OPTI / BME 638
Advanced Medical Imaging
Spring 2023

Class: T, Th 3:30pm – 4:45pm In person (Meinel 432)
Website: http://d2l.arizona.edu
Prerequisite: (OPTI 512, OPTI 604, BME 516 or equivalent).
Instructors: Russell Witte*, Beth Hutchinson, Srini Vedantham, Lars Furenlid

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Course Description: Advanced medical imaging course that dives deep into the physics, mathematics, instrumentation, signal processing, image formation and reconstruction algorithms for four broad medical imaging modalities, including nuclear, computed tomography (CT), ultrasound (US), and magnetic resonance imaging (MRI).

Medical imaging modalities covered: Single Photon Emission Computed Tomography (SPECT), Positron Emission Tomography (PET), Ultrasound (US), X-ray Imaging and Computed Tomography (CT), Magnetic Resonance Imaging (MRI)

Grading: Grading will based on homework assignments, a midterm exam (take home) and an in-class final exam. Each of these three components will be weighted equally. (Homework = 1/3, Midterm Exam = 1/3, Final = 1/3).

Grading Policy: Late homework will not be accepted without prior instructor approval. Students may study and work together, but homework should be completed independently. Direct plagiarism on homework assignments cannot be accepted. The University's Student Code of Academic Integrity applies to this class and should be reviewed by each student. Cases of suspected academic dishonesty including plagiarism, cheating on tests or altering graded homework will be referred to the appropriate Dean. The academic penalty for academic dishonesty will be an "F" grade. Homework will only be re-graded when there is evidence of grading error. The instructors reserve the right to re-grade an entire homework or test.

Text: There is no required textbook for this course. For general background to topics in this course, the instructors recommend "Medical Imaging Signals and Systems" by JL Prince and JM Links (Pearson Education Inc.). Each instructor will provide additional background material on the *d2l website* for their set of lectures.

Demonstrations: There may be demonstrations/imaging experiments during the semester. If possible, these demos will occur in-person.

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Teaching Format: In-person:

This class is scheduled to be taught in the IN-PERSON in Meinel Optical Sci Rm 432.

D2L

Students must access content in D2L. Students may not modify content or re-use content for any purpose other than personal educational reasons. All recordings are subject to government and university regulations. Therefore, students accessing unauthorized recordings or using them in a manner inconsistent with UArizona values and educational policies are subject to suspension or civil action.

Students with a Learning Disability

Accessibility and Accommodations: At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, https://drc.arizona.edu) to establish reasonable accommodations.

If a student is registered with the Disability Resource Center, he/she must submit appropriate documentation to the instructor if he/she is requesting reasonable accommodations. http:// drc.arizona.edu/instructor/syllabus-statement.shtml

Nondiscrimination and Anti-harassment Policy

Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others. The UA is committed to creating and maintaining an environment free of discrimination; see http://policy.arizona.edu/human-resources/ nondiscrimination-and-anti-harassment-policy

Classroom Behavior Policy

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.).

Threatening Behavior Policy

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See http://policy.arizona.edu/education-and-student-affairs/ threatening-behavior-students.

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.