

ANAT 542. Syllabus. Winter 2024

Lecture Time: 1:35 – 2:25 pm (Monday and Wednesday).

Lab Time: 14:30 – 17:30 (Monday).

Room for lectures: SAD M-48

Lab location: FEMR and room W315F SAD building. For all in-person labs meet your TA at 14:30 on the date indicated below at the Strathcona Building room W315F. For the first lab - meet at Strathcona Building level B, University Avenue entrance

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Lecture Schedule

Date	Lecture Title	Lecturer
Mon, Jan 8	Introduction to EM I	JO + NZ
Wed, Jan 10	Introduction to EM II	JO
Mon, Jan 15	The electron microscope I	JO
Wed, Jan 17	The electron microscope II	JO
Mon, Jan 22	Theory of image formation in EM	JO
Wed, Jan 24	Classical EM sample preparation for cell ultrastructure	HB
Mon, Jan 29	Sample preparation for macromolecules: Negative stain and cryo-EM	NZ
Wed, Jan 31	Localizing proteins in TEM	NZ
Mon, Feb 5	Correlative Light and Electron Microscope	HB
Wed, Feb 7	Tomography I	HB
Mon, Feb 12	Tomography II	HB
Wed, Feb 14	Image Processing Basics	NZ

Mon, Feb 19	Fourier Transform I	JO
Wed, Feb 21	Fourier Transform II	JO
Mon, Feb 26	Single Particle Analysis. Introduction	NZ
Wed, Feb 28	Single Particle Analysis. Image processing I	NZ
March 4-8	2020 SPRING BREAK WEEK	
Mon, Mar 11	Single Particle Analysis. Image processing II	NZ
Wed, Mar 13	Single Particle Analysis. Image processing III	NZ
Mon, Mar 18	Single Particle Analysis. Recent advances	NZ
Wed, Mar 20	Symmetry	HB
Mon, Mar 25	Tomography processing and subtomogram Averaging	HB
Wed, Mar 27	Data acquisition in tomography applications	HB
Mon, Apr 1	Easter Monday – no class	
Wed, Apr 3	Volumetric EM	NR
Mon, Apr 8	Deep learning for segmentation for volumetric EM	NR
Wed, Apr 10	Other structural Biology Methods	NZ
Thur, Apr 11	Cryo-EM and drug discovery	NZ
Apr 15 - 30	Final Exam Period	

Lab schedule

Date	Lab Title	TA
Mon, Jan 8	NO LAB	
Mon, Jan 15	FEMR Tour + presentations guidelines	DA/AU
Mon, Jan 22	Negative staining and TEM acquisition with Spirit	DA/AU
Mon, Jan 29	Cryo-EM prep + Loading in Tecnai F20	DA/AU
Mon, Feb 5	Embedding & Ultramicrotomy/ Paper Presentation (From TA selection)	DA/AU
Mon, Feb 12	Embedding & Ultramicrotomy/ Paper Presentation (From TA selection)	DA/AU
Mon, Feb 19	Basic Image Processing	DA/AU
Mon, Feb 26	Single Particle Analysis I	DA/AU
March 4-8	2020 SPRING BREAK WEEK	

Mon, Mar 11	Single Particle Analysis II	DA/AU
Mon, Mar 18	Single Particle Analysis III	DA/AU
Mon, Mar 25	Visualization with Chimera	DA/AU
Mon, Apr 1	Easter Monday – no lab	
Mon, Apr 8	Tomography Reconstruction	DA/AU
Thur, Apr 11	Paper Presentation (Student pick) and Image processing troubleshooting, if needed.	DA/AU

General Information

- Attendance to all classes and all the labs is **mandatory**.
- Any absence to the labs and/or delays in submitting lab reports must be justified. Any grade challenge must be made using the following guidelines: https://www.mcgill.ca/study/2015-2016/university_regulations_and_resources/undergraduate/gi_final_examinations#booknode-46666

Assignments and Evaluation

- Labs 35% (25% Attendance and participation; 10% quiz).
- Article presentation 25% (20% presentation; 5% participation).
- Final 35% (Comprehension questions).
- Lectures 3% (Attendance, participation, quizzes).
- Course evaluation 2% (Fill out the survey)

Course Materials

- MRC Electron Microscopy Course 2017. <https://www.youtube.com/watch?v=aHhmxD6RCI&list=PLQbPquAyEw4etKtxyqcvZz4uELPeLDLeF>
- Getting started with cryo-EM. Grant Jensen. Caltech. <https://cryo-em-course.caltech.edu>
- Additional readings provided during the lectures and practicals.

Department of Anatomy & Cell Biology

General Policies

Language of Submission

“In accord with McGill University’s [Charter of Student Rights](#), students in this course have the right to submit in English or in French any written work that is to be graded. This does not apply to courses in which acquiring proficiency in a language is one of the objectives.”
(Approved by Senate on 21 January 2009)

« Conformément à [la Charte des droits de l’étudiant](#) de l’Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté, sauf dans le cas des cours dont l’un des objets est la maîtrise d’une langue. »

Academic Integrity

“McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the [Code of Student Conduct and Disciplinary Procedures](#).” (Approved by Senate on 29 January 2003) (See McGill’s [guide to academic honesty](#) for more information.)

« L’université McGill attache une haute importance à l’honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l’on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l’étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le [guide pour l’honnêteté académique de McGill](#)). »

Departmental Grading Policy

The Department of Anatomy & Cell Biology will **NOT** revise/upgrade marks except on sound academic grounds. Once computed, the marks in this course will **NOT** be altered/increased arbitrarily. Decimal points will be “rounded off” as follows: if the final aggregate mark is computed to be 79.5%, the mark will be reported as 80% (an A-); a final aggregate mark of 79.4% will be reported as 79% (a B+). These marks are **FINAL and non-negotiable**.

University Policy on Reassessments and Rereads

Please see the eCalendar for policies regarding reassessments of coursework and rereads of final exams:

www.mcgill.ca/study/university_regulations_and_resources/undergraduate/gi_final_examinations

This syllabus is an important document and should be saved for future reference. It may be needed for credit transfer, employment, certification, or licensing purposes.