

## SE 260 (JAN) 3:0 Medical Imaging General information

**Instructor:** PHANEENDRA K. YALAVARTHY, Ph.D.

Office: Room No-305 (SERC)

Office Hours: 3:30PM–5:00PM (Tuesday)

Phone No: +91-80-2293 2496

e-mail: phani@serc.iisc.ernet.in

**Timings:** 3:30 PM - 5:00 PM on Monday and Wednesday (tentative); **Place:** Room No: 202 (SERC).

### Main Reference text books<sup>1</sup>:

1. The Essential Physics of Medical Imaging, J. T. Bushberg, J. A. Seibert, E. M. Leidholdt Jr., and J. M. Boone – Second Edition, Lippincott Williams & Wilkins Publishers, 2002.
2. Physics of Radiology, A. B. Wolbarst – Second Edition, Medical Physics Publishing, 2005.

**Course Web Page:** <http://www.serc.iisc.ernet.in/~phani/2011SE260/SE260.html>

**Grading:** Homeworks: 15%, Class Presentations: 10%, Midterm Exam: 25%, Project: 25%, and Final Exam: 25%.

**Course Outline:** Medical Imaging is an interdisciplinary subject that requires understanding of physics, technology, and practice of each medical imaging modality. This course will cover physics and technology part. There will be a visit to the clinic at the end of this course to see these three aspects in the clinical setting. Homework, presentations, and exams will test your understanding of physics and technology aspects. Project will involve development of a compact solution to current problem/s in medical imaging, such that it will enhance your understanding of challenges related to medical imaging.

**Homework/Presentations/Project:** There will be 3 homework problem sets with a specific due date and time. Some homework problems may require computer programming. There will be two class presentations, one journal paper presentation, where the student will present the assigned paper. Another presentation will be on a assigned topic related to medical imaging. Both these presentations will be evaluated on the comprehensiveness and breadth of the material covered. Each student will either choose or come with a project proposal by the end of first six weeks of completion of course. These proposals will be evaluated based on relevance and feasibility for proceeding further. Before three weeks of completion of course (second week of April), final report of the project should be submitted. *Late submission (beyond the due date and time) of homework solutions/project report will result in no credit.* Final project presentations will be scheduled in the final week of April.

**Midterm/Final Exam:** Both midterm and final exam will test primarily the physics and technology behind medical imaging modalities. Students will be allowed to carry one sheet of paper (A4 size) to the exam, which can contain important formulas/constants. A model exam along with answers will be placed in the SERC library for reference at least two weeks before the exam. Note that the course material that is covered in the midterm exam will not be part of the final exam.

**Honor Principle:** *You are welcome to exchange ideas in solving homework problems with your colleagues, but all the work submitted for grading (homework, presentations, project, and midterm/final exam) must be your own work (i.e., you must have worked out all details by yourself). Copying computer code or files (including the material on the web) without proper citation is considered as plagiarism. Any deviations from this principle will result in failing of the class.*

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<sup>1</sup>Supplementary texts will be used depending on the topic.