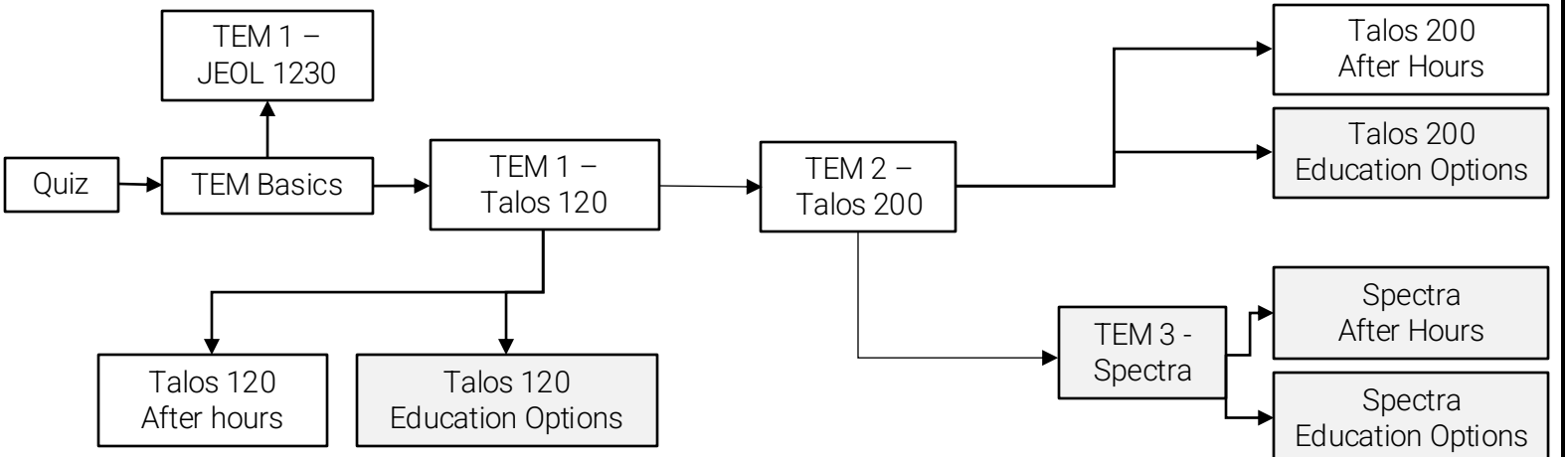
CCEM TEM Training Overview

CCEM strives to be Canada's leader in comprehensive, accessible training in cutting edge microscopy. We recognizes the rapidly evolving landscape of microscopy and are dedicated to offering a comprehensive educational experience in the latest techniques. However, the heart of this training remains our students. Our design is aimed at ensuring maximum accessibility, placing students at the epicenter of our efforts, empowering them to harness the full potential of TEM technology and contribute significantly to its future advancements.

TEM Training Workflow: White boxes are available options; grey boxes are coming soon!*



*Training is available for the designated grey box modules; however, standard pricing and methodologies will apply.

Introductory TEM Quiz	
Description:	Tests basic EM theory based on suggested reading and learning material.
Prerequisite:	Approved access to CCEM (incl. WHMIS 2015)
Completion Requirement:	Grade of ≥80%
Permissions:	None

Module: TEM Basics	
Description:	Introduction to TEM capabilities and basic alignments.
Prerequisite:	Completion of Introductory TEM Quiz
Completion Requirement:	1 in-person training session with staff
Permissions:	None

Module: TEM 1 – Talos 120	
Description:	Basic TEM training for TEM imaging.
Prerequisite:	Completion of TEM Basics Module
Completion Requirement:	3 in-person training and hands-on skills test
Permissions:	Unsupervised Daytime Talos 120 Booking

Module: TEM 1 – JEOL 1230 (FHS)	
Description:	Enhanced training for TEM and STEM imaging for biomaterials.
Prerequisite:	Completion of TEM Basics Module
Completion Requirement:	2 in-person training and hands-on skills test
Permissions:	Unsupervised Daytime JEOL 1230 Booking

Module: TEM 2 – Talos 200 & EDS	
Description:	Enhanced training for TEM and STEM imaging with EDS.
Prerequisite:	Completion of TEM 1 – Talos 120 with 6 hours of independent logged time
Completion Requirement:	3 in-person training and hands-on skills test
Permissions:	Unsupervised Daytime Talos 200 Booking

