

MASTER OF APPLIED SCIENCE ANATOMICAL SCIENCES EDUCATION

Overview

The Masters of Applied Science in Anatomical Sciences Education to be offered by the Department of Innovation in Medical Education (DIME) is a 20 month research paper-based program. This program focuses on anatomy education and modern medical education principles, aligning with the strengths unique to this Department. DIME is the home of a modern human anatomy laboratory (a unique resource essential to offering this program) and possesses the required expertise to teach in this laboratory course-intensive program and to supervise students in education scholarship projects. This program will be a unique program in Canada in which learners will develop clinically relevant anatomy knowledge, teaching skills and anatomy education scholarship during their first year and will then benefit from immediate, hands-on application of this acquired knowledge in their second year. In year two, students will serve as anatomy teachers in the Faculty's Medical Program and conduct their own education scholarship projects. This program will focus on student centered learning and teaching strategies (especially in the anatomy laboratories) that will provide a transformative and innovative educational experience consistent with current best practices. Finally, this program will be the first of its kind to offer anatomy instruction and laboratory training in both French and English.

Summary

- Degree offered: Master of Applied Science in Anatomical Sciences Education (ASE)
- Registration status option: Full-time
- Language of instruction: English or French
- Expected duration of the program: 5 terms; 20 consecutive months
- Academic units: Faculty of Medicine (<https://med.uottawa.ca/en/>), Graduate and Postdoctoral Studies Office (Grad.med@uottawa.ca).

Program Description

The ASE program is a research paper-based Masters of Applied Science degree that will be completed full-time over 5 consecutive terms (20 months). In the first year of the program, students will develop their knowledge in the anatomical sciences, with an emphasis on student-centered, hands-on learning in the context of a cadaveric dissection laboratory. Concurrently, students will also be trained in the best practices in pedagogy and in education scholarship.

In the second year of the program, the emphasis will be placed on the application of these valuable skills. Students will apply the anatomical knowledge and pedagogical expertise gained in the first year of the program by serving as educators supporting the entire anatomy component of the medical program. These teaching roles will include serving as teachers, small group facilitators and demonstrators in curricular anatomy sessions and in extracurricular dissection laboratory sessions. Students will also apply their training in education scholarship in a project focused on anatomy education research or innovation that will culminate in peer-reviewed dissemination. For example, students will be given the support necessary to present their work at an established health profession education conference.

Candidates who have established a level of previous training comparable to the program's first year of anatomical sciences courses can be considered, with the approval of the Program Director and with consultation from the Admissions committee, to enter into a 1 year version of the program emphasizing the applied teaching and research components.

The ASE program leverages established strengths within the Division of Clinical and Functional Anatomy and the Department of Innovation in Medical Education (DIME), which feature internationally known leaders, scholars, and innovators in anatomy education teaching and scholarship and health sciences education research and innovation.

Program Goals

The Masters of Applied Science in ASE program will produce individuals with expertise in human anatomy, cadaveric dissection, best pedagogical practices, and education scholarship. As a result, these individuals will be ideally suited and highly competitive for several career tracks, including pursuing further educational training opportunities. The program will therefore have three goals:

- For students who are aiming for a career in the health professions, this program will provide an excellent foundation in anatomy education that is necessary to competently treat future patients. At the same time, this expertise in the anatomical will ensure students are highly competitive in terms of pursuing further training (i.e. pursuing a degree in Medicine, Nursing, Dentistry, Physiotherapy, amongst others).
- For students who are aiming for a career in health professions education and scholarship, this program will provide students with experience, knowledge, and mentorship in education research. This program will therefore benefit students who are aiming for further training (i.e. a Ph.D. in health professions education) or for a position (i.e. contributing to an institutional, national, or private research unit) in a related research field.
- Finally, there is a long-standing and well-established lack of individuals in Canada, the United States, and Europe who are capable of teaching human anatomy (particularly in a cadaveric laboratory-based setting): <https://onlinelibrary.wiley.com/doi/abs/10.1002/ase.1895> (<https://anatomypubs.onlinelibrary.wiley.com/doi/full/10.1002/ase.1895>). As such, this program aims to prepare individuals who can excel in delivering modern human anatomy education to various groups of students in a wide range of settings and address the global shortage of competent anatomy educators.

