

# CLINICAL SCIENCE (MS)

## Overview

This program provides learning in new fields and acquisition of skills in clinical research to prepare clinicians for careers in clinical and translational sciences. Didactic course work and a mentored research project aimed to provide a strong foundation in:

- computational and statistical tools
- clinical epidemiology
- clinical research study design
- health services and outcomes research
- biomedical ethics

**Please visit the MSCS website for the most current admission information:** <https://cctsi.cuanschutz.edu/training/clsc#masters> (<https://cctsi.cuanschutz.edu/training/clsc/#masters>)

Qualified clinicians who have already earned either a professional doctoral degree (e.g., MD, DO, DDS, PharmD) or a clinically-related bachelor's or master's degree (e.g., nursing, pharmacy, physical therapy) are eligible to apply to this program.

### Application Deadlines

- **February 1st** to be considered for admission in following summer or fall semesters
- **May 1st** for following fall semester
- **October 1st** for following spring semester

### Minimum Criteria for Admission

- An undergraduate GPA of at least 3.0 (on a 4.0 scale).
- An acceptable and verifiable GRE, MCAT or PCAT score. This requirement can be waived by an earned MS/MPH or PhD from an accredited US School
- Clinically related bachelor's, master's or professional doctoral degree. Individuals without a clinically related degree but with an exceptional background and relevant clinical research experience are encouraged to contact Dr. Lisa Cicutto ([Lisa.Cicutto@cuanschutz.edu](mailto:Lisa.Cicutto@cuanschutz.edu)) to discuss their interest further.

### International Applicant Additional Admission Criteria

In addition to the general admission requirements listed above, international applicants must meet additional requirements dictated by the University. For additional information about these requirements, please review the International Student Requirements for Graduate School admissions. (<https://www.ucdenver.edu/academics/InternationalPrograms/OIA/admissions/apply/application/graduate/Pages/default.aspx>)

Please note that the Clinical Science Program does not provide stipends to assist with tuition and/or room and board expenses. In addition we currently do not have any research or teaching assistantships to support the educational costs of international students.

## Degree Requirements

- a minimum of 30 credit hours, of which no less than 4 and no more than 6 must be thesis/research hours
- defense/final exam of a thesis or publishable paper

- students have 8-11 elective credit hours to allow for tailoring of coursework

Code	Title	Hours
BIOS 6601	Applied Biostatistics I	3
BIOS 6602	Applied Biostatistics II	3
<i>Choose 1 of the following:</i>		
BIOS 6648	Design and Conduct of Clinical Research	
EPID 6626	Research Methods in Epidemiology	
BIOS 6623	Advanced Data Analysis	
EPID 6631	Analytical Epidemiology	
CLSC 6210	Research Seminars in Clinical Science	1
CLSC 6270	Critical Appraisal Seminars in Clinical Science	1
CLSC 7101	Grant Writing I	1
CLSC 7150	Ethics and Responsible Conduct of Research	1
EPID 6630	Epidemiology	3
CLSC 6699	Masters Research Project: Publishable Paper	1-6
or CLSC 6950	Masters Research Project: Thesis	

- Core course credits: 16
- Thesis/Research credits: 4-6
- Elective course credits: 8-10
- **Total required credit hours for degree: 30**

## Learning Objectives

- Perform human research adhering to legal, ethical and regulatory principles and and guidelines
- Critically appraise existing literature and sources of information
- Apply evidence based practice principals
- Accurately select, use and interpret commonly used statistics
- Apply and use appropriate study designs and methods to address research questions/hypotheses
- Identify and measure clinically relevant and meaningful outcomes
- Design and conduct research studies
- Publish research-based manuscripts to peer-reviewed journals
- Prepare and submit grant proposals
- Provide constructive reviews and feedback to colleagues
- Demonstrate effective communication and leadership skills
- Participate in interdisciplinary collaboration

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CLSC 6210 - Research Seminars in Clinical Science (1 Credit)  
This course provides an overview of the types of clinical translational studies being conducted by senior CLSC doctoral students. The interactive seminar series structure allows for interdisciplinary scientific dialogue among students at various stages of training, mentors and faculty.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 3.

A-GRAD Restricted to graduate students only.

Typically Offered: Fall, Spring, Summer.

**CLSC 6270 - Critical Appraisal Seminars in Clinical Science (1 Credit)**

This course provides an overview of the approaches for critically appraising common study designs published in the clinical and translational sciences literature, as well as other sources of information.

Grading Basis: Letter Grade

A-GRAD Restricted to graduate students only.

Typically Offered: Fall.

**CLSC 7101 - Grant Writing I (1 Credit)**

The purpose of this course is to develop and improve your skills in writing successful grant applications and participating in the critique and review process of grants. Prerequisites: BIOS 6601 and EPID 6630. Course

Restrictions: CLSC students, unless written approval of Course Director.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

A-GRAD Restricted to graduate students only.

Typically Offered: Spring.

**CLSC 7150 - Ethics and Responsible Conduct of Research (1 Credit)**

Course provides overview of the field of ethics in clinical research. Topics include historical background, current regulations, IRB requirements on human subjects protection issues. Students will learn how to develop approaches to conduct ethical human subjects research in an optimal manner.

Grading Basis: Letter Grade

A-GRAD Restricted to graduate students only.

Typically Offered: Fall, Spring, Summer.

**CLSC 6699 - Masters Research Project: Publishable Paper (1-6 Credits)**

During course students working with his/her research mentor and research project committee to plan, execute, write Final Research Project in form of a publishable paper. In addition, students prepare for Final Research Project Examination. This is a capstone course. Prerequisite:

Consent of program. BIOS 6601 and BIOS 6602 or BIOS 6611 and BIOS 6612, CLSC 7150, EPID 6630.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

A-GRAD Restricted to graduate students only.

Additional Information: Report as Full Time.

Typically Offered: Fall, Spring, Summer.

**CLSC 6950 - Masters Research Project: Thesis (1-6 Credits)**

During this course students plan, execute, and write the Final Research Project in the form of a Masters thesis. In addition, students will prepare for the Final Research Project Examination. This is a capstone course.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

A-GRAD Restricted to graduate students only.

Additional Information: Report as Full Time.

Typically Offered: Fall, Spring, Summer.

Please refer to the Graduate School Policies page (<http://catalog.ucdenver.edu/cu-anschutz/schools-colleges-programs/graduate-school/#policiestext>).

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