Module: TEM 3 - Spectra	
Description:	Transitioning skills from LB to Spectra and learning to use the image & probe correctors.
Prerequisite:	Completion of TEM 2 with 3 hours of independent logged time
Completion Requirement:	3 in-person training and hands-on skills test
Permissions:	Unsupervised Daytime Spectra Booking

Module: After Hours	
Description:	Enhanced troubleshooting and safety procedures for working after hours.
Prerequisite:	Respective instrument module completion and 10 Daytime logged hours on that instrument
Completion Requirement:	1 in-person training session
Permissions:	Unsupervised After Hours Booking

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CCEM
Canadian Centre for Electron Microscopy

Pricing

The pricing for ETM is structured at a reduced rate, ranging between 50% to 70% off the standard hourly rates. This adjustment is in line with our commitment to promote easier access and facilitate student education. As more modules become available this table will be updated.

	Module	Re-test	Missed Session	After hours	EDS	EELS	In-situ	Diff.	Mono	Image Cor.
TEM Basics	230		120							
TEM 1 – Talos 120	400	160	65	80						
TEM 1 – JEOL 1230	205	150	50							
TEM 2 – Talos 200	915	265	215	130						
TEM 3 - Spectra										

User Expectations:

Training Session Booking Requirements:

- Bookings will not be completed until the Introductory TEM Quiz is complete
- All training sessions must be booked a maximum of one week apart to complete a module. If the training sessions go beyond one week apart the student will be expected to take an additional training session at the price listed as a "missed session".
- TEM Basics must be booked one week maximum before entering TEM 1.

Introductory TEM quiz: To ensure proficiency, users are expected to achieve a score of 80% or above. Should the initial attempt not meet this standard, a fresh quiz will be provided. We encourage continuous learning, allowing users to retake the quiz as needed until the desired grade is secured. We're here to support your journey to mastery!

Module Hands-on test: To ensure the highest standards of proficiency, students are required to achieve a perfect score on the test. Upon completion, each student will receive a detailed copy of their graded quiz for review. In the event a student doesn't meet the required standard, we offer an additional one-hour practice session followed by another test, available for the fee listed in the pricing table as "re-test". This follow-up should be scheduled within a week from the initial test date. Our commitment is to mastery; hence, if a student doesn't meet the mark on their second attempt, revisiting the entire module will be necessary to ensure thorough understanding.

Additional Instruction: A student can request additional instruction before their module hands-on test. This will be charged at the full instrument and staff rate.

Previous training from another institution: Should a student indicate prior experience with TEM training, our team, at its discretion, may offer the opportunity to advance directly to the hands-on test. To ensure readiness, students will be granted a one-hour practice session followed by an assessment for the fee listed in the pricing table as "re-test". However, in the event the test isn't successfully completed, the student will then commence their training journey with the Introductory TEM Quiz to ensure foundational knowledge is solidified. We aim to recognize existing expertise while ensuring all users meet our rigorous standards for TEM operation.

Missed session or arriving late: To maintain the efficiency of our training sessions, we kindly request users to notify the instructor before the start of the training session if they're unable to attend a scheduled session. Please be aware that missing a session without timely notice or arriving over 10 minutes late will incur a fee of a missed session. To continue with the training program, it will be essential to reschedule the missed session within the one-week period from your previous training session.

Training samples: To ensure a consistent and fair training experience for everyone, we will provide standardized samples during both training and assessment phases. This approach is designed to foster equity and uniformity throughout the learning process for all users.

Independent Instrument Permissions: If a user remains inactive for a period of six months, their booking privileges may be temporarily suspended at the discretion of CCEM staff. To regain unsupervised access to the instrument, a proficiency test with a one-hour practice session will need to be scheduled at a cost of a re-test. Please note that if one doesn't successfully complete this test, the procedure for a failed hands-on test will be followed.

Accessibility: At CCEM, we are committed to fostering an inclusive and supportive environment for all participants in our training sessions. We understand that individuals may have different needs, and we are dedicated to working with students to provide accommodations that empower them to succeed. If you require alternative formats or communication supports, experience any accessibility-related barriers, or require accommodations, please contact the Manager of Education, Governance, and Outreach, Samantha Stambula, at stambusm@mcmaster.ca. We will collaborate with you to ensure your experience is accessible, comfortable, and conducive to learning. Your success is important to us, and we are here to help you achieve your goals.