Other Programs Offered Within the Same Discipline or in a Related Area

At the University of Ottawa the opportunity to combine training in pedagogy and education scholarship with learning human anatomy in the practical, applied hands-on environment a human cadaveric laboratory is unique to this program. However, there are other programs offered jointly through the Faculty of Education and the Faculty of Medicine that allow students to earn a concentration in Health Professions Education. These programs include:

- Graduate Diploma in Health Professions Education
- Masters of Education (MEd)
- Master of Arts in Education (MA)
- Doctorate of Philosophy in Education (PhD)

Fees and Funding

- Program fees:
 - The estimated amount for university fees (<https://www.uottawa.ca/university-fees/>) associated with this program are available under the section Finance your studies (<https://www2.uottawa.ca/study/graduate-studies/funding-financing/>).
- To learn about possibilities for financing your graduate studies, consult the Awards and financial support section (<https://med.uottawa.ca/graduate-postdoctoral/students-hub/awards-and-financial-support/>).

Notes

- Programs are governed by the general regulations (<https://www2.uottawa.ca/about-us/policies-regulations/>) in effect for graduate studies
- In accordance with the University of Ottawa regulation, students have the right to complete their assignments, examinations, research papers, and theses in French or in English.

Program Contact Information

Graduate and Postdoctoral Studies Office, Faculty of Medicine (<https://med.uottawa.ca/graduate-postdoctoral/>)

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Twitter | Faculty of Medicine (https://twitter.com/uOttawaMed/?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Eauthor)

Youtube | Faculty of Medicine (<https://www.youtube.com/c/uOttawaMed/>)

Flickr | Faculty of Medicine (<https://www.flickr.com/photos/uottawamed/>)

Admission Requirements

For the most accurate and up to date information on application deadlines, language tests and other admission requirements, please visit the specific requirements (<https://www2.uottawa.ca/study/graduate-studies/program-specific-requirements/>) webpage.

To be eligible, candidates must have:

- Honours Bachelor's degree with specialization (or equivalent) in one of the following areas: biology, biochemistry, pharmacology, physiology, human kinetics (kinesiology), biopharmaceutical, biomedical or health sciences with a minimum average of 75-79% (B+).

Preference is given to candidates who have had completed an undergraduate course in human anatomy (or equivalent). Candidates that have established a level of anatomy training comparable to the courses offered in the first year of the program, as assessed by the Program Director, can be accepted into a 1 year version of the Master's Program with a focus on applied teaching and scholarship courses. Candidates are also encouraged to document research or scholarly abilities (via research reports, abstracts, or presentations) in a Letter of Intent.

Note: International candidates must check the admission equivalencies (<https://www.uottawa.ca/graduate-studies/international/admission-equivalencies/>) for the diploma they received in their country of origin.

Language Requirements

Applicants must be able to understand and fluently speak the language of instruction (French or English) in the program to which they are applying. Proof of linguistic proficiency may be required.

Applicants whose first language is neither French nor English must provide proof of proficiency in the language of instruction.

Note: Candidates are responsible for any fees associated with the language tests.

Notes

- The admission requirements listed above are minimum requirements and do not guarantee admission to the program.
- Admissions are governed by the general regulations (<https://www2.uottawa.ca/about-us/policies-regulations/academic-regulations/>) in effect for graduate studies

Program Requirements Master's with Research Project

Compulsory Courses:

ASE 5101	Anatomy I: Anatomy of the Musculoskeletal System	3 Units
ASE 5102	Anatomy II: Anatomy of the Abdomen: Gastrointestinal, Renal and Reproductive Systems	3 Units
ASE 5103	Anatomy III: Anatomy of the Head, Neck Thorax	3 Units
ASE 5105	Applied Anatomy I	3 Units
ASE 5106	Applied Anatomy II	3 Units
ASE 5107	Histology and Embryology	3 Units
ASE 5908	Human Pathology	3 Units
ASE 5909	Applied Point-of-Care US and Anatomy Bootcamp	3 Units
EDU 5105	Inter-Professional Education in the Health Professions	3 Units
EDU 5190	Introduction to Research in Education	3 Units
EDU 5286	Technology and Health Professions Education	3 Units
MED 8166	Professionalism and Professional Skills	
Seminar		
ASE 5966	Seminar in Health Professions Education ¹	3 Units
Research Project		
ASE 7998	Education Scholarship: Research Project	6 Units

Note(s)

- ¹ Participation in ASE 5966 Seminar in Health Professions Education sessions is compulsory in both Anglophone and Francophone streams. This course is cross-listed with EDU 6101 offered by the Faculty of Education.

Minimum Requirements

Minimum passing grade of C+ in all courses.

For the Seminar in Health Professions Education course (ASE 5966) and the Education Scholarship: Research Project course (ASE 7998), a passing grade of Satisfactory is required.

