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Welcome!

The overall goal of the University of Colorado Denver (UCD) Graduate Program in Clinical Science (CLSC) is to train nationally competitive clinician/clinical translational scientists by providing a formal, structured, and rigorous educational program in the clinical and translational sciences. The Clinical Science Graduate Program was designed in response to the demand for well-qualified clinical researchers in academia and industry. The critical need for individuals capable of conducting rigorous, credible and relevant patient-based research within stringent ethical and regulatory guidelines, and translating the evidence for community application, is expected to continue to grow.

For doctoral students, there is a selected emphasis of study in one of the following three tracks: Clinical Investigation (CI), Health Information Technology (HIT), or Health Services Research (HSR). These three specialized tracks of clinical science are important areas of study for translational research activities in the evolving health care environment. In our program, training occurs across many disciplines to achieve proficiency in the areas of clinical science, clinical investigation and translation, and includes biostatistics, clinical epidemiology, clinical studies design, ethics, and grant writing. An important compliment to the rigorous training in the CLSC program is the formal mentoring with interdisciplinary faculty working in the clinical sciences. Graduates of our program are highly qualified and well-trained clinician/clinical scientists who will be nationally competitive for grant funding and career advancement in the health sciences.

Your feedback and perspectives of the CLSC program are important. We strive to provide the best academically rigorous program while simultaneously meeting the individual needs of students and seizing opportunities to enrich the educational experience. Please feel free to contact any of the Core CLSC Faculty or CLSC Program Administrator at any time. Our contact information is below. We have an open door policy and want to hear your thoughts both good and bad. Please feel free to contact Dr. Lisa Cicotto, CLSC Director, at any time by email (cicuttol@njhealth.org) or by phone at 303-398-1538.

Purpose of Handbook

The intent of the Faculty Handbook is to provide key information and required documents to support faculty in their roles as instructor, student committee member and advisor. This Handbook is to be used in conjunction with the University of Colorado Denver Graduate School Rules, Graduate School Policies and Procedures, and the Graduate School Course Book. There are additional documents to support the activities of the CLSC Graduate Program that can be found on the CLSC website. Students are expected to be familiar with and knowledgeable of these documents. To access the Graduate School Policies and Procedures, please go to http://www.ucdenver.edu/academics/colleges/Graduate-School/current/Pages/resources.aspx, under ‘Resources and Policies’.

As a general rule, the policies in effect at the time of admission govern a student’s progression. The curriculum, course schedules, and offerings are subject to change. Courses are offered pending required minimum enrollment numbers. If curriculum changes are made, courses in the current curriculum will be offered for a specified period of time; students who decelerate or otherwise change their program plans may be asked to substitute another course for required courses being discontinued or with insufficient enrollment. All program plan changes will be discussed and approved by the student’s Academic Program Advisor.

The Handbook is organized into 5 major sections. The first section provides general information regarding the CLSC Graduate Program. The next three sections provide information according to faculty roles within the program with a section dedicated to each role – Section 2: Teaching
Faculty, *Section 3: The Student Committee, and Section 4: Academic Advising*. The fifth and final section provides frequently asked questions and lists additional resources.

**CLSC Program Information**

**General Information**

**Mission**

The mission of the Clinical Science Program is to prepare and train nationally competitive clinician/clinical translational scientists.

**Vision**

To provide a comprehensive knowledge base of translational research methods, theories, and techniques in clinical science in order to train and further prepare clinician scientists.

**Core Competencies**

To prepare students to perform state of the art translational clinical research, graduates of the Clinical Science Graduate program will:

- Perform human research that adheres to the principles and guidelines of ethical conduct
- 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 clinically and patient oriented research studies
- Adhere to legal, ethical and regulatory issues related to clinical research
- Publish research-based 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
Clinical Science Program Faculty Handbook

**Clinical Science Graduate Program Core Faculty and Staff**

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Aurora, CO 80045  
Phone: 720-848-6249  
Fax: 720-848-7381
Program Descriptions

Master of Science in Clinical Science (MSCS) Degree Program

The Master of Science in Clinical Science (MSCS) degree program provides formal training in clinical and translational sciences through theoretical and methodological coursework and the application of coursework to a research project. The requirements for the degree are the completion of a minimum of 30 credit hours, of which no less than 4 and no more than 6 must be thesis/research hours, and the completion and defense/final exam of a thesis or publishable paper. Students have 8-10 elective credit hours to allow for tailoring of coursework. It is important for students to determine their research interests early, ideally before starting the program, so that the best electives can be taken to meet students’ needs. The Academic Advisor assists the student with identifying and scheduling required coursework, and selecting committee members to serve on the Final Examination Committee. The Academic Advisor meets with the student yearly to assist in identifying areas of research, existing possibilities and collaborations, and if necessary revise, the student’s program plan of study. The Academic Advisor is one of the core CLSC Faculty members.

Clinical Science PhD Degree Program

The overall goal of CLSC doctoral training program is to prepare nationally competitive clinician/clinical scientists that are able to translate across the discovery-community continuum. Students in our program are highly motivated and bright individuals that seek additional rigorous training to become leaders in their field and make significant contributions to improving the health of citizens. The program allows specialization in one of three tracks or areas of focus: Clinical Investigation, Health Information Technology, or Health Services Research.

The PhD program consists of successful completion of: didactic coursework, a Preliminary Examination, a Comprehensive Examination, and completion and defense of a thesis dissertation. In addition to the program-wide requirement of at least 30 credit hours of thesis work, the didactic coursework component includes 26-33 credit hours of required coursework plus 2-6 credit hours of elective coursework (exact coursework requirements vary by area). See the Clinical Science PhD Program Course Curriculum in the following pages.

Tracks within the CLSC Program

Clinical Investigation (CI)

Clinical investigation is the discipline by which physicians, clinicians and other health related disciplines translate knowledge gained in the basic sciences or the laboratory setting to develop prevention and disease management interventions and strategies to improve health outcomes. It can also involve translating knowledge gained about the efficacy of successful strategies and interventions conducted in the academic clinical setting to the community setting to improve health related outcomes. The mission of the Clinical Investigation Track is to train the next generation of clinician scientists who will pursue successful careers in clinical translational research. Clinical investigation is clearly a primary mission of academic medical and health centers, and properly trained clinicians and scientists are uniquely qualified to engage in investigative and translational studies. Within the CI Track, training occurs across many disciplines:

- Clinical trial design
- Biopharmaceutics and pharmacokinetics
• Biodiagnostics
• Laboratory-based molecular biology techniques that assist in bridging basic and clinical sciences

**Competencies Specific to CI**

Specific to the CI Track, graduates of the program will:

- Apply relevant study design methods commonly used in clinical translational investigative studies
- Interpret results from common molecular and cellular biology laboratory experiments
- Develop a well-designed, successful research thesis project relevant to the clinical and translation sciences and fields

**Health Information Technology track (HIT)**

The Health Information Technology Track provides a background in clinical informatics: the study of how medical data and knowledge can be stored, analyzed, and delivered to facilitate research and to improve the quality, safety, and efficiency of care. Students will develop a fundamental understanding of the technical and organizational challenges particular to the field of health information technology and will train in evaluation and research methods. Graduates of the Health Information Technology Track will be prepared for leadership roles in developing, implementing, and evaluating clinical informatics applications in academia, industry and clinical practice. Within the HIT Track, formal training occurs in the following cross disciplines:

- Electronic health records
- Decision support
- Telehealth
- Public health informatics
- Research informatics
- Standards and data integrity
- Privacy and security

**Competencies Specific to HIT**

Specific to the HIT Track, graduates of the program will:

- Demonstrate understanding of relevant standards and terminologies for communication and representation of health data
- Demonstrate understanding of major types of clinical and administrative information systems and how they are integrated
- Demonstrate understanding of computerized provider order entry (CPOE) and clinical decision support systems (CDSS), including
  - Success factors for implementation
  - Methods of encoding rules/logic
- Ability to assess and develop methods to protect privacy (e.g. HIPAA issues) and security (confidentiality, integrity, and availability) of health information
- Design appropriate research and evaluation studies in HIT, with understanding of both experimental and quasi-experimental research designs
- Ability to apply systems life cycle approach to HIT planning, analysis, design, implementation and evaluation, including translation of user needs into functional requirement
- Apply database concepts to the design and implementation of databases for clinical, research, and public health applications
Health Services Research track (HSR), Collaborative Program with CSPH

The PhD in HSR is designed for students interested in research. Students receive training in HSR, with a set of specialized skills suitable to conducting rigorous quantitative analysis. The curriculum is designed to provide students with the methodological training to conduct applied research in health care organization, financing, and policy.

The PhD in HSR is a collaborative program with the Colorado School of Public Health. For information about the program please visit:  
[http://www.ucdenver.edu/academics/colleges/PublicHealth/Academics/departments/HealthSystems/Academics/Pages/PhDHealthServicesResearch.aspx](http://www.ucdenver.edu/academics/colleges/PublicHealth/Academics/departments/HealthSystems/Academics/Pages/PhDHealthServicesResearch.aspx)
The Clinical Science Program MSCS curriculum for students admitted during or after fall 2019

Note that course schedules may vary from term to term. To verify schedules and prerequisites for specific courses, please visit the CLSC courses and registration web page at: http://www.ucdenver.edu/research/CCTSI/education-training/clsc/Resources/Pages/Course-Books-Schedules.aspx

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<tr>
<th>Required Core Course Hours</th>
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<tbody>
<tr>
<td>BIOS 6601 or BIOS 6611 Applied Biostatistics I or Biostatistical Methods I</td>
<td>3</td>
</tr>
<tr>
<td>BIOS 6602 OR BIOS 6612 Applied Biostatistics II or Biostatistical Methods II</td>
<td>3</td>
</tr>
<tr>
<td>BIOS 6648 or EPID 6626 Design and Conduct of Clinical Trials (2 credits) or Research Methods in Epidemiology (3 credits; BIOS 6602 is a pre-requisite)</td>
<td>2-3</td>
</tr>
<tr>
<td>or BIOS 6623 or EPID 6631 Advanced Data Analysis (3 credits) or Analytical Epidemiology (3 credits)</td>
<td></td>
</tr>
<tr>
<td>CLSC 6210† Research Seminars in Clinical Science</td>
<td>1</td>
</tr>
<tr>
<td>CLSC 6270 Critical Appraisal Seminars in Clinical Science</td>
<td>1</td>
</tr>
<tr>
<td>CLSC 7101 Grant Writing I</td>
<td>1</td>
</tr>
<tr>
<td>CLSC 7150 Ethics and Responsible Conduct of Research</td>
<td>1</td>
</tr>
<tr>
<td>EPID 6630 Epidemiology</td>
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**Total Required Core Course Credits for All Students** 15-16

<table>
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<tr>
<th>Required Thesis / Research Hours</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>*CLSC 6699 or *CLSC 6950 Masters Research Project: Publishable Paper OR Masters Research Project: Thesis</td>
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**Total Thesis / Research Credits** 4-6

<table>
<thead>
<tr>
<th>Required Elective Hours</th>
<th>Credits</th>
</tr>
</thead>
</table>

**Total Elective Course Credits** 8-11

Total Required Hours for Degree = 30

† CLSC 6210 is taken over 1 year typically during the second year of your MSCS
* Must take the following prerequisite classes prior to registering for CLSC 6699 or CLSC 6950: BIOS 6601 & BIOS 6602 or BIOS 6611 & BIOS 6612, CLSC 7150, EPID 6630

A minimum of 30 credit hours are required, of which no less than 4 and no more than 6 must be thesis/research hours.
Clinical Investigation Curriculum
(students admitted during or after Fall 2019)

Note that course schedules may vary from term to term. To verify schedules and prerequisites for specific courses, please visit the CLSC courses and registration web page at: http://www.ucdenver.edu/research/CCTSI/education-training/clsc/Resources/Pages/Course-Books-Schedules.aspx

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS 6601* or 6611*</td>
<td>Applied Biostatistics I or Biostatistical Methods I</td>
<td>3</td>
</tr>
<tr>
<td>BIOS 6602* or 6612*</td>
<td>Applied Biostatistics II or Biostatistical Methods II</td>
<td>3</td>
</tr>
<tr>
<td>BIOS 6648 or EPID 6626 or BIOS 6623 or EPID 6631</td>
<td>Design and Conduct of Clinical Trials (2 credits) or Research Methods in Epidemiology (3 credits; BIOS 6602 is a prerequisite) or Advanced Data Analysis (3 credits) or Analytical Epidemiology (3 credits)</td>
<td>2-3</td>
</tr>
<tr>
<td>CLSC 6210*</td>
<td>Research Seminars in Clinical Science</td>
<td>1</td>
</tr>
<tr>
<td>CLSC 6270</td>
<td>Critical Appraisal Seminars in Clinical Science</td>
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<tr>
<td>CLSC 7101</td>
<td>Grant Writing I</td>
<td>1</td>
</tr>
<tr>
<td>CLSC 7150*</td>
<td>Ethics and Responsible Conduct of Research</td>
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<tr>
<td>CLSC 7202</td>
<td>Clinical Outcomes and Applications</td>
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<td>CLSC 7300</td>
<td>Scientific Grant Review Process: CCTSI Proposals - Doctoral</td>
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<td>EPID 6630*</td>
<td>Epidemiology</td>
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<tr>
<td>EPID 6631</td>
<td>Analytical Epidemiology</td>
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</table>

**Required Clinical Investigation Course Credits**: 22-23

**Elective Course Credits**: 8-9

**Minimum Number of Required Course Credit (Core + Electives)**: 31

* Must take the following prerequisite classes and pass the preliminary exam prior to registering for CLSC 8990:
  BIOS 6601 or BIOS 6611, BIOS 6602 or BIOS 6612, BIOS 6648 or EPID 6626, or BIOS 6623 or EPID 6631, CLSC 7150, EPID 6630

* Courses required before Preliminary Exam (biostatistics, ethics, epidemiology). In addition, a second methods class is required (EPID 6626 or EPID 6631 or BIOS 6648 or BIOS 6623 or CLSC 6270 or CLSC 7202).

*CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination).
Health Information Technology Curriculum
(students admitted during or after Fall 2019)

Note that course schedules may vary from term to term. To verify schedules and prerequisites for specific courses, please visit the CLSC courses and registration web page at: http://www.ucdenver.edu/research/CCTSI/education-training/clsc/Resources/Pages/Course-Books-Schedules.aspx

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<tr>
<td>BIOS 6602* or 6612*</td>
<td>Applied Biostatistics II or Biostatistical Methods II</td>
<td>3</td>
</tr>
<tr>
<td>BIOS 6648 or EPID 6626 or BIOS 6623 or EPID 6631</td>
<td>Design and Conduct of Clinical Trials (2 credits) or Research Methods in Epidemiology (3 credits; BIOS 6602 is a pre-requisite) or Advanced Data Analysis (3 credits) or Analytical Epidemiology (3 credits)</td>
<td>2-3</td>
</tr>
<tr>
<td>CLSC 6210†</td>
<td>Research Seminars in Clinical Science</td>
<td>1</td>
</tr>
<tr>
<td>CLSC 6270</td>
<td>Critical Appraisal Seminars in Clinical Science</td>
<td>1</td>
</tr>
<tr>
<td>CLSC 6800</td>
<td>Intro to Health Information Technology</td>
<td>3</td>
</tr>
<tr>
<td>CLSC 6820 or NURS 6289</td>
<td>Management of Health Information Technology (3 credits) or IT Systems Life Cycle (4 credits)</td>
<td>3-4</td>
</tr>
<tr>
<td>CLSC 7101</td>
<td>Grant Writing I</td>
<td>1</td>
</tr>
<tr>
<td>CLSC 7150*</td>
<td>Ethics and Responsible Conduct of Research</td>
<td>1</td>
</tr>
<tr>
<td>CLSC 7202</td>
<td>Clinical Outcomes and Applications</td>
<td>3</td>
</tr>
<tr>
<td>EPID 6630†</td>
<td>Epidemiology</td>
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</tr>
<tr>
<td>NURS 6293 or ISMG 6080</td>
<td>Database Management Systems (Informatics focus)</td>
<td>3</td>
</tr>
</tbody>
</table>

* Required Health Information Technology Course Credits 27-29

| Elective Course Credits | 2-4 |

Minimum Number of Required Course Credit (Core + Electives) 31

* Courses required before Preliminary Exam (biostatistics, ethics, epidemiology). In addition, a second methods class is required (EPID 6626 or EPID 6631 or BIOS 6648 or BIOS 6623 or CLSC 6270 or CLSC 7202).

† CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination).

* Must take the following prerequisite classes and pass the preliminary exam prior to registering for CLSC 8990: BIOS 6601 or BIOS 6611, BIOS 6602 or BIOS 6612, BIOS 6648 or EPID 6626 or BIOS 6623 or EPID 6631, CLSC 7150, EPID 6630
Teaching

This section describes important information that details a faculty member’s responsibilities for teaching and serving as course director/instructor of a course. It details the steps necessary to prepare and teach a course, as well as general Graduate School information and requirements. A checklist is provided for you at the end of this section to assist with planning and preparation. Before a graduate course can be offered to students, many steps and processes need to be completed. Below is a complete list of those steps.

- Graduate School Faculty Appointments
- Course Set-up and Course Proposal and Inventory Forms
- Planning and Submission of a Course Syllabus
- Course Scheduling
- Student Registration
- Grading
- Online Courses
- Course Evaluations
- Submission of Grades

CLSC Faculty Appointments

Graduate Faculty

A Graduate Faculty appointment is required to mentor or teach graduate students or to participate in student committees (comprehensive exam, thesis defense committees). A Graduate Faculty appointment is a privilege extended to those who have a faculty appointment at an accredited college or university and who qualify through their research, teaching and mentoring ability, and demonstrate a commitment to graduate education and students.

To obtain a graduate faculty appointment, the individual must be nominated by one of the Graduate Programs and the nomination approved by the Appointment Committee and the Graduate School Dean. A nomination letter, biographical sketch and appointment request form must be sent to the Graduate School from the CLSC Graduate Program Director. The biographical sketch and letter must provide sufficient evidence of specific academic contributions and/or skills to warrant an appointment.

There are two types of Graduate School faculty appointments: regular and special.

1. Regular appointments are generally limited to full-time faculty with the rank of Assistant Professor or above. A doctoral or terminal degree appropriate to their discipline is required. A regular appointment is required to serve as a research mentor or to chair a student exam or thesis committee.

2. Special appointments for faculty members at any level and from any accredited university or college may be requested. Faculty with a special appointment may serve on – but not chair – student committees.
**Program Faculty**

With a valid Graduate School appointment, faculty members may be appointed to Graduate Programs. Determining who is on a program’s faculty is up to the individual Program Director. To serve as a CLSC’s student research mentor or to chair a student committee, a faculty member must – in addition to having a current Graduate School appointment – be a member of the CLSC’s program’s faculty. These individuals are referred to as “in” faculty members. The majority of all student committee members must be “in,” and at least one member must NOT be “in.”

**Course Information**

Course titles, credits and semester offerings are listed on the [Course Schedule](#) available on the CLSC website. To review a course description of CLSC courses, required courses, and commonly taken electives, please see the website for the CLSC Course Listing. Consultation of the [Graduate School Coursebook](#) is also recommended.

The semester listed is the term that each course is usually offered and is subject to change. Some courses require pre-requisites. Courses have a minimum enrollment of 5 students; a course with less than the minimum enrollment on the first day of the semester is subject to cancellation. The program reserves the right to provide a substitute course.

**Course Proposals/Inventories**

Course proposals/inventories are kept on file at the CLSC Program Office and the Office of the Registrar for active and inactive courses. Any variation of existing course information, except for a name change for the course instructor, must have a completed and signed Course Proposal/Inventory form submitted to the Office of the Registrar via the CLSC Program Administrator.

Please work with Galit Mankin, Program Administrator (galit.mankin@ucdenver.edu) to obtain and/or complete a new or updated Course Proposal/Inventory form that is due six weeks prior to the beginning of the course. A copy of the Course Proposal/Inventory form is provided on the next page.
### COURSE PROPOSAL / INVENTORY

**Graduate School / Registrar's Office**

Check One:  
- New Course  
- Course Change/Revision  
- Section Number

<table>
<thead>
<tr>
<th>School:</th>
<th>GRAD</th>
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<tbody>
<tr>
<td>Program Prefix:</td>
<td></td>
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<tr>
<td>Course Number:</td>
<td></td>
</tr>
<tr>
<td>Credit Hrs:</td>
<td></td>
</tr>
</tbody>
</table>

(i.e., Dent, Grad, Med, Nurs, Pharm)  
If variable, indicate 1-3, 1-10, etc.

Repeatable for Credit:  
- within term  
- w/ degree program, but not w/ term  
Max Rpt Hrs

Course Title:

First Term and Year Offered:  

Previous Dept. and Course Number:

Course Level:  

(i.e., BS, MS, PhD, MD, PhrmD, etc.)

Course Level:

Special Grading:  

(i.e., Letter Grade, Pass/Fail, No Grade)

#### TERM(S) OFFERED (Check all that apply)

<table>
<thead>
<tr>
<th>Term</th>
<th>Offered</th>
<th>Contact Hours Per Week</th>
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<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Is there a web component to this course?  

Yes (100% or Partial)  
No

Crosslisted Course (Dept. & Course Number):

Minimum Enrollment:

Maximum Enrollment:

Prerequisites (Dept. & Course Number):

Corequisites (Dept. & Course Number):

Course restrictions:

Primary Instructor:  

PeopleSoft #:

Other Instructors:  

PeopleSoft #:

Other Instructors:  

PeopleSoft #:

Dept. Representative:

Telephone Ext.:

Mail Stop:

Course description for Course Book (*please limit to 40 words*):

---

Approved by Program Director  

Date:

Approved by Curriculum Committee  

Date:

Approved by Dean  

Date:

Rev. 4/9/19  

Page 15
Additional information needed for course proposal:

1. List the objectives of the course.

2. Why should this course be offered and how does it fit into the curriculum of your program?

3. Provide a topical outline of the course contents. (If this is a change / revision to an existing course, specify the nature of the change or reorganization.)

4. Provide a list of required readings and bibliography associated with the course.

5. Specify the kinds of work required of the students in this course, including the methods you intend to use to evaluate student performance.

6. What changes (if any) will be made by your program to facilitate the offering of this course (e.g., deletion of a previous course, additional faculty, etc.)?

7. Does this course overlap or duplicate any other graduate course at UCDHSC?
   YES_____ NO_____
   If it does, please indicate the reasons why the overlap or duplication is justified:

8. Will this course require any special resources (classroom, laboratory, library holdings, electronic transmission, etc.)?
   YES_____ NO_____
   If so, please explain.

Return this proposal to the Graduate School Campus Mail Stop C296
If you have questions, please call 303 724-2911, Graduate School
**Course Syllabi**

A course syllabus should be available at least one week before the beginning of the semester. Students may request to see the syllabus prior to registering. The course syllabus needs to include course dates and meeting times, instructor contact information, pre-requisites, course description, course objectives, required textbooks and other readings, class structure/organization, assignments, the CLSC grading policy, and Canvas access and helpdesk information. Please see below for a sample syllabus template. Once your course syllabus is complete, please email it to Galit Mankin (galit.mankin@ucdenver.edu) for course record keeping and student inquiries.

**Course Scheduling**

Course scheduling and classroom reservation is coordinated from one year to six months before the beginning course date. Please communicate to Galit Mankin your time, date, and room preferences to ensure accurate scheduling. You may also reserve classrooms through the UCDenver Online Room Management System, located at https://schedule.ucdenver.edu/emswebapp/
Course Syllabus (Template)

CLSC xxxx
Name of Course
x Credit Hours
Semester (Fall, Spring, Summer) 20??

Instructor(s): Name and title

Contact:
e-mail
Phone
Office location and hours

Class time and location
Prerequisites
Course Description
This course provides an overview of the major issues of...

Course Objectives

At the end of the course, learners will be able to:

- 
- 
- 
- 

Core Clinical Science Competencies Addressed in this Course (Note Instructor: From the list below, please select the competencies you believe are addressed in this course)

To prepare students to perform state of the art translational research, this course addresses the following clinical science competencies:
Perform human research that adheres to the principles and guidelines of ethical conduct
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
Adhere to legal, ethical and regulatory issues related to clinical research
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

Readings
Optional/Additional:

Additional reading materials may be posted on Canvas.

Students are expected to read materials in advance to prepare for active class participation.
Class Structure

Due to the tight time line of our classes, it is important to arrive on time. The format of classes will ...

