

Category (科目区分)	Basic Subjects		
Course Title (授業科目名)	Optical and Electron Microscope Operation		
Instructors (担当者名)	Akiteru Goto	Academic Year (配当年次)	1,2
Required Course / Elective Course (必修/選択)	Elective Course	Credits (単位数)	1
Class Format (授業形態)	Experimental practice		
Schedule (開講期間)	Oct. 2025 to Mar. 2026 (details of the schedule to be discussed)		
Class Date/Period (開講曜日・時間)	Every Tuesday, 7th and 8th periods (details of the schedule to be discussed)		
Course Outline/ Course Objectives (授業の概要・到達目標)			
<p>Course Objectives: For optical microscopy using visible light, this course teaches what defines resolution, numerical aperture, depth of focus, image brightness, and field of view, and teaches actual operation by observing paraffin sections. In the same way for fluorescence microscopy, the characteristics of fluorescent materials and the principle of obtaining images will be explained.</p> <p>For an electron microscope that uses an electron beam instead of visible light, the principles of transmission electron microscopy and scanning electron microscopy will be explained, and students will learn how to operate such microscopes by observing actual specimens.</p> <p>Course Goals: The goals of this course are to teach the principles and characteristics of optical microscopy, fluorescence microscopy, and electron microscopy, and to teach students how to operate such microscopes.</p>			
Course Planning (授業計画)			
	Course Outline/ Course Objectives (授業の概要及び到達目標) (Contents of Class) (授業内容)	Instructor (担当教員名)	Department (講座名) Class Room [実施場所]
1	Principles and uses of optical microscopy	Yasukazu Hozumi Kiwamu Yoshikawa	Cell Biology and Morphology [Lecture: Zoom, Web Class Practice: Basic Research Building 3F, Cell Biology Seminar Room]
2			
3			
4	Principles and uses of fluorescence microscopy	Tomonori Ayukawa	
5			
6	Principles of electron microscopy and specimen preparation 1	Akiteru Goto	Cellular and Organ Pathology [Molecular Medicine Laboratory, Electron Microscope Lab.]
7			
8	Principles of electron microscopy and specimen observation 1	Akiteru Goto	
9			
10			
Grading Criteria (成績評価の基準と方法)			
This course consists of 30 hours of practice in the seminar room (laboratory) and 15 hours of self-study, for a total of 45 hours. Evaluation is based on attendance and attitude during the classes, the results of oral examinations, and the content of submitted reports.			
Contact Information (問い合わせ先(氏名, メールアドレス等))			
Name: Akiteru Goto / E-mail: akigoto@med.akita-u.ac.jp			
Comment (その他特記事項)			
<p>Information on enrollment: If you are a working graduate student and cannot attend the practice due to work or other reasons, we will adjust the schedule.</p> <p>Textbooks and reference materials: Materials will be distributed as necessary.</p> <p>Content of study during self-study time: It is desirable to conduct preparatory study according to the course objectives and lecture contents.</p>			