Research Research Fields & Facilities

Located in the heart of Canada's capital, a few steps away from Parliament Hill, the University of Ottawa is among Canada's top 10 research universities.

uOttawa focuses research strengths and efforts in four Strategic Areas of Development in Research (SADRs):

- Canada and the World
- Health
- e-Society
- Molecular and Environmental Sciences

With cutting-edge research, our graduate students, researchers and educators strongly influence national and international priorities.

Research at the Faculty of Medicine

"The Faculty of Medicine has a long history of conducting both basic and clinical research of the highest quality. Many of our high profile research projects are conducted in partnership with affiliated-teaching hospitals and research institutes. These partnerships lead to biomedical discoveries that have a significant impact on health care. In the process they educate the next generation of Canadian scientists. Our research activity also attracts significant investment, which stimulates the Ottawa economy."

- Dr. Bernard Jasmin, Dean of the Faculty of Medicine

Facilities, Research Centres and Institutes at the Faculty of Medicine

- Centre for Neural Dynamics (<http://www.neurodynamique.uottawa.ca/>)
- University of Ottawa Centre for Neuromuscular Disease (<https://med.uottawa.ca/neuromuscular/>)
- Centre for Research in Biopharmaceuticals and Biotechnology (<http://www.med.uottawa.ca/crb/b/eng/>)
- Canadian Partnership for Stroke Recovery (<https://canadianstroke.ca/>)
- Kidney Research Centre (<http://www.ohri.ca/centres/KRC/default.asp>)
- University of Ottawa Skills and Simulation Centre (<https://uOSSC.ca/>)
- Medical Devices Innovation Institute
- Ottawa Institute of Systems Biology (<https://med.uottawa.ca/oisb/>)
- University of Ottawa Brain and Mind Research Institute (<https://www.uottawa.ca/brain/>)

For more information, refer to the list of faculty members and their research fields on Uniweb (<https://uniweb.uottawa.ca/>).

IMPORTANT: Candidates and students looking for professors to supervise their research project can also consult the website of the faculty or department (<https://www.uottawa.ca/en/faculties/>) of choice. Uniweb does not list all professors authorized to supervise research projects at the University of Ottawa.

Courses

ASE 5101 Anatomy I: Anatomy of the Musculoskeletal System (3 units)

Focus on musculoskeletal anatomy. Student-centered, hands-on learning will be emphasized, where students will develop their expertise in a practical (human anatomy laboratory) setting that includes cadaveric dissection.

Course Component: Theory and Laboratory

ASE 5102 Anatomy II: Anatomy of the Abdomen: Gastrointestinal, Renal and Reproductive Systems (3 units)

Focus on the anatomy of the gastrointestinal, renal, and reproductive systems. Student-centered, hands-on learning will be emphasized, where students will develop their expertise in a practical (human anatomy laboratory) setting that includes cadaveric dissection.

Course Component: Theory and Laboratory

ASE 5103 Anatomy III: Anatomy of the Head, Neck & Thorax (3 units)

Focus on the anatomy of the nervous, cardiovascular, and respiratory systems. Student-centered, hands-on learning will be emphasized, where students will develop their expertise in a practical (human anatomy laboratory) setting that includes cadaveric dissection.

Course Component: Theory and Laboratory

Prerequisite: ASE 5101, ASE 5102.

ASE 5104 Introduction to Teaching and Educational Scholarship (3 units)

Development of skills related to education scholarship and innovation.

Introduction to key concepts in modern, cadaveric-based anatomy education that are broadly applicable across health sciences education. These include: basic theoretical frameworks in education, applying evidence-based pedagogical approaches, facilitating student-centered learning, and employing best teaching practices in anatomy laboratory-based education, providing student feedback, developing a research question, performing a literature review, applying basic qualitative and quantitative methodology, designing anatomy education curricula, program evaluation, assessment of conceptual and practically applied (using cadaveric specimens) anatomy knowledge, developing an education scholarship program, and dissemination of educational scholarship.

Course Component: Lecture

ASE 5105 Applied Anatomy I (3 units)

Application of anatomical knowledge and pedagogical expertise developed in their first year of study by serving as teachers in classroom and laboratory settings. Emphasis on professional behaviors in teaching environment and in context of working with anatomical donors. Regions dissected will include the upper limb, lower limb, back, abdomen, and pelvis.

Course Component: Theory and Laboratory

Prerequisites: ASE 5101, ASE 5102, ASE 5103.

