



## BiS452: Biomedical Imaging (Edu 3.0)

### 🕒 Class Time

MW 9:00 – 12:00

TThF 9:00 – 11:00

### 📍 Location

To be announced

### 📖 Credit

3

### 👤 Instructor

Professor Sung-Hong Park, Ph.D.; Dept. of Bio & Brain Engineering, KAIST

([sunghongpark@kaist.ac.kr](mailto:sunghongpark@kaist.ac.kr))

Office Hour: After class hours or determined by appointment (E16 Building, Rm. 1002)

Tel. 042-350-4312

### 📚 Required Materials

Textbook: Introduction to Medical Imaging: Physics, Engineering, and Clinical Applications, Nadine Barrie Smith and Andrew Webb, ISBN : 9780521190657 and lecture slides.

- (Reference book: Medical imaging signals and systems, Jerry L Prince and Jonathan M Link (international edition), ISBN-13 : 978-0130653536)

### 📄 Course Summary

#### ★ Goal:

The goal of this course is for students to understand biomedical imaging systems such as X-ray, CT, SPECT, PET, Ultrasound, and MRI. The class includes physics for biomedical imaging systems and image reconstruction algorithms like fast Fourier transform and filtered back projection, etc.

The class will be taught in an Education 3.0 format.

- a. There will be no conventional lecture in the classroom from the Wednesday of the first week. Students should study with video lectures in advance and take part in the in-class discussion.
- b. There will be a quick quiz (10 – 20 min) for every homework.
- c. Students don't need to submit their homework.
- d. On Monday, Wednesday, and Friday, there will be instructor-students discussion for ~60min, followed by student group discussion for ~60min.
- e. Students can discuss the lecture contents and the homework questions on Monday, Wednesday, and Friday, in preparation for quiz on Tuesday and Thursday.
- f. There will be no class other than the quiz on Tuesday and Thursday.
- g. The date of discussion and quiz can be swapped, depending on the class schedule.
- h. Students can discuss various issues through KLMS website too.  
The instructor and TAs will answer for the questions.
- i. Please get familiar with KLMS (KAIST Learning Management System) <http://edu3.kaist.ac.kr>

#### ★ Contents and Schedule :

- (i) Introduction to biomedical imaging systems, Image quality, and X-ray (1st week)
- (ii) CT and nuclear medicine (2nd week)
- (iii) Mid-term Exam (end of 2nd week)
- (iv) SPECT, PET, Ultrasound (3rd week)

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(v) MRI (4th week)

(vi) Final Exam (end of 4th week)

## Course Evaluation

Grading :

Homework and quiz 30%, mid-term exam 30%, final exam 30%, and attendance and attitude 10%.