

SCBM 375: Microscopy and Bioimaging 2 (1-2-3) credits

Semester 2, Academic Year 2022; Lecture room: P-401 ; Lab: B109/1, AN1-110, MDL-2, B-200

ALL MONDAY 2023

Date '2023	Time	Topic	Instructor
Jan 9	13.00-14.00	-Course orientation-	Worawit Worawit Morakot
	14.00-15.00	Lecture 1: Light microscopy (LM): Basic principle of LM and image formation	
	15.00-16.00	Lecture 2: Properties of light and parts of light microscope Lecture 3: Dark field microscopy, phase contrast microscopy and differential interference contrast (DIC) microscopy	
Jan 16	13.00-14.00	Lecture 4: Preparation technique for light microscopy: Paraffin technique and frozen tissue preparation	Morakot Morakot
	14.00-15.00	Lecture 5: Preparation technique for light microscopy: General staining and special staining	
Jan 23	13.00-15.00	Lab 1: Paraffin technique 1 – Tissue selection, auto processing, and embedding (B109/1 ; partial hand-on session)	Thanapong Worawit Rapeepun Morakot
	15.00-17.00	Lab 2: Paraffin technique 2 – Tissue sectioning and mounting (AN1-110 ; partial hand-on session)	
Jan 30	13.00-15.00	Lab 3: General staining - H&E (MDL-2 ; hand-on session)	Thanapong Worawit Rapeepun Morakot
	15.00-17.00	Lab 4: Digital imaging of the H&E-stained specimens (MDL-2 ; hand-on session)	
Feb 6	13.00-14.00	Lecture 6: Fluorescence microscopy (epifluorescence/inverted fluorescence)	Thanapong Thanapong
	14.00-15.00	Lecture 7: Confocal laser microscopy	
Feb 13	13.00-14.00	Lecture 8: Immunohistochemistry: Immunoperoxidase and immunofluorescence techniques	Thanapong Krai
	14.00-15.00	Lecture 9: <i>In situ</i> hybridization technique	
Feb 20	13.00-15.00	Lab 5: Immunoperoxidase technique – part 1 (MDL-2 ; hand-on session)	Thanapong Worawit Rapeepun Krai
	15.00-17.00	Lab 6: Immunoperoxidase technique – part 2 (MDL-2 ; hand-on session)	
Feb 27	13.00-15.00	Lab 7: Immunofluorescence technique – part 1 (MDL-2 ; hand-on session)	Thanapong Worawit Rapeepun Krai
	15.00-17.00	Lab 8: Immunofluorescence technique – part 2 (MDL-2 ; hand-on session)	
Mar 13	13.00-15.00	Lab 9: Digital imaging of immunoperoxidase-stained specimen (MDL-2 ; hand-on session)	Thanapong Worawit Rapeepun Krai Wattanapong
	15.00-17.00	Lab 10: Digital imaging of the immunofluorescence-stained specimen (B-200 ; hand-on session)	
Mar 20	13.00-14.00	Lecture 10: Principle of transmission electron microscopy (TEM)	Worawit Worawit
	14.00-15.00	Lecture 11: Preparation technique for TEM	
Mar 27	13.00-14.00	Lecture 12: Principle of scanning electron microscopy (SEM)	Worawit Worawit
	14.00-15.00	Lecture 13: Preparation technique for SEM	
Apr 3	13.00-14.00	Lecture 14: Image analysis of electron microscopy	Puey Puey
	14.00-15.00	Lecture 15: Image processing for scientific publication (ImageJ)	
Apr 10	13.00-15.00	Lab 11: TEM specimen preparation (B-200 ; partial hand-on session)	Worawit Puey Wattanapong Jirawadee
	15.00-17.00	Lab 12: SEM specimen preparation (B-200 ; hand-on session)	
Apr 24	13.00-15.00	Lab 13: Basic operation of TEM (B-200 ; demonstration)	Worawit Puey Wattanapong Jirawadee
	15.00-17.00	Lab 14: Basic operation of SEM (B-200 ; hand-on session)	
May 1	13.00-15.00	Lab 15: Conference: Instrument & preparation techniques (Group presentation & discussion)	Thanapong Worawit Rapeepun Morakot
May 8	13.00-16.00	Examination	
May 8	12.00	Submission Due for Individual Lab's Report	

Course instructors	Email
Asst.Prof. Dr. Worawit Suphamungmee*	worawit.sup@mahidol.edu
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*Course coordinator: Office B118, Department of Anatomy, Faculty of Science

Course evaluation:

Examination	50%
Individual lab's report	25%
Lab presentation	20%
Class attendant	5%

Scientific staff: Anatomy

Apisit Tangla (AN)

Invited staff: Center for nanoimaging

Wattanapong Pinyo & Jirawadee Thanatnit (B-200)