

# CLINICAL SCIENCE (PHD)

## Overview

The Clinical Science PhD program is designed for qualified individuals who have already earned a health care graduate or professional degree (i.e., physicians, MSPH graduates, biostatisticians, epidemiologists, nurses, pharmacists, and dentists) or a graduate degree related to health sciences.

The overall goal of CLSC doctoral training program is to prepare nationally competitive clinician/clinical scientists who are able to translate across the discovery-community continuum. Students in our program are highly motivated and bright individuals who seek additional rigorous training to become leaders in their field and make significant contributions to improving the health of citizens.

Please visit the CLSC PhD website for current admission information: <https://cctsi.cuanschutz.edu/training/clsc#phd> (<https://cctsi.cuanschutz.edu/training/clsc/#phd>)

## Admissions Requirements

All completed application materials for the PhD Program must be submitted by February 1st of each year to be considered for admission. There is only one application submission and review process per year. CLSC accepted applicants may start in the summer or fall term. Specific course offerings can be previewed at our Course Books and Schedules section of this page under Resources.

### Minimum Criteria for Admission

Meeting the criteria does not guarantee admission.

- An undergraduate GPA of at least 3.0 (on a 4.0 scale)
- A masters, graduate or professional doctoral degree with a GPA of at least 3.0 (on a 4.0 scale).
- A graduate degree that required course completion in study design and analytics/biostatistics.
- 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
- Previous clinical and translational research experience that involved working in clinical settings and/or with clinicians. Those without this clinical translational experience are encouraged to contact Dr. Lisa Cicutto to discuss the appropriateness and fit of the program.

You are encouraged to speak with CLSC staff and/or faculty before applying to the program.

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.

### 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 (<https://www.ucdenver.edu/academics/InternationalPrograms/OIA/admissions/>)

[apply/application/graduate/Pages/default.aspx](https://cctsi.cuanschutz.edu/training/clsc#phd)) for Graduate School admissions.

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## Degree Requirements

### Clinical Investigation Track

Code	Title	Hours
BIOS 6601	Applied Biostatistics I	3
BIOS 6602	Applied Biostatistics II	3
<i>Choose 1 from the following:</i>		
BIOS 6648	Design and Conduct of Clinical Research	
EPID 6626	Research Methods in Epidemiology	
BIOS 6623	Advanced Data Analysis	
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
or CLSC 7152	Ethics and Responsible Conduct of Research in the Digital Age	
CLSC 7202	Clinical Outcomes and Applications	2
CLSC 7300	Scientific Grant Review Process: CCTSI Proposals	1
EPID 6630	Epidemiology	3
EPID 6631	Analytical Epidemiology	3
CLSC 8990	Doctoral Thesis	1-10

- 22 Required Clinical Investigation Course Credits
- 8 Elective Course Credits
- **Total required course hours for degree: 30**

### Health Information Technology Track

Code	Title	Hours
BIOS 6601	Applied Biostatistics I	3
BIOS 6602	Applied Biostatistics II	3
<i>Choose 1 from 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
HLTH 6071	Introduction To Health Information Technology	3
or NURS 6286	Foundations Informatics	
NURS 6290	Information Systems Life Cycle	4
CLSC 7101	Grant Writing I	1
CLSC 7150	Ethics and Responsible Conduct of Research	1
or CLSC 7152	Ethics and Responsible Conduct of Research in the Digital Age	
CLSC 7202	Clinical Outcomes and Applications	2
EPID 6630	Epidemiology	3
NURS 6293	Database Mgmt Systems	3

or ISMG 6080 Database Management Systems	
CLSC 8990	Doctoral Thesis 1-10

- 28 required Health Information Technology course credits
- 2 elective course credits
- **Total required course hours for degree: 30**

## Learning Objectives

- Adhere to legal, ethical, and regulatory principles related to clinical research
- 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 clinical and patient-oriented research studies
- Publish research manuscripts in 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

## Courses

Please visit the CLSC PhD website for course information: <https://cctsi.cuanschutz.edu/training/clsc#phd> (<https://cctsi.cuanschutz.edu/training/clsc/#phd>)

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 7152 - Ethics and Responsible Conduct of Research in the Digital Age (1 Credit)  
This course will provide an overview of the evolving ethical issues in clinical, translational and public health research involving digital data and technologies.  
Grading Basis: Letter Grade with IP  
Typically Offered: Spring.

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 7202 - Clinical Outcomes and Applications (2 Credits)  
The Clinical Outcomes and Applications course introduces students to key concepts and methods in health outcomes research, focusing on how to measure, analyze, and apply outcomes data in research and health policy. Through a mix of lectures, case studies, and hands-on activities, students will learn to design research questions, evaluate study designs, and explore the real-world impact of outcomes research on healthcare delivery. Prereq: BIOS 6601 and BIOS 6602 or BIOS 6611 and EPID 6630.  
Grading Basis: Letter Grade  
A-GRAD Restricted to graduate students only.  
Typically Offered: Fall.

CLSC 7300 - Scientific Grant Review Process: CCTSI Proposals (1 Credit)  
Students will understand and participate in the process of scientific review of human subject research protocols submitted to the University of Colorado Denver Clinical Translational Research Centers at University Hospital and the Children's Hospital. Prereq: BIOS 6601 BIOS 6602 or BIOS 6611 and BIOS 6612.  
Grading Basis: Letter Grade  
A-GRAD Restricted to graduate students only.  
Typically Offered: Fall, Spring.

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 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 8990 - Doctoral Thesis (1-10 Credits)  
This course involves the student working with his/her research mentor and research project committee develop, design and execute a clinical science doctoral study as well as to write up the project as a thesis. Prerequisite: Program consent. BIOS 6601 or BIOS 6611, BIOS 6602 or BIOS 6680 and HSMP 6617, CLSC 7150, EPID 6630, BIOS 6648 or EPID 6626 or HSMP 6670. Restrictions: Only CLSC PhD students or collaborative CLSC and CSPH Health Services Research Students.  
Grading Basis: Letter Grade with IP  
Repeatable. Max Credits: 99.  
A-GRAD Restricted to graduate students only.  
Additional Information: Report as Full Time.  
Typically Offered: Fall, Spring, Summer.

## Policies

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

## Contact US

Please visit the CLSC PhD website for contact information: <https://cctsi.cuanschutz.edu/training/clsc#phd> (<https://cctsi.cuanschutz.edu/training/clsc/#phd>)

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