ASE 5106 Applied Anatomy II (3 units)

Application of anatomical knowledge and pedagogical expertise developed in their first year of study by serving as teachers in classroom and laboratory settings. Emphasis on professional behaviours in teaching environment and in context of working with anatomical donors. Regions dissected will include head, neck, and thorax.

Course Component: Theory and Laboratory

Prerequisites: ASE 5101, ASE 5102, ASE 5103.

ASE 5107 Histology and Embryology (3 units)

Focus on the histology and embryology of all major body systems. Student-centered, hands-on learning will be emphasized, where students will develop their histology expertise in a laboratory setting (microscopy). These activities will be complemented with didactic and virtually delivered histology and embryology content.

Course Component: Lecture

ASE 5108 Human Pathology (3 units)

Focus on the pathology of all major systems of the body. Student centred hands-on learning with pathological specimen cadavers and autopsy specimens will be emphasized in the laboratory setting and will be complemented by didactic content delivery.

Course Component: Lecture

ASE 5501 Anatomie I : anatomie de l'appareil locomoteur (3 crédits)

Exploration de l'anatomie de l'appareil locomoteur. Apprentissage pratique centré sur l'étudiant misant sur le perfectionnement des connaissances (dans un laboratoire d'anatomie humaine) au moyen de la dissection cadavérique.

Volet : Théorie et laboratoire

ASE 5502 Anatomie II : anatomie de l'abdomen : appareils digestif et rénal et système reproducteur (3 crédits)

Exploration de l'anatomie de l'appareil digestif, de l'appareil rénal et du système reproducteur. Apprentissage pratique centré sur l'étudiant misant sur le perfectionnement des connaissances (dans un laboratoire d'anatomie humaine) au moyen de la dissection cadavérique.

Volet : Théorie et laboratoire

ASE 5503 Anatomie III : anatomie de la tête, du cou et du thorax (3 crédits)

Exploration de l'anatomie du système nerveux, de l'appareil cardiovasculaire et de l'appareil respiratoire. Apprentissage pratique centré sur l'étudiant misant sur le perfectionnement des connaissances (dans un laboratoire d'anatomie humaine) au moyen de la dissection cadavérique.

Volet : Théorie et laboratoire

Préalables: ASE 5501, ASE 5502.

ASE 5504 Introduction à l'enseignement et à la recherche en éducation (3 crédits)

Perfectionnement des compétences en recherche et en innovation en éducation. Introduction aux fondements de l'enseignement moderne de l'anatomie cadavérique applicables dans toutes les sphères de l'enseignement des sciences de la santé, notamment : cadres théoriques fondamentaux en enseignement, application de méthodes pédagogiques éprouvées, enseignement centré sur l'apprentissage des étudiants et meilleures pratiques d'enseignement en laboratoire d'anatomie, rétroaction aux étudiants, formulation d'une question de recherche, revue de la littérature, application d'une approche méthodologique qualitative et quantitative de base, conception d'un cursus en anatomie, évaluation de programmes, évaluation des connaissances théoriques et pratiques de l'anatomie (à l'aide d'échantillons cadavériques), élaboration de programmes de recherche en éducation et dissémination de la recherche.

Volet : Théorie et laboratoire

ASE 5505 Anatomie appliquée I (3 crédits)

Application des connaissances d'anatomie et de l'expertise en pédagogie acquises en première année à titre d'enseignant en classe et en laboratoire. L'accent sera mis sur le professionnalisme dans un contexte d'enseignement et de travail avec des corps humains. Régions disséquées : membres supérieurs, membres inférieurs, dos, abdomen et pelvis.

Volet : Théorie et laboratoire

Préalable: ASE 5501, ASE 5502, ASE 5503.

ASE 5506 Anatomie appliquée II (3 crédits)

Application des connaissances d'anatomie et de l'expertise en pédagogie acquises en première année à titre d'enseignant en classe et en laboratoire. L'accent sera mis sur le professionnalisme dans un contexte d'enseignement et de travail avec des corps humains. Régions disséquées : tête, cou et thorax.

Volet : Théorie et laboratoire

Préalables: ASE 5501, ASE 5502, ASE 5503.

ASE 5507 Histologie et embryologie (3 crédits)

Porte sur l'histologie et l'embryologie de tous les principaux systèmes du corps humain. Une approche d'apprentissage pratique et centrée sur l'étudiant sera mise en avant, pour permettre aux étudiants de renforcer leur expertise en histologie dans un contexte de laboratoire (microscopie). Ces activités s'accompagneront d'un contenu d'histologie et d'embryologie dispensé de façon virtuelle.