Course Schedule *(Please provide the dates or weekly schedule and the accompanying topics and assignments)*

Assignments and Grading *(Please detail each of the assignments, the weighting of the assignment (e.g. 20% for on line exam, 30% for the term paper) criteria used for grading, and the due date)*

Late Policy/Attendance (example)

- Instructors are not responsible for providing information related to classes missed. Handouts and/or lecture notes should be obtained from other participants in attendance.
- Participants are responsible for all information presented in class. Please note; the lectures will cover some materials not found in the textbook and handouts.
- Group presentations cannot be turned in late—your peers are counting on you!
- If you know an assignment will be late, notify the instructor before the due date to establish a revised deadline and to determine if deductions will apply. Failure to communicate and coordinate an acceptable plan with your instructor could result in receipt of an “F” or “0%” for the assignment.
- For each day an assignment is late, 2% for each day it is late will be deducted from the assignment’s grade.

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>GPA</th>
<th>%Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.00</td>
<td>93-100</td>
</tr>
<tr>
<td>A-</td>
<td>3.70</td>
<td>90-92</td>
</tr>
<tr>
<td>B+</td>
<td>3.30</td>
<td>87-89</td>
</tr>
<tr>
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<td>3.00</td>
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</tr>
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<td>2.70</td>
<td>80-82</td>
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<tr>
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<td>2.30</td>
<td>77-79</td>
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<tr>
<td>C</td>
<td>2.00</td>
<td>73-76</td>
</tr>
<tr>
<td>C-</td>
<td>1.70</td>
<td>70-72</td>
</tr>
<tr>
<td>D+</td>
<td>1.30</td>
<td>68-69</td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
<td>63-67</td>
</tr>
<tr>
<td>D-</td>
<td>0.70</td>
<td>60-62</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
<td>&lt;60</td>
</tr>
</tbody>
</table>

Any course grade below a B will not be accepted for credit hours applied to the PhD in Clinical Science degree.

Course Evaluation

Students are encouraged to complete the course evaluations administered at the end of the course.

Canvas Website

Canvas can be accessed at [http://canvas.cuonline.edu](http://canvas.cuonline.edu).

For access assistance, please contact the UC Denver Online Help Desk at 303.315.3700 (Monday through Friday, 7:00 am – 7:00 pm), or email [cuonlinehelp@ucdenver.edu](mailto:cuonlinehelp@ucdenver.edu). The help desk provides email assistance 24 hours a day, 7 days a week. They guarantee a 24-hour response time to inquiries, but generally respond in much shorter time.
Badge Access

A UC Denver Student ID Badge is NEEDED TO ACCESS CLASSROOM. If a new badged is needed or current badge has expired, please contact the Badge Access Office at IDAccess.Badges@UCDenver.edu or 303.724.0399.

Honor Code

A University-wide honor code that all students are required to follow was instituted in the Fall of 1988. The code includes specific procedures, including rights of appeal, when violations are reported. A copy of the Code is located in Graduate School Policies and Procedures. Matriculation into a Graduate School Program at the University of Colorado Denver, Anschutz Medical Campus indicates your willingness to abide by this Code. Questions and concerns may be directed to the Graduate School.

Academic Honesty

Students should adhere to the highest standards of academic honesty and integrity. Examples of behavior that violates these standards include: plagiarism (including the undocumented use of internet and web-based information), cheating, illegitimate possession and/or use of examinations, violation of the ethical standards for conducting research, and falsification of official records.

The following activities will be considered academic dishonesty:
· Copying the work of current or past students or using solutions given to students in past semesters for any class assignments
· Paying external parties to complete part or all of assignments or exams
· Using material from other sources (such as websites, books and articles) without crediting the source

If a student is caught engaging in one of these activities, the program will enforce the standard penalty for academic dishonesty. The standard penalty for a first violation is an F on the assignment resulting in at least a one letter grade penalty for the course. The penalty for subsequent academic penalties can involve removal from the program.

Special Considerations

The Professors will gladly accommodate participants with physical disabilities or diagnosed learning disabilities, upon request. For students requesting accommodations, contact the Office of Disability Resources and Services. Their staff will assist in determining reasonable accommodations as well as coordinating the approved accommodations. Phone number: (303) 724-5640. Location: Building 500, Room W1103. The physical address is 13001 E. 17th Place.
Registration

Student registration opens three to four weeks before the beginning of summer and fall semesters, and even earlier for spring semester. The Academic Calendar is posted on the Graduate School’s website under ‘Resources and Policies’ at http://www.ucdenver.edu/academics/colleges/Graduate-School/current/Pages/resources.aspx. New students must register using paper forms, which require program approval. Galit Mankin (galit.mankin@ucdenver.edu, 720-848-6249) can assist students with the process, which should be completed before the first day of the semester. The drop/add periods vary and students and course instructors need to check the Graduate School calendar for these dates. Students are responsible for full tuition and fees for any classes dropped after this period, and a $60 late fee is charged for any class added after this period. Payment is due within 30 days of the beginning of the semester, regardless of the registration date. Note that new students are not allowed to register until after being cleared by the Graduate School.

Grading within the CLSC Program

Standards for assigning grades are as follows:

<table>
<thead>
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The following activities will be considered academic dishonesty:

- Copying the work of current or past students or using solutions given to students in past semesters for any class assignments
- Paying external parties to complete part or all of assignments or exams
- Using material from other sources (such as websites, books and articles) without crediting the source

If a student is caught engaging in one of these activities, the program will enforce the standard penalty for academic dishonesty. The standard penalty for a first violation is an F on the assignment resulting in at least a one letter grade penalty for the course. The penalty for subsequent academic penalties can involve removal from the program.
**Incomplete Grades**

After the 10th week, courses may not be dropped unless there are special circumstances. As of Jan. 1st, 2009, students are able to request only the grade of “I,” as “IW” (Incomplete Withdrawal) and “IF” (Incomplete Fail) are no longer allowed. The student must ask the instructor for an “I” grade if his/her circumstances warrant it. If this is the case, the student and the instructor must develop a written plan for the work that needs to be completed and the time frame for its completion. If the outlined work is completed according to the agreed upon time frame, the Instructor of Record must submit the work plan (work required and timeline) and the final grade using the grade change form (a.k.a. “Change of Record” or “COR” form). This form is available to faculty only from the CLSC Administrative Office. The Instructor of Record and the CLSC Program Director will need to sign the form, but at no time may this form be in the student’s possession. If the agreed upon work is not completed by the agreed upon time frame, the course grade will be changed to an “F” (Fail).

**Submission of Grades**

It is extremely important that course grades are submitted on time in the Student/Faculty portal, [CU Access](https://portal.prod.cu.edu/UCDAccessFedAuthLogin.html).

Graduate school web grade rosters for each course instructor’s classes are available by logging into the portal with the instructor’s campus credentials using the same id and password used to access University web mail.

Go to [https://portal.prod.cu.edu/UCDAccessFedAuthLogin.html](https://portal.prod.cu.edu/UCDAccessFedAuthLogin.html) to log on, and click on the Faculty Tab in the upper left hand corner of the page, then on Faculty Center in the yellow box. Click on ‘My Schedule’ and your grade roster(s) will appear on the left side of the page next to your class roster(s). Only those with faculty appointments including teaching assistants are able to submit grades. Administrative Assistants, Course Coordinators, Program Assistants, or Teaching Assistants without faculty appointments do not have grading access. Grades cannot be submitted if not complete. Every student on the grade roster must have a grade designated in order to post. Those grade rosters that are not complete and cannot process will have to have a hard copy grade change form submitted for every student on that roster signed by the instructor of record. It has to be an original signature, not a stamp.

If you need assistance with your logon credentials, call the ITS help desk at (303) 724–4357.

If you can logon to CU Access but the Faculty tab does not appear, please send an email to [UCDSecurityAccess@ucdenver.edu](mailto:UCDSecurityAccess@ucdenver.edu).

**Online Course Management**

**Canvas** is used in almost all courses available through the CLSC Program. Course syllabi, notes, lectures, articles, discussion groups, and assignments are to be posted online. Online quizzes, exams, and assignments can also be conducted online or submitted via Canvas. Canvas allows faculty, instructors, and trainers to easily upload course content; manage course communication; test students online; post multimedia materials; manage student grades online, and many other course-related functions. Using a common web browser, students can access the materials from home or work at their convenience. Canvas is primarily used for web-enhanced courses (traditional courses with Internet enhancement), and hybrid courses (courses that blend the traditional format with online).
Canvas can be accessed at [http://canvas.cuonline.edu](http://canvas.cuonline.edu) and accessed with your UCDenver email log-in. Upon enrollment, your registered courses will be attached to Canvas and content made available at the beginning of the semester.

For access assistance, please contact the UC Denver Online Help Desk at 303.315.3700 (Monday through Friday, 7:00 am – 7:00 pm), or email cuonlinehelp@ucdenver.edu. The help desk provides email assistance 24 hours a day, 7 days a week. They guarantee a 24-hour response time to inquiries, but generally respond in much shorter time.

**Course Evaluations**

At the end of the semester students will complete an overall evaluation of the course and instructor. Students are asked to evaluate components of the course on a 1-5 scale (1-poor, 2-fair, 3-good, 4-very good, 5-excellent) and have the opportunity to add free text. In addition, faculty members can submit up to three additional questions specific to the course that they would like added to the evaluations. These questions should be sent to Galit Mankin 4-6 weeks prior to the end of the term. The CLSC standard evaluation questions are shown below.

**CLSC Overall Course Evaluation**

1. How well were the overall course objectives described?
2. Please rate the overall course content in contributing to your knowledge and meeting the course objectives.
3. How well did the course promote critical analysis?
4. Please rate the quality of (instructor’s name) as an instructor.
5. How well did the course promote exchange of ideas and discussion?
6. How well did the course assignments extend your understanding?
7. What suggestions would you make to improve the course?
8. Please provide any other comments, concerns, or issues.

**CLSC Guest Instructor Course Evaluation**

1. How well were the session’s objectives described?
2. Please rate the overall session’s content in contributing to your knowledge and meeting the objectives.
3. Please rate the overall quality of (guest instructor’s name).
4. Please provide any comments, concerns, or issues.
Additional Information

**I.D. Badge and Parking Information**

New instructors will be contacted by email to receive a badge. The signing authority for the Graduate School will let you know when to contact the Badge Office at the Anschutz Medical Campus (AMC). A driver’s license, state ID, or passport is necessary to have your photo taken and to receive your badge. The Badge Office is located in Building 500, Room N1207 behind the café and on the same floor as the bookstore. The Badge Office can be reached at 303-724-0399 and at IDAccessBadges@ucdenver.edu

Pay parking is available at the Anschutz Medical Campus. For maps, permits and rates, go to http://ucdenver.edu/about/denver/Pages/AnschutzMedicalCampus.aspx/maps/

OR

http://www.ucdenver.edu/about/departments/FacilitiesManagement/ParkingMaps/Pages/ParkingMaps.aspx

**Ordering Books and Software**

Books required for use in CLSC courses should be made available to students through the Anschutz Medical Campus bookstore or can be purchased online at www.amazon.com, www.half.com, or other textbook websites. As more students have been ordering textbooks from online sources, the AMC Bookstore has reduced the number they keep in stock. Therefore, not all books will be on the shelf. If that occurs, the Bookstore will order additional texts as needed. Most material will be made available on Canvas. Please consult with your course instructor for the specifics.

You may order books and software through the AMC Bookstore by telephone at 303-724-2665 or 1-800-591-2884 or through their website at http://cuanschutz.bncollege.com/webapp/wcs/stores/servlet/BNCBHomePage?storeId=87741&catalogId=10001&langId=-1. You may also contact Dirk Stricker at dirk.stricker@ucdenver.edu, or 303-724-6645.

**The Health Sciences Library at Anschutz Medical Campus**

As a faculty member in the CLSC program, you have access to the outstanding state-of-the-art Anschutz Medical Campus’ Health Sciences Library, which houses more than 2000 online journals, many information databases, computer workstations, group study rooms, and online text references. This is a valuable resource that is available to you for your professional use throughout your enrollment in the CLSC Program. We encourage you to read the materials from the Health Science Library and to explore the assistance available on the home page at http://hslibrary.ucdenver.edu/ The “Online Information Rack” from the library also provides helpful information about the library and its online services. If you have questions about using the library, the librarians can be reached at 303-724-2152.

**Scholarship Information and Financial Aid**

No scholarship opportunities to support students of the Clinical Science Program exist at this time. Financial aid information is available from the campus financial aid office at: http://www.ucdenver.edu/student-services/resources/CostsAndFinancing/FA/Pages/FinancialAid.aspx
Students must be registered for at least 5 credit hours per semester to meet the financial aid qualifications as a full-time student.

