

Dual Degree (MD/MS) Master of Science in Applied Anatomy

Department of Anatomy, Case Western Reserve University

[Effective January 1, 2020]

Description

The dual MD/Master of Science in Applied Anatomy degree is a four-year graduate degree program that includes an independent project. It provides advanced exposure to anatomical sciences that complements the MD (WR2) curriculum and prepares physicians-in-training for specialties that rely heavily on the anatomical sciences, such as surgery, radiology, and anatomic pathology. The MS component is overseen by the Graduate Executive Committee (GEC) of the Department of Anatomy.

School of Graduate Studies Requirements:

General: Grade point average of 2.50 after two semesters or 12 hours, 2.75 after four semesters or 21 hours, and 3.00 cumulative to graduate; program of study to be completed within five years.

Plan B Master's Degree: 30 credit hours of study and a culminating experience (a comprehensive exam in the case of the MS in Applied Anatomy). At least 18 semester hours of course work must be at the 400 level or higher. Courses taken at the 300 level are only be allowed when no 400-level course is available or under unusual circumstances and must be approved in advance via a petition to Graduate Studies.

Department of Anatomy Requirements

Coursework:

Anatomical Sciences Core Curriculum:

ANAT 411	Human Gross Anatomy/lab (6 cr.)	Spring semester
ANAT 412	Histology and Ultrastructure/lab (4 cr.)	Fall semester
ANAT 414	Neurological Anatomy/lab (4 cr.)	Fall semester
ANAT 491	Embryology (3 cr.)	Fall semester

Surgical Anatomy (one of the following):

ANAT 515	Orthopedics (4 cr.)	Block 4 (~October)
ANAT 516	Head and Neck (4 cr.)	Block 11 (April)

Other:

ANAT 499	Independent Study (3 cr.)	Flexible
----------	---------------------------	----------

TOTAL required Anatomy coursework: 24 credit hours

The Anatomical Sciences Core Curriculum (ASCC) consists of four courses totaling 17 credit hours. A student must earn a grade of "B or better" in each ASCC course. Should this grade not be achieved, the student may repeat the course once to earn a "B or better" grade. A student may not repeat an ASCC course more than once; a second unsatisfactory performance makes the student ineligible for the MS in Applied Anatomy degree. (Note that credits of a repeated course do not contribute to the 30-credit-hour minimum but are included in the total credit count and GPA calculation.)

The surgical anatomy courses each take place during a four-week rotation block and are typically taken during a medical student's fourth (final) year. Taking one surgical anatomy course is required; if both are taken, the second will count as an elective.

Three credits of ANAT 499 associated with an independent project (described below) are required for MD/MS students.

Elective coursework must be approved by the GEC. A list of pre-approved electives can be found on [this page](#) of the Anatomy web site.

Independent Project

MD students pursuing a joint MD/MS degree are exempt from the research block required of other MD students. In lieu of this, MD/MS in Applied Anatomy students must register for three hours of ANAT 499 (Independent Study) and undertake an independent scholarly project supervised by an Anatomy faculty member. The main steps in this process include:

- Explore potential projects and research mentors
- Finalize project and mentor
- Register for ANAT 499 and collect data
- Analyze data and draft thesis
- Submit final thesis

A student should consider how the above steps might best fit into their overall plan of study and create a schedule to ensure timely completion of the project. For example, if data collection is targeted for the summer between the first and second years, the project and mentor should be finalized during spring semester of Year 1. If data collection will take place during the spring semester of Year 2, the advisor and project should be finalized during the fall of Year 1. The final thesis may be submitted any time before Jan. 15th of Year 4.

The independent project must focus on an area of the anatomical sciences, but significant latitude is permitted in the specific project. For example, a project could focus on pedagogy and involve developing new resources for teaching anatomical sciences and/or evaluating particular approaches currently used in teaching. Another option might be describing anatomical variation in a particular structure in a large sample of cadavers or analyzing data collected from the Hamann-Todd Human Osteological Collection at the Cleveland Museum of Natural History. Anatomy faculty can help determine potential research topics within a general area.

