Advanced Course in Oral and Maxillofacial Radiology I

Lecture/Lab./Clinic　Academic year 1,2　credits 2,4

[Keywords] Anatomy, oral and maxillofacial region, radiation, physics, biology, dose management, imaging, examination, processing

[Academics] Yusuke Kawashima

[Course aims]
The aims of this class are to:
1. Understand the methods by which anatomic structures in the oral and maxillofacial region are displayed on diagnostic images in order to investigate the disease by diagnostic imaging.
2. Understand the physical characteristics and biologic effects of ionizing radiation including X-rays used for diagnostic imaging.
3. Acquire the knowledge and skills relevant for management of exposure dose in radiologic examinations and experiments using ionizing radiation.
4. Understand the methods used to image the human body and the basics of quantitative analysis using those image data.

[Course objectives]
The goals of this course are for students to be able to:
(1) Explain the anatomic structures of the oral and maxillofacial region.
(2) Explain the anatomic structures on diagnostic images of the oral and maxillofacial region.
(3) Explain the methods used for management of the exposure dose in radiology examinations and experiments using ionizing radiation.
(4) Practice adequate management of radiation exposure.
(5) List and explain the methods used to image human anatomic structures and the characteristics of these methods.
(6) Carry out basic image processing and perform basic quantitative analysis of human body imaging data.

[Course content]

Class	Theme	Content	Academics
1	Lecture on anatomic structures in the oral and maxillofacial region.		Yusuke Kawashima
2	Seminar on imaging the anatomy of the oral and maxillofacial region.		Yusuke Kawashima
3	Lecture and seminar on the physical characteristics and biological effects of ionizing radiation.		Yusuke Kawashima
4	Lecture on the basic theory of image processing.		Yusuke Kawashima
5	Practice of image processing.		Yusuke Kawashima
6	Seminar on statistical analysis of quantitative data obtained by image processing.		Yusuke Kawashima
7	Simulation of a presentation at an academic meeting and publication of a paper.		Yusuke Kawashima

[Class implementation method]
Combination of face-to-face learning and distance learning
* Class implementation depends on the implementation policy of each department (graduate school), interdisciplinary studies, and school.

[Grading policies]

Your overall grade in class will be decided based on class attendance and reports.

[Textbook]
Your overall grade in class will be decided based on class attendance and reports.

[Reference book]
Students will be informed of which reference book to use.

[Preparation for course]
Students must understand the course objectives and prepare appropriately for classes.