**Faculty Course Preparation Checklist**

Please use this checklist at the beginning of each semester to ensure an efficient and successful teaching experience in the Clinical Science Program:

___ Ensure a current CLSC Faculty Appointment

___ Obtain or update your UC-Denver Badge if necessary through the Badge Office

___ Update and/or submit Course Proposal and Inventory forms, if applicable

___ Submit up-to-date course syllabus to Galit Mankin 4 wks before the start of the course

___ Ensure grading policy is consistent with the CLSC Program and the Graduate School

___ Complete course scheduling (room, dates, times) with Galit

___ Order necessary books and software

___ Know important dates for the Graduate School, e.g. add/drop dates, grade submissions

___ Prepare Online Courses through Canvas and utilize the Help Desk if necessary

___ Coordinate Course Evaluations to occur throughout or at the end of the semester

___ Submit Grades to CLSC Program/Graduate School Office of the Registrar
CLSC 6650/7650 Guided Research Tutorial

A Guided Research Tutorial, also known as an independent study course, may be taken for 1-3 credit hours given that the requirements for doing so are fulfilled. Independent study courses (CLSC 6650/7650 Guided Research Tutorial) cannot exceed 8 credit hours for the doctoral degree and 6 credit hours for the Master’s degree.

No required courses may be taken for credit as independent study.

Planning for the Guided Research Tutorial should begin at least one term prior to the term of planned enrollment. There are several steps that need to occur prior to enrollment.

1. First, the student should discuss the intent and plan for the Guided Research Tutorial with his/her Academic Advisor to get preliminary approval.

2. Discuss with the proposed course instructor the Academic Advisor’s availability to supervise the course of study and to review and agree on the course plan. Specifically, a course plan should be mutually developed and agreed upon and include:
   - proposed number of credit hours,
   - course objectives
   - course content covered, activities and the time frame (outline)
   - assignments or outcomes/products of the course and due dates to the course instructor.

3. Determine the appropriate number of credit hours
   - Regular meetings need to occur with the course instructor
   - For instructional activities conducted by the faculty that require student participation, experimentation, observation or practice, the minimum number of weekly student-faculty contact hours is 2 hours for a 1 credit course, 4 hours for a 2 credit course and 6 hours for a 3 credit course throughout the semester.
   - For a private instruction–based course, there needs to be formal presentations in a one-to-one relationship between the student and the instructor weekly. Over the course of 15 weeks, there needs to be at least 7.5 hours with the instructor for a 1 credit hour course; 15 hours with the instructor for a 2 credit hour course; and 22.5 hours with the instructor for a 3 credit hour course.

4. Submit the course plan that has the approval (as evidenced by signatures or emails acknowledging approval) of the Academic Advisor and the course instructor to the Clinical Science Graduate Office (galit.mankin@ucdenver.edu) for approval by the Educational Director or the Program Director.

Steps 1-4 need to be completed prior to registering for CLSC 6650/7650 Guided Research Tutorial. This is a closed registration course meaning that self-registration is not allowed. The CLSC program must register students for this course.
Sample Course Plan for CLSC 6650

Clinical Sciences (CLSC) 6650 or 7650 Guided Research Tutorial
Fall 2008

Student: Jane Kanduit
Primary Instructor: Onlywith Myhlp, MD
Credits: 3 hours
Course Focus: Manuscript Preparation, Writing and Submission of Pilot Study on Surviving a PhD and Avoiding Bankruptcy

Course Objectives:
At the end of this course, I will be able to:
1. Perform literature searches related to surviving a PhD and avoiding bankruptcy
2. Synthesize and integrate the literature related surviving a PhD and avoiding bankruptcy by writing a literature review
3. Write a structured abstract related to pilot study re: surviving a PhD and avoiding bankruptcy
4. Describe and write the statistical analyses section of the manuscript
5. Prepare tables and figures that support the text in the manuscript for publication
6. List and discuss the pros and cons of possible journals to submit to and publish in
7. Submit a manuscript for peer-review publication on surviving a PhD and avoiding bankruptcy

Weekly Course Content Outline:
1-2 Review literature for guidance on publishing in scientific journals.
2-4 Perform literature search and review literature on surviving a PhD and avoiding bankruptcy.
3 Interview mentors and colleagues about strategies for publishing in the area
2-5 Identify appropriate journals for manuscript
5 Write Background/Introduction section
6 Meet with psychologist, stress physiologist, life coach and financial planner to seek advice in the write-up of methodology used in pilot study
7 Write Methods section
8 Meet with statistician about writing statistical analysis section and presentation of results
9-10 Write Results section (2 weeks)
10-11 Write Discussion and abstract
11-12 Solicit feedback on entire manuscript and draft cover letter to editor
13-14 Revise and incorporate comments
14-15 Submit to chosen journal

Meeting Plans with Instructor:
1. Meet with Dr. Onlywith Myhlp, every week on Mondays at the VA hospital from 2:00- to 4:00 (2x15=30 hours).
2. Meet with psychologist, stress physiologist, life coach and financial planner (all co-authors) each for 1-2 hrs while writing the manuscript and perhaps again after completing first draft.

Assignments:
1. Outline of manuscript: Due week 3, 5% of final grade
2. Introduction section: Due week 6, worth 15%
3. Methods section: Due week 9, worth 15% of final grade
4. Results section: Due week 11, 2% of final grade
5. Discussion and abstract: Due week 12, 20% of final grade
6. Cover letter and revised paper submitted: 20% of final grade
Serving on a Student Committee

This section describes important information that details a faculty member’s responsibilities for being part of a student committee. It defines expectations and roles of the student and faculty member as the student completes the final master’s project or doctoral thesis. It also explains the requirements of the program and provides the necessary forms.

Expectations of the Student

Good supervisory practice entails responsibilities not only of the Research Mentor but also of the student. When a student enters a doctoral program, that student commits time and energy necessary for research leading to a thesis that makes a substantial and original contribution to knowledge. It is the responsibility of the student to conform to University and program requirements and procedures. Although it is the duty of the Research Mentor to be reasonably available for consultation, the primary responsibility for keeping in touch rests with the student.

The student’s responsibilities include:

- Becoming familiar with, and adhering to, the rules, policies, and procedures in place in the Clinical Science program, the Graduate School, and the University as outlined in available resources such as the respective handbooks, web sites and calendars.
- Preparing a research plan and timetable in consultation with the Research Mentor as a basis for the program of study, including any proposed fieldwork.
- Meeting with the Research Mentor and reporting regularly on progress and results of research project.
- Establishing a Comprehensive Exam and Thesis Committee, with the assistance of the Research Mentor, by the end of the second year of study.
- Maintaining good records of each stage of the research.
- Planning to complete the PhD degree requirements in 4 years (the Graduate School’s maximum duration for PhD degree completion is 8 years).
- Planning to complete the MSCS degree requirements in 2 years (the Graduate School’s maximum duration for MSCS degree completion is 7 years).

Expectations of the Research Mentor

Within the context of their role as Research Mentor, a faculty member’s primary task is to guide and inspire his or her students to reach their scholarly potential. At the same time, each Research Mentor must try to ensure that each student is in compliance with the rules and regulations of the University. The Research Mentor and Comprehensive Exam and Thesis Committee members should promote conditions conducive to a student’s research and intellectual growth and provide appropriate guidance on the progress of the research and the standards expected.

In order to provide good supervisory practice, Research Mentors will:

- Commit adequate time to meet regularly with students.
- Guide the student in the selection and planning of an original research topic that can be successfully completed within the expected time frame (2 years for a MSCS and 4 years for a PhD). The maximum time the Graduate School allows for completion of the MSCS is 7 years and the PhD is 8 years).
- Establish with the student a realistic timetable for completion of various phases of the research project and write-up.
• Provide students with regular and timely provision of feedback and ensuring students adhere to the agreed upon timetable.
• Ensure that students have an understanding of the relevant theories and the methodological and technical skills necessary for the research.
• For PhD students, establish with the student a Comprehensive and Thesis Committee by the end of the second year of the student’s program (or earlier).
• For PhD students, ensure that the committee meets with the student at least once a year, as a committee, and provides an annual written report of the student’s progress.
• Make arrangements to ensure continuity of supervision during leaves or an extended period of absence.
• Encourage participation in departmental seminars.
• Encourage and assist students to attend and present work at local, national, or international conferences and to publish their work in appropriate peer-reviewed journals.
• Advise on and contribute to career development and professional development in academics, examples include: preparation of the CV, providing letters of reference, reviewing applications, and strategies for launching an academic career.
• Be honest with the student when academic performance is not meeting expectations.

Expectations of Members of the Comprehensive Exam and Thesis Committee

In order to provide good supervisory practice, Comprehensive Exam and Thesis Committee Members will:
• Commit adequate time to meet with students to advise and provide expertise.
• Provide input in the selection and planning of an original research topic that can be successfully completed within the expected time frame (2 years for a MSCS and 4 years for a PhD).
• Provide students with timely provision of feedback when requested.
• Ensure that students have an understanding of the relevant theories and the methodological and technical skills necessary for the research.
• Advise on and contribute to career development and professional development in academics, examples include: preparation of the CV, providing letters of reference, reviewing applications, and strategies for launching an academic career.
• Be honest with the student when academic performance is not meeting expectations.
• Attend Comprehensive Exam and Thesis Committee meetings at least once a year.

Expectations of the Comprehensive Exam and Thesis Committee Chair

- He/she is responsible for the completion and submission of the appropriate paperwork or forms and that these forms are submitted to the Anschutz Medical Campus Clinical Science Administrative Office in the AMC Leprino Building, Suite 351, Mail Stop B141 (Attn: Galit Mankin).
- He/she is responsible for chairing the committee meetings and examinations
- Specific to PhD students,
  • Complete the Comprehensive Exam: Approval of Thesis Proposal after successful completion of the Comprehensive Examination and the accompanying Graduate School form.
  • Ensure that the committee meets at least yearly and completes the Thesis Committee Report of the student’s progress.
  • Ensures that the Approval of Thesis for Defense form is completed when the student is scheduling the PhD Final Thesis Examination/Defense.
• If conflicts arise between the student and the Research Mentor or committee members, the Chair will take the lead for resolution of conflicts and will notify the Program Director or Educational Director of the CLSC, as appropriate.
Acknowledgment of NIH Funding on CCTSI Publications and Projects

The Clinical Science graduate program is a CCTSI (Colorado Clinical & Translational Sciences Institute) - sponsored Training and Education Resource. Any publications, patents, projects, or other tangible outcomes (including MSCS thesis/Publishable paper and PhD thesis) that benefit from any CCTSI resources must credit the CTSA Grant.

The following language should be used when citing the grant:

“This project/publication is supported in part by NIH/NCATS Colorado CTSA Grant Number UL1 TR002535. Contents are the authors’ sole responsibility and do not necessarily represent official NIH views.”

In addition, publications should be registered with PubMed Central.

More information is available on the CCTSI website at http://www.ucdenver.edu/research/CCTSI/about/Pages/Cite-Grant.aspx
MSCS Final Project and Examination

As described above, in addition to completing the required coursework, students must complete and write-up a final research project, provide an open-to-the-public oral presentation of the final project, and defend the project to satisfy the MSCS degree requirements. The final research project may take the form of a publishable paper or thesis. The thesis/publishable paper should be thought of as the demonstration of the student’s ability to organize and communicate, in a clear and effective manner:

- a statement of a problem;
- a researchable hypothesis;
- the methods used to address the hypothesis/research question
- a discussion of pertinent findings; and
- coherent conclusions and implications of the issue being studied.

The scope of work expected from the student should:

- involve substantial contribution to the development of the scientific question being studied;
- demonstrate the ability to partition a complex question into a workable set of specific objectives and/or answerable research questions/testable hypotheses;
- demonstrate the ability to critically review and document the current state of the evidence that addresses the study topic;
- involve a substantial contribution to the study design and selection of the study subjects;
- demonstrate the ability to organize results/observations; and
- demonstrate the ability to adequately identify and discuss the results, study limitations and implications of the observations in the context of previously known theories, recommendations and practices.

Although it is extremely difficult to be highly specific about the content of either a thesis or a publishable research paper, it is anticipated that all final projects, whether written as a thesis or a research paper, will include the collection and appropriate analysis of quantitative or qualitative data. Although primary data collection is desirable, use of existing data sets involving significant additional analyses are acceptable at the master’s level.

The thesis is submitted to the Clinical Science Program and the Graduate School and the research paper is submitted to the examination committee and to a refereed journal approved by the examination committee. Otherwise the steps are the same.

