information.

Additional information can be found here: <https://covid19.illinois.edu/on-campus/on-campus-instructors/>

### **Sexual Misconduct Reporting Obligation**

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 Office. In turn, an individual with the Title IX 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: [wecare.illinois.edu/resources/students/#confidential](https://wecare.illinois.edu/resources/students/#confidential).

Other information about resources and reporting is available here: [wecare.illinois.edu](https://wecare.illinois.edu).

### **Academic Integrity**

The University of Illinois at 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.

### **Religious Observances**

Illinois law requires the University to reasonably accommodate its students' religious beliefs, observances, and practices in regard to admissions, class attendance, and the scheduling of examinations and work requirements. You should examine this syllabus at the beginning of the semester for potential conflicts between course deadlines and any of your religious observances. If a conflict exists, you should notify your instructor of the conflict and follow the procedure at <https://odos.illinois.edu/community-of-care/resources/students/religious-observances/> to request appropriate accommodations. This should be done in the first two weeks of classes.

### **Disability-Related Accommodations**

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 333-4603, e-mail [disability@illinois.edu](mailto:disability@illinois.edu) or go to <https://www.disability.illinois.edu>. If you are concerned you have a disability-related condition that is impacting your academic progress, there are academic screening appointments available that can help diagnosis a previously

undiagnosed disability. You may access these by visiting the DRES website and selecting “Request an Academic Screening” at the bottom of the page.

### **Family Educational Rights and Privacy Act (FERPA)**

Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <https://registrar.illinois.edu/academic-records/ferpa/> for more information on FERPA.

### **Anti-Racism and Inclusivity**

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 the Bias Assessment and Response Team (BART) (<https://bart.illinois.edu/>). Based on your report, BART members 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.

### **Counseling and help:**

If you need mental health counseling or help, don't hesitate to contact the Counseling Center (<https://www.counselingcenter.illinois.edu>) which provides services to address emotional, interpersonal, and academic concerns. The Center also provides emergency service (<https://www.counselingcenter.illinois.edu/emergency-0>). Another option that you have is to contact the ECE department advising office (Jen Merry, [merry@illinois.edu](mailto:merry@illinois.edu), 217-333-9710), or the advising office in your perspective department if you are not an ECE student. Of course you can always contact me if you have any concerns or need any help.