LEARNING MODULE DESCRIPTION

GENERAL INFORMATION

1. Module title: **Clinical chemistry, mainly diagnostic imaging (CT, MRI, US, and PET/SPECT)**
2. Module code: **ADAC**
3. Term: **2nd**
4. Duration: **15 hours**
5. ECTS: **2**
6. Module lecturer: **prof. K. Ogawa, Kanazawa University, Japan**
7. E-mail: **kogawa@p.kanazawa-u.ac.jp**
8. Language: **English**

DETAILED INFORMATION

Information about the lecture:
Clinical chemistry is a hybrid field between medicine and analytical chemistry. In the clinical chemistry, diagnostic imaging has progressed well in recent years and is very important for clinical medicine.

1. Module aim (aims)

The main objectives of the lectures are to introduce clinical chemistry, mainly noninvasive diagnostic imaging (X-ray CT, MRI, US, and PET/SPECT).

Students will be provided with the following knowledge:

- X-ray imaging and X-ray CT and their contrast agents.
- MRI and its contrast agents.
- Ultrasound imaging (Ultrasonography, US), endoscopy
- Nuclear medicine imaging, such as PET and SPECT, and radiopharmaceuticals
- Immunoassay

2. Pre-requisites in terms of knowledge, skills and social competences (where relevant)

Basic knowledge related to chemistry, anatomy, and physiology.

READING LIST

1. Krzysztof Iniewski, Medical Imaging: Principles, Detectors, and Electronics, Wiley, 2009

SYLLABUS:

Lecture

Week 1: Introduction of clinical chemistry.
Week 2: X-ray imaging and X-ray CT.
Week 3: Contrast agents for X-ray imging and X-ray CT.
Week 4: Ultrasound imaging and endoscopy.

Week 5: MRI and its contrast agents.
Week 6: Nuclear medicine imaging (PET and SPECT).
Week 7: Radiopharmaceuticals for nuclear medicine imaging.
Week 8: Immunoassay (1).
Week 9: Immunoassay (2).
Week 10: Colorimetric analysis using enzymatic methods (1).
Week 11: Colorimetric analysis using enzymatic methods (2).
Week 12: Analysis in cardiology, such as electrocardiogram.
Week 13: Dry chemistry and sensor.
Week 14: Statistical analysis (1).
Week 15: Statistical analysis (2).

Student workload (ECTS credits)

Activity types	Mean number of hours* spent on each activity type
Contact hours with the teacher as specified in the programme	**15**
Independent study (1)	**15**
Independent study (2)	**15**
Total hours	**45**
Total ECTS credits for the module	**2**

** Class hours – 1 hour means 45 minutes*
(1) Independent study – examples of activity types: preparation for classes, data analysis,
(2) library-based work, PowerPoint presentation of the chosen topic related to the lecture .