Steps for Student Completion of the MSCS Final Project and Examination

The student will:

1. **Choose and delineate a problem for investigation.**
   - Consider topics previously pursued which can perhaps be taken a step further
   - Review current literature in the area
2. **Choose a three-member examination committee.**
   Students select three members to serve as an examination committee for the thesis/publishable paper project. All members must have or be eligible for a Graduate School faculty appointment. A Graduate School faculty appointment listing is posted on-line at the Graduate School website. For a committee member that does not have a Graduate School appointment, students may request that the CLSC Program submit an appointment nomination to the Graduate School. To begin this process, the student must submit to Galit Mankin (galit.mankin@ucdenver.edu) a biosketch of the nominee, a CV and a written explanation of what this potential member would contribute to the committee. The nomination/approval process takes 6-8 weeks. Guidelines are posted on the Graduate School website.

   The chair is required to hold a "regular" Graduate School appointment whereas the other members can have or obtain either "regular" or "special" appointments. The committee chair must be a CLSC faculty member. In addition, the committee as a whole must meet the following three criteria:
   - One member must be from outside the department. An outside member is defined as a person without a primary appointment in the Clinical Science Program.
   - The majority of the committee members, two out of three, must come from the CLSC faculty.

3. **Prepare a written proposal for the research project.**
   It is suggested that students register for one thesis/research paper credit during the term they work on finalizing the proposal and that they distribute the remaining credits over the terms in which the bulk of the research is conducted. Students who complete the thesis option are to enroll in CLSC 6950 Masters Research Project: Thesis and students who complete the publishable paper option are to enroll in CLSC 6699 Masters Research Project: Publishable Paper. The total number of course credit hours that students may complete for their final project (thesis or publishable paper) is 4-6 credit hours. While the final project is in progress, credits for either CLSC 6950 or CLSC 6699 are assigned the grade IP (in progress). The grade is changed retroactively by the final project examination committee chair when the final project is completed and a grade can be assigned. **Students must complete EPID 6630 Epidemiology, BIOS 6601/6602 Biostatistics, BIOS 6648 OR EPID 6626 Research Methods in Epidemiology, and CLSC 7150 Ethics prior to enrolling in either of these two options.**

   In general, whether doing a thesis or research paper, the proposal should contain the following elements:
   - A problem statement, including justification as to the significance and scope of the study question.
   - A review of the relevant literature, discussing the scope and limitations of the available literature relative to the issue studied.
   - Hypotheses/research question - levels of hypotheses/research question, alternative and rival hypotheses, specification of the variables.
   - Planned methodology for the study:
     A. study setting,
     B. data source,
     C. sampling techniques,
     D. size of sample,
     E. plan of analysis including the organization and summary of the data and statistical techniques to be used,
     F. proposed timetable for completion of project.
4. Present the written proposal to the examination committee prior to conducting the study.

5. Implement the investigation and develop a timeline for completion and graduation.

6. Prepare the written report.

Guidelines for thesis content:

a) A statement of the problem, including formulation of hypotheses when appropriate;

b) A review of relevant literature to identify research that has preceded and led to the thesis problem and rational for the study;

c) A description of the study setting;

d) A description of the method(s) of inquiry to be used including data collection instruments and statistical techniques, and explanation of why these methods are appropriate for meeting the objectives of the study;

e) A presentation of the findings/results of the study;

f) Discussion of the implications or application of the results, integration with other published research findings, and suggestions for further research.

Guidelines for content of publishable research paper - adapted from McMaster University and Structured Abstract Guidelines:

a) A statement of the study objective/s;

b) A description of the study design;

c) A description of the study setting;

d) A description of the patient(s), population, or events being studied;

e) A discussion of the methods and interventions (if applicable);

f) A presentation of the main results;

g) A discussion of the results, contribution to the literature and limitations;

h) Conclusions.

7. It is suggested that students work with their committee throughout the project.

8. Give all members of the examination committee a draft of the written report. Allow committee members at least two weeks to review the draft and return their comments. Incorporate these comments into a final draft.


Students should not schedule their Final Exam unless they are confident that their thesis can be finalized or their publishable paper can be finalized and submitted to a peer-reviewed journal within 60 days of the Final Exam date.

When the committee chair agrees that the thesis/publishable paper is ready to defend and all committee members have signed the Final Exam Schedule Approval form (see page 42), a day and time acceptable to all committee members can be scheduled. Faculty signatures on this form ensure that the full committee agrees that the student is ready to defend his/her final thesis/publishable paper. Students should plan on a meeting of at least two hours unless the committee chair advises differently. The defense must be held in a room on the AMC campus or an approved affiliated campus. Contact CU Denver | Anschutz Medical Campus Educational Support Services to reserve a room and any necessary audio-visual equipment (e.g.,
All members of the committee must be present for the examination. One member, but not the chairperson or the student, may participate by interactive video/telephone.

Students must be enrolled for either thesis credit (CLSC 6950) or research paper credit (CLSC 6699) hours during the semester in which the final exam (oral defense) is held. It is expected that all CLSC course work (required and elective courses) be completed prior to the final exam defense. However, students can be completing course work during the semester in which the final exam is held.

Please note that the following forms must be submitted to the Program Administrative Office. Allow a minimum of 4 weeks for the CLSC and the Graduate School to process the required forms:

1) Request for Exam form (a Graduate School form)
2) Final Exam Schedule Approval form (a CLSC program form)

If your examination is occurring within four months of graduation, it is extremely important that you check the Graduate School deadlines for graduation listed in the Deadlines and Forms section of the Graduate School website. Students MUST check the Graduate School deadlines as they change frequently. The Request for Scheduling Exam form must be submitted to the Graduate School two weeks prior to the examination date.

The Application for Candidacy form must be submitted one month prior to the comprehensive examination or by the Graduate School’s graduation deadline, WHICHEVER DATE COMES FIRST. There are no exceptions to these deadlines. These deadlines are strictly enforced and if not met will necessitate the rescheduling of the exam.

The thesis/publishable paper defense is open to the public and is publicly advertised. Upon completion of the student’s presentation (approximately 40 minutes) and answering of any questions from attendees (30 minutes), the committee chair will close the meeting so that the committee may discuss with the student any issues, concerns, or required changes to the thesis/publishable paper. All members of the committee must be present for the examination. One member, but not the chairperson or the student, may participate by interactive video.

This committee will evaluate both the oral defense and written thesis/publishable paper. Following deliberations, the committee will vote to pass, conditionally pass (with modifications required to the written thesis draft), or fail a student. The committee may require changes to the final thesis/publishable paper. If changes are required, a timetable for re-submitting the revised document to committee members should be established. A timetable is particularly important when a student expects to graduate in the semester in which he/she defends the thesis/publishable paper. The maximum time allowed for these changes to be made or disparities reconciled is 60 days. The Chair will be expected to facilitate completion of required forms by the committee and to submit the completed forms to the CLSC Administration Office. These forms include: CLSC MSCS Final Project Examination Report (see page 49) and the Graduate School Final Examination Results Report form. The student is at no times to be in possession of the Graduate School Final Examination Results Report form.

After the oral defense, incorporate any additional changes into the final version of the thesis or publishable paper.
**Thesis:** A current Format Guide for Theses and Dissertations is available under ‘Resources and Policies’ on the [Graduate School website](#). All students are required to have a “precheck” of their thesis or dissertation with the Graduate School. Contact the AMC Graduate School Office at 303-724-2911 to schedule your precheck appointment. Your final thesis or dissertation must be submitted by the published deadline in order to graduate in that semester. In addition, an electronic copy of your thesis MUST be submitted to the program within 60 days of your Final Exam date.

**Research Paper:** Copies of the final research paper are submitted to each member of the examination committee, the program office, and to a refereed journal approved by the examination committee. Students completing the research paper option will not be assigned a final grade until a copy of the research paper and a copy of the transmittal letter submitting the paper to the agreed upon journal is received in the program office, which MUST occur within 60 days of your Final Exam date. Once this is received, the program office will submit the final grade to the Graduate School.

*Please Note: It is common that all committee members be included as authors on final research papers, although this is not always the case. The issue of authorship should be discussed in every instance with all committee members. If, by mutual agreement, a committee member is not included as an author, he/she should be acknowledged in the research paper. The chair of the examination committee will have primary responsibility for assuring that the final report is completed and that the grade is submitted to the Graduate School.*
Final Exam Schedule Approval Form

The following members of the Final Research Project Examination Committee have received, reviewed and agree that the thesis/publishable paper submitted by ________________________________
Masters Candidate
is ready to proceed to the final examination.

Chairperson

________________________
Print name

________________________
Signature Date

Committee Member

________________________
Print name

________________________
Signature Date

Committee Member

________________________
Print name

________________________
Signature Date

This form is to be submitted to the Clinical Science Graduate Program's Administrative Office: Galit.mankin@ucdenver.edu
GRADUATE SCHOOL INSTRUCTIONS

INSTRUCTIONS FOR MASTERS' STUDENTS
PLANNING TO GRADUATE

You must type all forms.

Signature Instructions:
If you are using Adobe Acrobat reader, you will need to fill out the form, print it, and obtain hard signatures. You cannot save any changes you make to the document, so be sure to print the form once you have completed it.

If you are using Adobe Acrobat professional, you can obtain all digital signatures. To sign the form digitally, you will click on the signature box in the form. A pop up box will appear that asks what you would like to do. You can choose an existing digital ID (choose this option if you already have created a signature and follow the process you would for other forms). If you have not digitally signed a PDF before, choose “A new digital ID I want to create now” and click “next”. On the next screen, choose “New PKCS #12 digital ID file” and click “next” (If you are a Mac user, this screen will not appear. Skip this step and move onto the next one). Enter your identifying information and click “next”. On the next screen, choose a file in which to store your signature for future use and create a password. Then click “Finish”. You will then be prompted to sign the document by entering your password. Enter your password and click “sign”. You will be prompted to save the form and once you have done so your digital signature will appear.

Once you have completed the form and signed it electronically, you can email onto others to sign digitally using the mail (it looks like a small envelope) at the top of the screen.

1. Deadlines Calendar
A deadline calendar is provided for your information on the Graduate School website. Please call the Graduate School at 303-724-2915 (CU Anschutz) or 303-315-2183 (CU Denver) if you have any questions. **There are no exceptions to these deadlines.**

2. Transfer of Credit
To transfer credit taken at the University of Colorado as a non-degree student, simply add the courses to the Application for Admission to Candidacy. Identifying them as non-degree student credits and obtaining the signature of your advisor and program director will approve the courses for transfer and application to your degree. Courses taken outside of the University of Colorado system must be transferred using the **transfer of credit form**. You will need to have the form signed by your advisor and program director and submitted to the Graduate School, along with a transcript, the
semester **prior** to the term of your final exam/thesis defense. The course must be graduate level, at least a "B-" grade or better (Pass/Fail grades are not allowed), taken within the seven year time limit, and taken at an accredited institution.

3. **Application for Graduation**
   The Registrar’s Office requires that students complete this diploma application at the beginning of the term in which you will graduate. The deadline is published on the Academic Calendar, but generally is the last day of add/drop registration for that semester.

4. **Application for Admission to Candidacy**
   Before you attempt to complete this form, it is suggested that you print out your transcript and have it available. Complete the application form by entering all information. Pay special attention to the designation of Plan I (thesis) or Plan II (non-thesis), making the appropriate selection. On page 2, make sure your courses are listed in chronological order (this means the oldest courses are listed first) and that you have the correct information listed for each course. All students must have a minimum of 30 semester hours listed (these are minimums; your program may require additional credits). The purpose of this form is to allow your program to approve the courses you are using for your degree (not necessarily all the courses you have taken) and to give them the opportunity to ensure you have taken all your required courses. You **may not** simply attach a transcript. All courses must have letter (A or B and + or -) grades. Courses in which you received Honors or Pass are not acceptable toward a Master’s degree.

   Once you have completed the form please reference instructions at the top of this page regarding the signature section of the form. Regardless of if you take the form to your advisor or email it, the responsibility still remains with YOU to make sure that the form arrives at the Graduate School Office by the established deadline. Obtain the required signatures, and return the form to the Graduate School **by the stated deadline or at least one month before the examination, WHICHEVER DATE COMES FIRST**. If you submit your Application Admission to Candidacy after that deadline you will be removed from the graduation list and required to apply for the subsequent graduation date. Any incomplete forms will be returned. When the application has been approved by the Graduate School, you will be notified of your admission to candidacy.

