

2025 Akita University Faculty of Medicine Syllabus

Category : 基礎医学 IV
Course Title : Radiation Biology and Physics
Eligible Students : grade 2 Related Course
Code : 71563019
Schedule : week 24 ~ week 25 (Wed Period 1-10)
Credits : 0.5

1. Lead Instructor

Naoko Mori (Professor, Department of Radiology, 6179, Office Hour: North Clinical Research Building 1F Conference Room (12:00 13:00))

2. Instructors

Naoko Mori (Professor, Department of Radiology, 6179, Office Hour: North Clinical Research Building 1F Conference Room (12:00 13:00))

Yuki Wada (Lecturer, Department of Radiology, 6179)

Takahiro Otani (Assistant Professor, Department of Radiology, 6179)

Tomoki Tozawa (Assistant Professor, Department of Radiology, 6179)

Satoshi Kumagai (Assistant Professor, Department of Radiology, 6179)

3. Course Description Outline(Course Objectives)

授業の概要

放射線の医学応用の基礎と生体への影響を理解する

1) 核医学診療の基礎と管理 (3-3)

2) CT/MRI の原理と撮像法 (3-3)

3) 放射線生物学の基礎 (3-3)

4) 放射線治療の基礎 (3-3)

5) 放射線の物理と医学応用 (3-3)

6) IVR の基礎

Course Description Outline

In this course, you will learn the basis of clinical radiology and the effects of radiation on living organisms.

1)The basis and management of nuclear medicine (3-3)

2)The principals and methods of CT/MR (3-3)

3)The basis of radiation biology (3-3)

4)The basis of radiation therapy (3-3)

5)Radiation physics and clinical applications (3-3)

6)The basis of interventional radiology (IVR) (3-3)

ねらい

患者・医療者に対し良質で安全な放射線診療を提供できる基礎的事柄を理解する

Course Objectives

After the course, you will understand the essential points about radiology in order to use radiology adequately in a clinical situation.

4. Textbook/Reference Books

標準放射線医学（医学書院）、臨床放射線腫瘍学（南江堂）、新臨床 X 線診断学（医学書院）

5. Assessment

統一試験、授業への出席、小テストにより、評価する

Attendance, reports and examinations

6. Out of Class Study/Message

担当教員の予定により、変更する場合があります

指定教科書、配布資料などで十分予習・復習すること

Slight changes may occur depending on the schedule of the instructor.

Prepare and review with designated textbooks and handouts.

Topics and Contents of class, Course Objectives						
	Class Date	Period	Class Format	Topics and Contents of class, Course Objectives	Instructors	Class Room
1	10 / 15 (Wed)	1-2	Lecture	Theme: 核医学診療の基礎と管理 The basis and management of nuclear medicine ・放射性同位元素の種類や物理学的特徴を説明できる ・同位元素の管理の留意点を説明できる ・ Explain the types of radioisotope and respective physical characteristics. ・ Explain the attentions of radioisotope management.	Takahiro Otani	基礎棟第 2 講義室
2	10 / 15 (Wed)	3-4	Lecture	Theme: CT/MR の原理と撮像法 The principals and methods of CT/MR ・各種撮像法を理解し、説明できる ・デジタル画像の基本を概説できる ・ Explain the types of clinical imaging modalities. ・ Explain the basis of digital imaging.	Naoko Mori	基礎棟第 2 講義室
3	10 / 15 (Wed)	5-6	Exercise	Theme: 小テスト Short test CT/MR, 核医学 CT/MR, nuclear medicine	Naoko Mori Takahiro Otani	基礎棟第 2 講義室
4	10 / 15 (Wed)	7-8	Lecture	Theme: 放射線生物学 Radiation biology ・放射線生物の基本を説明できる ・放射線治療との関連を説明できる ・ Explain the basis of radiation biology ・ Explain radiation biology for radiation therapy.	Yuki Wada	基礎棟第 2 講義室
5	10 / 15 (Wed)	9-10	Exercise	Theme: 小テスト（予習と復習） Short test 放射線物理・生物 Radiation physics and clinical applications, and radiation biology	Yuki Wada Satoshi Kumagai	基礎棟第 2 講義室
6	10 / 22 (Wed)	1-2	Lecture	Theme: 放射線治療の基礎 I The basis of radiation therapy I ・日常臨床で行われる放射線治療の基礎を知り説明できる ・ Explain the basis of clinical radiation therapy	Yuki Wada	基礎棟第 2 講義室
7	10 / 22 (Wed)	3-4	Lecture	Theme: 放射線治療の基礎 II（障害含め） The basis of radiation therapy II (including radiation effects) ・日常臨床で行われる放射線治療の基礎を知り説明できる ・ Explain the basis of clinical radiation therapy	Satoshi Kumagai	基礎棟第 2 講義室
8	10 / 22 (Wed)	5-6	Exercise	Theme: 小テスト（予習と復習） Short test 放射線治療の基礎と IVR The basis of radiation therapy and radiation effects, and the basis of interventional radiology	Yuki Wada Tomoki Tozawa Satoshi Kumagai	基礎棟第 2 講義室

Topics and Contents of class, Course Objectives						
	Class Date	Period	Class Format	Topics and Contents of class, Course Objectives	Instructors	Class Room
9	10 / 22 (Wed)	7-8	Lecture	Theme: 放射線の物理と医学応用 Radiation physics and clinical applications ・放射線の社会・医学での活用を説明できる ・放射線の物理学的性質を概説できる ・ Explain the clinical and daily use of radiology. ・ Explain the basis of radiation physics.	Satoshi Kumagai	基礎棟第 2 講義室
10	10 / 22 (Wed)	9-10	Lecture	Theme: IVR の基礎 The basis of interventional radiology (IVR) ・ IVR の基本を説明できる ・ Explain the basis of IVR procedures.	Tomoki Tozawa	基礎棟第 2 講義室