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| **Course** | ECE 50700 – Introduction to Biomedical Imaging |
| **Type of Course** | Graduate level course, can be Technical elective for EE/CmpE |
| **Catalog Description** | This course covers the major aspects of standard medical imaging systems used today including X-Ray, computed tomography (CT), magnetic resonance imaging (MRI), ultrasound (US) and positron emission tomography (PET). The fundamental physics and engineering underlying each imaging modality are reviewed. The image reconstruction, processing and visualization are examined. Students will gain technical knowledge and an overview of current status of medical image processing and visualization. |
| **Credits** | 3 |
| **Contact Hours** | 3 |
| **Prerequisite Courses** | ENGR 12800, MA 35100, PHYS 152 |
| **Corequisite Courses** |  |
| **Prerequisites by Topics** | Linear algebraProgramming experience in MatlabBasic college physics |
| **Textbook** | *Andrew Webb, “Introduction to Biomedical Imaging”, Wiley-IEEE Press* |
| **Course Objectives** | By the end of the course each student should be able toUnderstand the basic physical principles of modern medical imaging Understand basic data acquisition strategies and image reconstruction techniques. * Understand the basic medical image processing and visualization.

Gain experience in clinical applications of each medical imaging modality. |
| **Lecture Topics** | * Review of linear algebra, linear systems and Fourier transformation
* X-ray mammography
* Computed tomography
* Ultrasonic imaging
* Magnetic resonance imaging
* Positron emission tomography
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| **Computer Usage** | High |
| **Laboratory Experience** | Low |
| **Design Experience** | Median |
| **Coordinator** | Bin Chen, Ph.D. |
| **Date** | 11/14/2022 |