5. **Request for Scheduling Examination**
   Students should fill out this form, obtain the required signature, and return this form to the Graduate School **at least two weeks** prior to the date you plan to take the examination.

   **STUDENT NAME** - Your name **as it appears on University records**. No nicknames.
   **STUDENT NUMBER** - Check with Admissions and Records if you are unsure of this.
   **DEGREE/PROGRAM** - e.g. MS, Nursing; MA, History
   **TYPE OF EXAMINATION** - Self-explanatory.
   **DATE OF EXAM** - the month/day/year that you will take exam (If your exam is done in multiple sittings, please list the final date on which you will be testing.) Check with
advisor/program director if unsure. 

TIME - the time the exam will begin. 

ROOM NUMBER - list the building and room number (NOT the room's name). 

THESIS TITLE - use only if you are defending a formal thesis. (Not for the publishable paper, research paper, project, or report options) 

EXAMINATION COMMITTEE - All members must have current Graduate Faculty appointments. All students must have a minimum of three committee members on their committee and the committee chair must hold a Regular Graduate Faculty appointment. List each member by their full name (don't use nicknames or initials, please - we have a lot of faculty) and their graduate program affiliation per the drop down box. 

CU Anschutz students: See the Graduate Faculty list online to check faculty appointment term and program affiliations. The majority of the members of the committee, including the chair, must be from the core training faculty of the degree granting program. If the faculty member has multiple program affiliations listed on the website, list your program if that is one of their affiliations or list their “sponsor” program if they are not affiliated with your program. 

CU Denver students: Please contact Jessica Halliday at 303-315-2183 or Jessica.halliday@ucdenver.edu for any questions regarding the status of an appointment for a committee member. 

REQUIRED APPROVAL SIGNATURES - This is your Graduate Program Director. See information at the top of this page regarding signature instructions. 

6. Thesis Specifications 

If you are writing a formal thesis (not a master’s project or report), the Thesis Specifications are available online. These are the required guidelines you must follow for the formatting of your thesis. 

   CU Anschutz students: You must complete a mandatory thesis precheck that should be scheduled prior to your defense. Please call Milinda at 303-724-2911 at least two weeks prior to your defense to schedule the precheck. 

   CU Denver students: You are required to submit an unbound, hard copy of your theses to the Graduate School by the deadline listed on the deadline calendar for format review. 

Final copies of theses are submitted electronically and must be submitted by the published deadline. If you miss the submission deadline, you will graduate the following semester. The information regarding the electronic submission process is available online. 

7. Statement of Approval (Thesis Students Only) 

You must submit this form prior to the electronic submission deadline. Original signatures of all faculty are required. This form becomes a University document so care should be taken to keep the form unblemished prior to submission to the Graduate School (no staples, folding, white out). 

8. Registration 

All students are required to be registered during the semester in which the final exam is taken. Students who schedule their final exam or thesis defense after the last day of the semester will be required to register for the subsequent semester. If all coursework for the degree is complete at the time of the exam, students should register for the candidacy course (Anschutz-CAND 6940, Nursing-NURS 6940, Denver-CAND 5940). YOU MAY ONLY REGISTER FOR THIS COURSE ONCE. You may not be registered for any other courses when you are registered for this course. 

Updated-08/08/2013
Clinical Science MSCS Program: Final Exam Process Checklist
(Expectations of the Chair)

Checklist for Master’s Thesis/Publishable Paper Final Exam Process

2-4 days prior to the Final Research Project Examination, ensure that you have received the necessary paperwork from Galit Mankin:

- Graduate School Defense Information/Instruction sheet
- Graduate School Final Examination Confirmation Sheet
- Graduate School Final Examination Results Report form
- Student’s completed coursework and grades record
- CLSC MSCS Final Project Examination Report
- Copy of Student’s Thesis or Publishable Paper – should be provided by the student directly to the committee members (It is also the chair’s responsibility to ensure all authors listed on the publishable paper agree that the student is ready for the exam)

If you have not received these documents, please contact Galit Mankin at galit.mankin@ucdenver.edu or 720-848-6249

Day of the Final Research Project Examination

1. Introduce the student and the title of his/her project

2. Explain the structure of the Examination
   - Open forum session will include MSCS candidate’s presentation (approx. 40 mins) followed by questioning (approx. 30 mins)
   - Closed session follows (only committee members and candidate)

3. Following the presentation and questioning, thank and dismiss attendees and begin the closed session (ONLY committee members and student)

4. Ask candidate to step outside room (5-10mins), while the examination committee discusses the following points:
   a. Ensure all members have read the project
   b. Determine order and format of questioning
   c. Determine if there are major concerns of the candidate

5. Call candidate back into the examination room to begin closed session questioning

6. Once questioning is completed, ask student to step outside the room (10-15 mins) until asked to return.

7. Chair the Committee member executive session
   a. Determine examination grade: pass, pass with conditions, or fail
      - If pass with conditions, the conditions need to be clearly documented and a date by which the conditions must be met identified on paper (conditions must be satisfied within 60 days) which is submitted to the CLSC Program Administrator, Galit Mankin.
b. Committee members sign Graduate School Final Examination Report form

c. Complete the MSCS Final Research Project Examination Report form with committee member input

8. Call the candidate back into the room to join the committee and share the results of the examination. If there are conditions, explain the steps that the student must complete and the timeframe for completion.

9. Remind the student that the CTSA grant must be cited in the finalized version of the student’s Thesis or Publishable Paper. The following language should be used when citing the grant:

“This project/publication is supported in part by NIH/NCATS Colorado CTSA Grant Number UL1 TR002535. Contents are the authors’ sole responsibility and do not necessarily represent official NIH views.”

In addition, publications should be registered with PubMed Central.

10. Scan and e-mail the completed Graduate School forms and the CLSC forms to: Galit.mankin@ucdenver.edu

AT NO TIME IS THE STUDENT TO HAVE POSSESSION OF ANY OF THE GRADUATE SCHOOL FORMS
Rate the student’s ability regarding the CLSC core competencies taking into account the written manuscript or thesis, the oral presentation and response to questioning:

1. Applies legal, ethical and regulatory issues related to clinical research and principles for Responsible Conduct of Research.
   - ☐ Exceeds expectations
   - ☐ Meets expectations
   - ☐ Below expectations

2. Critically appraises existing literature and sources of information.
   - ☐ Exceeds expectations
   - ☐ Meets expectations
   - ☐ Below expectations

3. Accurately selects, uses, and interprets commonly used statistics.
   - ☐ Exceeds expectations
   - ☐ Meets expectations
   - ☐ Below expectations

4. Applies appropriate study designs and methods to address research questions/hypotheses.
   - ☐ Exceeds expectations
   - ☐ Meets expectations
   - ☐ Below expectations

5. Identifies and measures clinically relevant and meaningful outcomes.
   - ☐ Exceeds expectations
   - ☐ Meets expectations
   - ☐ Below expectations

6. Designs and conducts clinically and patient oriented research studies.
   - ☐ Exceeds expectations
   - ☐ Meets expectations
   - ☐ Below expectations

7. Demonstrates effective communication and leadership skills.
   - ☐ Exceeds expectations
   - ☐ Meets expectations
   - ☐ Below expectations

8. Participates in interdisciplinary collaboration.
   - ☐ Exceeds expectations
   - ☐ Meets expectations
   - ☐ Below expectations

9. Preparation of manuscript for submission to a peer reviewed journal.
   - ☐ Exceeds expectations
   - ☐ Meets expectations
   - ☐ Below expectations

Type of research (select all that apply)

- ☐ T0.5
- ☐ T1
- ☐ T2
- ☐ T3
- ☐ T4
- ☐ N/A

Comments:

Please submit completed form to: Galit.mankin@ucdenver.edu
PhD Comprehensive Exam, Thesis Process and Thesis Defense

Comprehensive Examination and Thesis Committee

The Comprehensive and Thesis Examination Committee will examine the student for both the Comprehensive Examination, to qualify for PhD candidacy, and the Thesis Defense Examination to complete the requirements of the PhD degree. Students select at least five members to serve on the Comprehensive Examination and Thesis Committee. This committee is typically formed during the first year of study or after successful completion of the Preliminary Examination. The committee is required to meet at least once per year, but it is strongly recommended that the committee meet more frequently (two or more times/year). Following each Comprehensive Examination and Thesis Committee meeting, documentation of the student’s progress and areas discussed are to be forwarded to the CLSC Administrator (galit.mankin@ucdenver.edu) using the Thesis Committee Report Form, http://www.ucdenver.edu/research/CCTS1/education-training/clsc/phd-program/Pages/Resources.aspx

We encourage students to talk with a number of faculty members about possible topics during the first year. If a committee is not formed, this must occur right after completing the Preliminary Exams. Academic Advisors are a wonderful resource for networking and identifying potential Research Mentors and committee members.

When students have selected a Research Mentor, also known as the thesis supervisor, (the person the student will work most closely with on the research project and thesis) and are fairly confident he or she has a good topic or specific area to work in, students will begin forming the committee. The student and Research Mentor should determine other faculty to work with and who would add needed expertise. When the student and the Research Mentor have agreed on a list of possible members, the student should meet with each of those people to describe the proposed work and request committee membership. The student and the committee should meet as a group at least once every year, although every six months is preferable. The student will also need to identify the Chair of the committee. The Research Mentor and Chair must be different. The Chair is responsible for monitoring the conditions and reporting their outcome to the Clinical Science Graduate Program and the Graduate School. Specifically, s/he will complete the Thesis Committee Report form (at the end of this section) following each committee meeting and will chair both the Comprehensive Examination and the Thesis Defense Examination. It is the role of the Chair to complete and submit the Thesis Committee Report form. However, it is strongly encouraged that the student work with the Chair to ensure the process is completed.

All members of the committee must have or be eligible for a Graduate School faculty appointment. A Graduate School faculty appointment listing is posted on-line at http://www.ucdenver.edu/academics/colleges/Graduate-School/current/Pages/faculty-list.aspx

For a committee member who does not have a Graduate School appointment, students may request that the CLSC Program submit an appointment nomination to the Graduate School. To begin this process, the student must submit to Galit Mankin (galit.mankin@ucdenver.edu) a biosketch of the nominee, a CV, and a written explanation of what this potential member would contribute to the committee. The nomination/approval process takes six to eight weeks, so nomination requests must be submitted to the CLSC Program no less than two months before the planned comprehensive and thesis proposal examination date.

Committee Composition for Clinical Investigation and Health Information Technology

- The committee must contain at least 5 members.
- The majority of committee members must be CLSC faculty.
- At least 1 member must NOT be from the CLSC faculty.
• The Research Mentor (the person with whom the student will work most closely with to develop and conduct the research project) needs to be a member and MUST attend the Comprehensive Examination and the Thesis Defense Examination but is NOT allowed to chair the committee nor the exams.

• The Chair of the committee must be a CLSC core faculty member (This includes the Track Directors, Educational Director, Program Director and Program Director Emeritus). This individual will chair the Comprehensive Examination, your committee meetings, and the Thesis Defense Examination.

Following the above guidelines and with input from the Academic Advisor (Track Director) and Research Mentor, the student should prepare a list of proposed committee members for review and approval by the Clinical Science Program Director. This should be done at the latest two terms following passing of the Preliminary Examination (although it is encouraged that the committee be formed much earlier).
Comprehensive Examination Planning Process

**Admission to Candidacy**

Graduate School Rules apply to Comprehensive Exams of all CLSC PhD students. The purpose of the Comprehensive Examination is to provide the candidate with the opportunity to demonstrate mastery of a broad range of knowledge in clinical science. While specific courses completed by the candidate are important, their content has been tested as a portion of the grading process for the course. The Comprehensive Examination is not, therefore, a re-examination of course content but rather the integration and application of knowledge and skills. A form of evidence of this ability is the student’s thesis proposal. The candidate should demonstrate synthesis of knowledge in the areas of:

- theory construction, analysis, and evaluation;
- research and analytic methods required to answer significant clinical science questions;
- existing and emerging knowledge in clinical science, the identified clinical science track and other contributing fields.

Before admission to candidacy for the PhD in Clinical Science, each student must pass a Comprehensive Examination in his/her selected track or field of concentration. This examination will include: 1) a written exam component, 2) a presentation of the thesis proposal that is open to the public, and 3) a closed oral exam on the proposal, related clinical science topics and synthesis of completed coursework. The format of the written exam requirement can take the form of an NIH-like grant or the first three chapters of the student's thesis.