Volet : Cours magistral

ASE 5508 Pathologie humaine (3 crédits)

Accent sur la pathologie de tous les principaux systèmes du corps. L'apprentissage pratique centré sur l'étudiant avec des cadavres de spécimens pathologiques et des spécimens d'autopsie sera souligné dans le cadre du laboratoire et sera complété par une prestation didactique de contenu.

Volet : Cours magistral

ASE 5908 Pathologie humaine / Human Pathology (3 crédits / 3 units)

Porte sur la pathologie de tous les principaux systèmes du corps humain. L'apprentissage pratique et centré sur l'étudiant au moyen d'échantillons pathologiques, de cadavres et d'échantillons d'autopsie sera mis en avant dans un contexte de laboratoire et s'accompagnera d'un contenu didactique. / Focus on the pathology of all major systems of the body. Student-centered, hands-on learning with pathologic specimens, cadavers, and autopsy specimens will be emphasized in laboratory settings, and will be complemented by didactic content delivery.

Volet / Course Component: Cours magistral / Lecture

ASE 5909 Formation d'anatomie et écho ciblée appliquées / Applied Point-of-Care US and Anatomy Bootcamp (3 crédits / 3 units)

Les étudiants synthétiseront leurs connaissances fondées sur l'anatomie cadavérique lors de séances en laboratoire autogérées. Leurs connaissances seront ensuite mobilisées lors d'activités d'échographie ciblée (PoCUS), dans le cadre desquelles les étudiants auront la possibilité d'approfondir leurs connaissances de cette technologie pratique d'imagerie clinique dans des séances en petits groupes. / Students will synthesize their cadaveric-based anatomy knowledge in self-directed laboratory sessions. This knowledge will be then employed in Point-of-Care Ultrasound (POCUS) activities, where students have the opportunity to develop their skills with this clinical imaging technology in hands-on, small group learning sessions.

Volet / Course Component: Théorie et laboratoire / Theory and Laboratory

Préalables : ASE 5501, ASE 5502, ASE 5503. / Prerequisites: ASE 5101, ASE 5102, ASE 5103.

ASE 5966 Séminaire en enseignement aux professionnels de la santé / Seminar in Health Professions Education (3 crédits / 3 units)

Exploration de la recherche en enseignement ou en innovation pédagogique fondée sur l'enseignement moderne de l'anatomie. / Critical examination of selected topics in health professions education based on research and disciplinary issues.

Volet / Course Component: Séminaire / Seminar

ASE 7998 Recherche en éducation : projet de recherche / Education Scholarship: Research Project (6 crédits / 6 units)

Exploration de la recherche en enseignement ou en innovation pédagogique fondée sur l'enseignement moderne de l'anatomie. / Focus on educational research or teaching innovation based on enhancing modern anatomy education.

Volet / Course Component: Recherche / Research

EDU 5105 Inter-Professional Education in the Health Professions (3 units)

Examination of educational research, theory and practice related to the professional interdependence of work in the health concentration; study of the impact of interdisciplinary professional principles on teaching and learning strategies, curricular design, and evaluation strategies.

Course Component: Lecture

EDU 5190 Introduction to Research in Education (3 units)

Introduces students to understanding and applying research in education: researching a topic, critical reading, overview of various types of applied research.

Course Component: Lecture

EDU 5286 Technology and Health Professions Education (3 units)

Study of the impact of computer technology on communication and instructional techniques for health professions education; exploration of distance education, on-line learning, and low and high fidelity simulation.

Course Component: Lecture

EDU 5505 Formation interprofessionnelle dans le domaine de la santé (3 crédits)

Étude des théories et pratiques reliées à l'interdépendance professionnelle du travail et de l'éducation dans le domaine de la santé. Étude de l'impact des principes interdisciplinaires et interprofessionnels sur les stratégies d'enseignement, d'apprentissage et d'évaluation ainsi que sur l'élaboration des programmes d'études.

Volet : Cours magistral

EDU 5590 Introduction à la recherche en éducation (3 crédits)

Initiation à la consultation et à l'utilisation de la recherche en éducation : documentation d'une problématique; lecture critique; initiation aux différents types de recherche appliquée.

Volet : Cours magistral

EDU 5686 Technologie en enseignement en santé (3 crédits)

Étude des enjeux théoriques et pratiques liés à l'intégration des technologies en enseignement en santé. Examen des rôles et des identités professionnelles et d'apprenants en lien avec l'intégration des TIC selon différents contextes en enseignement en santé.

Volet : Cours magistral