Master of Science Comprehensive Examination

All joint degree (MD/MS) students must complete a comprehensive examination (MS Comp Exam) for the MS in Applied Anatomy degree. A student becomes eligible to take the MS Comp Exam following successful completion of all required ASCC courses (i.e., by earning a grade of "B or better"). It is not required that a student complete all elective coursework before taking the MS Comp Exam.

The MS Comp Exam is computer-based and consists of four multiple-choice subject exams. Each exam consists of 45 questions covering one of the four ASCC subjects. A student must achieve a combined (average) score of 60% or better on this exam to pass the MS Comp Exam. A student who does not meet the 60% threshold will be allowed one retake of the original (entire) exam. A score of 65% or better is required

to pass this 'retake' exam. A second unsatisfactory performance represents failure of the MS Comp Exam, making the student ineligible for the MS in Applied Anatomy degree.

Program of Study

The Office of Graduate Studies requires that a Program of Study be prepared by the student and faculty advisor upon matriculation. This plan must be submitted via the Student Information System (SIS) for approval by the student's academic advisor. The Program of Study may be amended at any time until graduation by submitting an amended plan following the same process. Visit [this page](#) for details.

Leave of Absence

Students are expected to pursue their studies according to a systematic plan coordinated through their academic advisor. Students must maintain continuous registration unless a Leave of Absence (LoA) is requested and granted. Failure to register will trigger separation from the program. A 24-month registration lapse requires reapplication to program.

A Leave of Absence must be requested in writing by submitting the LoA request form to the department, and subsequently to the Dean of Graduate Studies, for approval. A LoA is granted only when circumstances prevent continuation of studies. It is not to exceed two consecutive semesters, has a four-semester maximum, and does not extend implicitly the time (5 year) limitation for completion of the degree requirements. During a LoA the student must not utilize university resources, which includes not seeking aid from faculty, taking exams, or defending theses. A LoA may affect an international student's visa status.

Students must be enrolled in order to graduate. Note: The student (rather than department) must submit the Application to Graduate form through SIS.

Academic Probation and Program Separation

A student must maintain minimum academic requirements and continuous progress to remain in the Applied Anatomy program. The GECO reviews the academic performance and progress of students after the fall and spring semesters. In situations of academic probation and/or lack of progress, a student may be separated from the program.

Possible bases for separation include:

- insufficient grade point average
- earning a 'C' grade in two ASCC courses
- failure to make continuous academic progress
- failure to pass the MS Comp Exam
- failure to complete and defend the MS thesis

Transfer of Credit

The CWRU School of Graduate Studies has established guidelines for giving credit for previous experience and knowledge obtained from formal education programs. Transfer of graduate credit from another university toward the master's degree

requirements is limited to six semester hours of graduate-level, biomedical courses taken in excess of degree requirements at that university. No credit for thesis research may be transferred from another university. Transfer of credit is subject to approval by the GECo and by the Office of Graduate Studies. Transfer of credit cannot be used for the required ASCC courses.

The Graduate School distinguishes between a professional degree and a university degree. Courses taken for a professional degree, such as the MD or DDS, do not qualify for credit toward a university degree, such as MS or PhD. Biomedical graduate courses taken by professional students that were beyond the requirements for their professional degree can be considered for transfer of credit. Exceptions to these guidelines exist, provided approval is obtained from the GECo and the Office of Graduate Studies.

Advisor

The Director of the MS in Applied Anatomy program serves as the academic advisor for students in the joint MD/MS program. This faculty member will assist the student in academic matters for the duration of the student's tenure as a MS in Applied Anatomy student.

Graduate Executive Committee

The Graduate Executive Committee (GECo) of the Department of Anatomy is composed of the course directors of the Anatomical Sciences Core Curriculum (ASCC). It is the responsibility of the GECo to oversee all academic matters involving graduate students in the department seeking the Master of Science degree. The committee:

- serves as the Admissions Committee for the department and, as such, makes recommendations to the CWRU School of Graduate Studies;
- acts as the Curriculum Committee for the Department;
- defines the requirements for earning the MS in Applied Anatomy degree;
- serves as or appoints faculty serving on MS Comprehensive Examination committees;
- should be consulted whenever a question concerning departmental requirements for graduate students arises; and
- tracks the academic progress of each student/candidate; in situations of academic probation and/or lack of progress, determines a student's continuance or separation from the Applied Anatomy program.