**Requirements Prior to Scheduling the Comprehensive Examination**

- Preferably completed by the end of the student’s third year.
- Successful completion of the Preliminary Examination.
- Completion of or current registration for all program-required, non-thesis coursework.
- Validation of any course work to count toward the degree that was taken more than 7 years before the Comprehensive Exam.
- A cumulative 3.00 G.P.A. or higher for completed CLSC program coursework.
- Students must be registered for a minimum of one credit at the time of the examination.
- Attend at least one CLSC peer’s public presentation portion of the Comprehensive Examination.
- A CLSC program approved list of committee members including the Research Mentor and Thesis Committee Chair.
- Ready to initiate the project. The student must submit the “Approval of Thesis Proposal Form” (signed by Chair & Mentor) to Galit Mankin at least 8 weeks before the exam.
- The student must have prepared a written research proposal in the form of an NIH grant submission or the first three chapters of the thesis that has been read by your Research Mentor. (It is strongly encouraged that the student holds a committee meeting or has met with the individual members prior to the Comprehensive Examination to determine general agreement regarding the proposal).
- The student must submit his/her thesis proposal to all committee members and to Galit Mankin at least 8 weeks before the exam.
All required paperwork must be completed and submitted to the Graduate School **NO LESS THAN 14 DAYS** before the exam is held.

- Instructions and forms are available at the Graduate School website: [http://www.ucdenver.edu/academics/colleges/Graduate-School/current/Pages/resources.aspx](http://www.ucdenver.edu/academics/colleges/Graduate-School/current/Pages/resources.aspx)
- Please read all instructions carefully. An “Application for Admission to Candidacy” form must be submitted along with the “Request for Scheduling Exam” form.
- The paperwork requires the CLSC Program Director to sign the form before the Graduate School will accept it.
- Any student who does not meet the Graduate School deadline will be required to re-schedule his/her Comprehensive Examination. Therefore, we strongly recommend students begin the paperwork process **NO LESS THAN 8 WEEKS** before the planned exam date.

**Extremely Important:** Students must be registered at the time they take the Comprehensive Examination. Students who schedule their examinations after the last day of a given term must register in the subsequent term.

- The student must register for a minimum of 5 thesis credits during the semester in which he/she defends (summer is NOT excluded in this instance).
- Post-comp HSR students can register for 1 thesis credit each semester after completing 30 thesis credits (except in the semester they schedule their defense).
- In addition to the maximum 10 thesis hours that may be completed prior to the Comprehensive Exam (and after passing the preliminary exam), up to 10 additional thesis hours may be completed during the semester in which the Comprehensive Exam is done.

**Scheduling**

- Due to limited faculty availability during the Summer semester, Comprehensive Exams will normally be held during Fall and Spring semesters.
- The Graduate School requires that students and committee members set aside 4 hours for the Comprehensive Exam. CU Denver-Anschutz Medical Campus Educational Support Services ([https://schedule.ucdenver.edu/emswebapp](https://schedule.ucdenver.edu/emswebapp)) is available for reserving a room and providing equipment (e.g., projector).

**Comprehensive Examination Procedure/Content**

All members of the committee must be present for the examination. One member, but not the chairperson or the student, may participate by interactive video or telephone. Any costs incurred to bring an outside member to campus or to connect the member by interactive video/telephone are the responsibility of the student. The examination form, indicating the pass, conditional pass, or fail status of the exam, must be signed by all committee members and returned to the Graduate School Office. Students might remind the chair of his/her responsibility to get signatures of the committee members. *Graduate School policy requires that the student never be in possession of the completed exam form; failure to comply with this requirement nullifies the exam results.* The completed form should be scanned and e-mailed to the CLSC Administrative Office (galit.mankin@ucdenver.edu).

The thesis proposal should describe the proposed topic, background and relevant literature, theoretical foundations, methods, and intended approaches. The student and the Research Mentor (and perhaps other
committee members with whom the student may have worked closely) should work together to get the proposal in good shape, and then circulate it to the committee for comments. This process is meant to help assess the level of agreement between the student and the committee, describing expectations and scope of work. The PhD research project and thesis should show originality on the part of the student and be of peer-reviewed publishable quality.

**Thesis Proposal or NIH-like Submission Elements**

1) **Cover letter/memo:** Provide a list of the names of the Comprehensive Examination Committee, provide the date, time, location (including room number) and title of the proposal and oral presentation.

2) **Chapter 1- Introduction:** Provide a brief overview, conceptual framework, purpose, and problem statement of the proposal.

3) **Chapter 2- Background/Review of the Literature:** Perform a review of the literature that identifies, reviews, and critically appraises existing knowledge in the identified fields and topics. Gaps in evidence, knowledge and/or practice should be identified that the proposed project addresses.

4) **Chapter 3- Study Hypotheses, Methods and Analysis Plan:** Briefly present the proposed study’s hypotheses/research questions, the methods proposed to address the hypotheses/questions and the accompanying analysis plan.

**Evaluation Criteria for the Paper/Written Element**

- Focuses on a substantive topic in clinical science that synthesizes theory, research and practice.
- Reflects breadth of knowledge in the field.
- Reflects understanding of the issues and problems related to the topic.
- Presents original ideas and sound rationale; the significance for clinical science is convincing.
- Discusses and suggests methods and approaches to the inquiry.
- Is concise, logical and readable.
- The content is well founded and accurate.
- Citation and documentation of sources used are accurate and comprehensive.

**Comprehensive Exam Structure**

A form titled “CLSC PhD Program Comprehensive Examination Process Checklist: Expectations of the Chair” is provided on the following pages to ensure compliance with a proper and standardized protocol.

The Comprehensive Examination has two components: 1) a formal, public presentation of the student’s thesis (dissertation) proposal, and 2) a closed discussion with the exam committee during which the student is required to demonstrate in-depth knowledge of the methodological, clinical and social issues pertinent to the student’s project and selected track.

The public presentation should last approximately 30-40 minutes, followed by an open question-answer session. Following the public presentation is a closed meeting with committee members. During this exam component, content from track-specific courses and the student thesis proposal will be covered (related fields of study, methodology, statistics). Listed below are some examples of core content areas according to track.
• Clinical Investigation: Students will be expected to demonstrate their knowledge and understanding of the challenges and potential solution/approaches used in clinical investigations, research methods, and principles of clinical translation.

• Health Information Technology: Students will be able to present and discuss the goals and objectives for HIT in clinical, financial and administrative realms; describe the role of HIT in improving patient safety, quality, and operational efficiencies; and explain the major barriers to implementing HIT.

• Health Services Research: Students will be expected to demonstrate their understanding of research methods, health economics, and the principles of health services research including the major seminal HSR literature.

Prior to their own Comprehensive Exam, CLSC students must attend at least one of their CLSC peer’s public presentation component of the Comprehensive Examination. Students are encouraged to attend more than one to become familiar with the process and to participate in the scholarly dialogue.

**Examination Grading**

There are three possible outcomes for the Comprehensive Exam:

1) Pass – The student must receive affirmative (passing) votes from the majority of the committee members to pass.

2) Pass with conditions – The committee may decide that although the student has passed the examination the student should complete additional work on the thesis proposal or coursework. Areas of additional work or other conditions will be specified on the examination form and must be completed to the satisfaction of the examination committee within 4 months of the examination. The committee chair is responsible for monitoring the conditions and reporting the outcome to the Graduate School and to the Clinical Science Program office. Failure to satisfy these conditions will result in failure of the examination.

3) Fail – If the student fails the examination, per Graduate School Rules, the student may be subject to immediate dismissal from the program. At the program’s discretion, the student may be allowed to re-take the examination once. The re-examination will be in the form designated by the committee and must be completed within twelve (12) months. The original examination form noting the failure is signed by the committee and returned to the Clinical Science Program office. New examination forms will be generated when the examination is rescheduled. The student will be required to meet registration requirements and be registered during the term in which the repeat exam is taken.

Upon completion of the Comprehensive Examination, the Chair ensures completion of the proper forms. Please refer to the PhD Comprehensive Examination Checklist to ensure completion of all required Graduate School CLSC forms. These forms should be provided to the CLSC Administrative Offices (galit.mankin@ucdenver.edu). These forms should never be in the student’s possession. Copies will be kept in the student’s file.
UNIVERSITY OF COLORADO DENVER

CLINICAL SCIENCE GRADUATE PROGRAM

Approval of Thesis Proposal

The following members of the Thesis Committee have approved the dissertation proposal submitted by ______________________________________

Doctoral Candidate

Chairperson

________________________________________________________________________

Print name

Signature Date

Research Mentor

________________________________________________________________________

Print name

Signature Date

This form is to be submitted to the Clinical Science Graduate Program’s Administrative Office:

Galit.mankin@ucdenver.edu
CLSC PhD Program: Comprehensive Examination Checklist

(Expectations of the Chair)

2-4 days prior to the Comprehensive Examination, ensure that you have received the necessary paperwork from Galit Mankin:

- Graduate School Information/Instruction sheet
- Graduate School Confirmation Sheet
- Graduate School Comprehensive Examination Report form
- CLSC Comprehensive Examination Attendance form
- Student’s completed coursework and grades record
- CLSC Comprehensive Examination Report form
- Copy of student’s thesis proposal – should be provided by the student directly to the committee members

If you have not received these documents, please contact Galit Mankin at galit.mankin@ucdenver.edu or 720-848-6249

Day of the Comprehensive Examination

1. Have attendees sign-in using the CLSC Comprehensive Exam Attendance form
2. Introduce the student and the title of his/her thesis proposal
3. Explain the structure of the Comprehensive Examination
   - Open forum session will include PhD student’s presentation (approx. 40-45 mins) followed by questioning (approx. 20-30 mins)
   - Closed session follows the open forum (only committee members and student)
4. Following the presentation and questioning, thank and dismiss attendees and begin the closed session (ONLY committee members and student)
5. Ask student to step outside room (10mins), while the examination committee discusses the following points:
   i. Ensure all members have read the proposal
   ii. Determine order and format of questioning
   iii. Review student’s coursework and grades
   iv. Determine if there are major concerns of the candidate
6. Call student back into the examination room to begin closed session questioning
7. Once questioning is completed, ask student to step outside the room (10-15 mins) while committee deliberates.
8. Chair the committee member executive session
   a. Determine examination grade: pass, pass with conditions, or fail
      - If pass with conditions, the conditions need to be clearly documented and a date by which the conditions must be met identified on paper (conditions must be satisfied within 4 months). This paper should be provided to the CLSC Program Administrator, Galit Mankin.
   b. Have committee members sign Graduate School Comprehensive Examination Report form
c. Complete the CLSC Comp Exam Form with committee member input

9. Call the candidate back into the room to join the committee and share the results of the examination. If there are conditions, explain the steps that the student must complete and the timeframe for completion.

10. Remind the student that the CTSA grant must be cited in the finalized version of the student’s Thesis. The following language should be used when citing the grant:

   “This project/publication is supported in part by NIH/NCATS Colorado CTSA Grant Number UL1 TR002535. Contents are the authors’ sole responsibility and do not necessarily represent official NIH views.”

   In addition, publications should be registered with PubMed Central.

10. Scan and e-mail the completed Graduate School and CLSC forms to: Galit.mankin@ucdenver.edu

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**AT NO TIME IS THE STUDENT TO HAVE POSSESSION OF ANY OF THE GRADUATE SCHOOL FORMS**
CLSC PhD Program: Comprehensive Examination Report

Student: _________________________________ Date of Exam:________________________

Chair: __________________________   Research Mentor: ___________________________

Members in Attendance:________________________________________________________
____________________________________________________________________________

The student’s performance during the Comprehensive Examination and review of the written thesis proposal and coursework grades suggest that the student is progressing as follows towards CLSC core competencies:

1. Understands legal, ethical and regulatory issues related to clinical research and principles for Responsible Conduct of Research.
   - ☐ Exceeds expectations   ☐ Meets expectations   ☐ Below expectations

2. Critically appraises existing literature and sources of information.
   - ☐ Exceeds expectations   ☐ Meets expectations   ☐ Below expectations

3. Accurately selects, uses and interprets commonly used statistics.
   - ☐ Exceeds expectations   ☐ Meets expectations   ☐ Below expectations

4. Applies appropriate study designs and methods to address research questions/hypotheses.
   - ☐ Exceeds expectations   ☐ Meets expectations   ☐ Below expectations

5. Identifies and measures clinically relevant and meaningful outcomes.
   - ☐ Exceeds expectations   ☐ Meets expectations   ☐ Below expectations

6. Designs and conducts clinically and patient oriented research studies.
   - ☐ Exceeds expectations   ☐ Meets expectations   ☐ Below expectations

7. Demonstrates effective communication and leadership skills.
   - ☐ Exceeds expectations   ☐ Meets expectations   ☐ Below expectations

8. Participates in interdisciplinary collaboration.
   - ☐ Exceeds expectations   ☐ Meets expectations   ☐ Below expectations

Comments:

Please submit completed form to: Galit.mankin@ucdenver.edu
CLSC Comprehensive Examination Attendance Form

SPEAKER: ______________________________________

DATE: ___ / _____ / _____

ATTENDEES (please PRINT name clearly):

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Post Comprehensive Exam Requirements

Registration

- After passing the Comprehensive Examination, students must register for at least 5 dissertation/thesis credits every semester (excluding the summer semester).
- The student must register for a minimum of 5 thesis credits during the semester in which he/she defends (summer is NOT excluded in this instance).
- A maximum of 10 thesis credits can be taken in any semester (In rare circumstances, 15 credits may be taken with Academic Advisor approval). Only 10 of the thesis credits taken prior to the Comprehensive Examination may be counted towards the minimum 30 credit hours required.
- In addition to the maximum 10 thesis hours that may be completed prior to the Comprehensive Exam (and after passing the preliminary exam), up to 10 additional thesis hours may be completed during the semester in which the Comprehensive Exam is taken.
- If a CSPH student has met the 30-credit minimum dissertation requirement prior to defending thesis, then the student is only required to register for one credit per semester until graduation. The student only needs to register for the summer semester if s/he will defend during the summer semester.

Important Note: There is some strategy required in taking thesis credits. Because of the continuous registration requirement, taking too many credits early may result in additional expense; however, if a student takes too few, it may limit how quickly the student can graduate.

Committee Meetings

Although it is expected that each student’s Thesis Committee will meet at least yearly, it is highly desirable that the committee meet more regularly. The student should also meet with individual committee members more regularly to take advantage of the individual members’ expertise for successful project completion. The Chair should complete and return the CLSC Thesis Committee Report Form to the CLSC Program Coordinator immediately following each Committee meeting.
CLINICAL SCIENCE GRADUATE PROGRAM
Thesis Committee Report

Student: ________________________________ Date of Meeting: ____________________________

Research Mentor: ________________________ Dissertation Chair: _________________________

Committee Members in Attendance:

__________________________________________________________________
__________________________________________________________________

1. Has the student made satisfactory progress? YES NO
   If yes, attach student’s progress summary.
   If no, explain the reasons.

2. Please list publications submitted, In Press, published and/or grants submitted, or awarded since the last committee meeting.

3. Is there evidence that the student is sufficiently committed to the research? YES NO

4. Does the student have sufficient knowledge of the current literature?
   □ Exceeds expectations     □ Meets expectations     □ Below expectations

5. Is the student able to critically appraise evidence and various sources of information?
   □ Exceeds expectations     □ Meets expectations     □ Below expectations

6. Does the student have sufficient knowledge to apply legal, ethical, and regulatory issues related to clinical research and principles for the Responsible Conduct of Research?
   □ Exceeds expectations     □ Meets expectations     □ Below expectations

7. Did the student display the ability to select, use and interpret commonly used statistics and forms of analyses?
   □ Exceeds expectations     □ Meets expectations     □ Below expectations
8. Did the student demonstrate the ability to use appropriate research design to address the research questions or hypotheses?
   □ Exceeds expectations   □ Meets expectations   □ Below expectations

9. Does the student have ability to identify and measure clinically relevant and meaningful outcomes?
   □ Exceeds expectations   □ Meets expectations   □ Below expectations

10. Through the final research project, is the student participating in interdisciplinary research?
    YES      NO

11. Has the student communicated effectively (written and oral) in committee meetings?
    □ Exceeds expectations   □ Meets expectations   □ Below expectations

12. What are the specific concerns of the committee related to the project/student?

13. The committee recommends the following activities, experiments and/or goals to be accomplished by the next meeting.

14. Has the student been made aware of concerns, expectations or recommendations of the committee?
    YES   NO
    If yes, explain.

15. Are there any disagreements within the committee or between committee members and the student?
    YES   NO

16. Date by which next meeting should be held?____________________________________

This form is to be submitted to the Clinical Science Graduate Program’s Administrative Office: Galit.mankin@ucdenver.edu
Thesis Process

1. Form the committee: See above Comprehensive Examination and Thesis Committee Membership.
3. Secure Thesis proposal approval: Ensure that the CLSC PhD Program Approval of Thesis Proposal form is signed by committee members immediately following successful passing of the Comprehensive Examination.
4. Conduct the research: The student will work with the Research Mentor and committee members to carry out the proposal. As things develop there will likely be some variation from the proposal, which is okay. Research involves collaboration. Some committees or individual members meet regularly (e.g., weekly) while others meet upon request. However, the student should not spend long periods of time working alone without talking with the Research Mentor – this is a recipe for delay, expenses, and/or failure. Committees MUST meet at least once a year (preferably every six months), and complete a Thesis Committee Report form (found at the end of this section) to be submitted to the CLSC Administrative Offices. Students must register for at least five thesis hours each fall and spring semester extending through the semester of the thesis defense. The final grade for the thesis (thesis course credit hours) will be withheld until the thesis is completed and approved by the Graduate School; the student will receive a grade of “In Progress” (IP) until that time.
5. Write the thesis: The thesis must meet the formatting criteria outlined in CU Denver | Anschutz Medical Campus Graduate School Thesis Specifications. The student should pick up the "Thesis Specifications" handbook at the Graduate School office or access it through the Graduate School website. The Graduate School offers yearly workshops every fall and spring to assist students in completing their thesis. The student will draft his/her thesis and circulate it among committee members informally. The goal is for the student to incorporate all required changes/revisions to the draft thesis document PRIOR to the Thesis Defense Examination.

*Thesis Chapter Content Requirements*

There is some variation in the chapters across theses, but all theses must contain the information listed below and adhere to the Graduate School requirements.

Chapter 1- Introduction: Provide a brief overview, conceptual framework, purpose, and problem statement of the project.

Chapter 2- Background/Review of the Literature: Perform a review of the literature that identifies, reviews, and critically appraises existing knowledge in the identified fields and topics. Gaps in evidence, knowledge and/or practice should be identified that the project addresses.

Chapter 3- Study Hypothesis/es or Research Questions, Methods, and Analysis Plan: Provide the study’s overall purpose, research question(s) hypothesis/es, specific aims, and a detailed description of the research methodology and analytical approach used. Where appropriate, detailed lab protocols should be specified (but may be included in an appendix). A power calculation/sample size calculation would normally be included. If qualitative or exploratory work was involved to complement the primary hypothesis-driven study approach, these study aims and methods should be described also. Appendices are helpful to provide copies of instruments, calibration assessments, key diagnostic tests, clinical performance metrics, study data forms, study data definitions, survey instruments, or any other source documents related to the study. The student’s thesis COMIRB application and (at a minimum) COMIRB
approval documentation (including HIPAA documentation if appropriate) should be included as a separate appendix.

Chapter 4- Study Results: Tables, graphs, and a detailed summary of the study findings should be presented.

Chapter 5- Conclusion/Discussion: The clinical science) provided. The impact on patient care should be discussed. Strengths and limitations of the work are also described. Future research directions and/or research projects planned may be discussed in this chapter or an additional chapter.
Thesis Defense

1. Prior to scheduling your PhD thesis defense, all Thesis Committee members should agree that the student and the thesis are ready to proceed to defense. The CLSC Permission to Proceed to Defense form should be signed by committee members and returned to the CLSC Administrative Office (galit.mankin@ucdenver.edu)

2. Schedule thesis defense: Upon the request of the student and when all members of the committee have signed the CLSC Permission to Proceed to Defense form, a day and time acceptable to all committee members can be scheduled. Faculty signatures (electronic signatures are acceptable) on this form ensure that the full committee agrees that the student is ready to defend his/her final thesis. Students should plan on a meeting of at least four hours. The final draft of the thesis must be submitted to the CLSC Administrative Office (galit.mankin@ucdenver.edu) and the committee members of the Thesis Defense Examination at least four weeks in advance of the planned defense date. The defense must be held in a room on the AMC campus or an AMC-affiliated campus.

   Please note that the following forms need to be completed and submitted to CLSC Administrative Office. Allow a minimum of 4 weeks for the CLSC and the Graduate School to process the required forms:
   1) Request for Scheduling Exam form (a Graduate School form)
   2) Permission to Proceed to Defense form (a CLSC program form)

Graduate School deadlines for graduation are listed in the Deadlines and Forms section of the Graduate School website. It is crucial to check the Graduate School deadlines to ensure a smooth process. Graduation packets containing all necessary instructions and paperwork are available from the Graduate School or the website.

Students must be enrolled for a minimum of 5 thesis credits (CLSC/HSMP 8990) during the semester in which the thesis defense is held.

Students should consult the graduate school several months before planning to graduate to ensure the necessary paperwork is complete.

3. Defend the thesis: The thesis defense is the official Graduate School final exam for the PhD degree.

   Similar to the Comprehensive Examination, the thesis defense consists of an open-to-the-public oral presentation and question period followed by a closed session with the members of the examination committee. All CLSC Program faculty and students will be invited to attend the oral presentation. The public presentation should last approximately 50 minutes with 20-30 additional minutes allotted for open public discussion. All members of the committee must be present for the examination. One member, but not the chairperson or the student, may participate by interactive video.

   At the thesis defense, a majority vote of the Comprehensive and Thesis Committee members is required. This committee will evaluate both the oral defense and written thesis. Following deliberations, the committee will vote to pass, conditionally pass (with modifications required to the written thesis draft), or fail a student for his/her thesis defense. If changes are required, final review and approval by the committee chair (who will determine that the committee’s stipulated modifications have been completed successfully) will be obtained. If a student passes the examination with conditions, those conditions must be satisfied within 60 days for the PhD degree.

Please review the following forms on subsequent pages:
4. **Submit thesis**: A current [Format Guide for Theses and Dissertations](#) is available on the [Graduate School website](#). All students are required to have a “precheck” of their thesis or dissertation with the Graduate School prior to the defense. Contact the AMC Graduate School Office at 303-724-2911 to schedule your precheck appointment. Your final thesis or dissertation must be submitted by the published deadline in order to graduate in that semester. In addition, an electronic copy of your thesis MUST be submitted to the program within 60 days of your thesis defense date.
Clinical Science Program
Guidelines for Doctoral Dissertations

Please review and follow the Graduate School Formatting Guidelines
http://www.ucdenver.edu/academics/colleges/Graduate-School/Documents/GSOCTFORMS/Format-Guide.pdf

Length: Most range between 150-200 pages

General Outline for Doctoral Dissertation

Title
The title must be pertinent to your project, but it should also indicate a sufficient grasp of the subject matter to suggest a focused effort.

Abstract
The abstract is a brief summary of your proposal. It should include the research question to be answered, the proposed methodology and the key results. If more than one hypothesis is to be tested, this should be stated in the abstract. The abstract is typically written last. Abstract uses a structured format Background/ Rationale, Objective/Purpose, Methods, Results, Conclusion and is within the 350 words limit.

Chapter 1 Elements

Introduction
This is a general introduction to what the thesis is all about -- it is not just a description of the contents of each section. Briefly summarize the question (you will be stating the question in detail later), some of the reasons why it is a worthwhile question, and perhaps give an overview of your main results. This is a birds-eye view of the answers to the main questions answered and how this thesis adds value to the known literature.

What is the topic and why is it important? State the problem(s) as simply as you can. Try to step back mentally and take a broader view of the problem. How does it fit into the broader world of your area/discipline?

In the introduction, do not overestimate the reader's familiarity with your topic. You are writing for researchers in the general area, but not all of them need be specialists in your particular topic. The introduction should be interesting. If you bore the reader here, then you are unlikely to revive his/her interest in the methods chapter. For the first paragraph or two, tradition permits prose that is less dry than the scientific norm. Try to make the reader want to read the heavy bundle that has arrived uninvited on his/her desk. Go to the library and read several thesis introductions. Did any make you want to read on? Which ones were boring?

This section might go through several drafts to make it read well and logically, while keeping it short. For this section, it is a good idea to ask someone who is not a specialist to read it and to comment. Is it an adequate introduction? Is it easy to follow? There is an argument for writing this section---or least making a major revision of it---towards the end of the thesis writing. Your introduction should tell where the thesis is going, and this may become clearer during the writing.

Literature Review
The topic of the dissertation must be well grounded in the relevant theoretical and/or empirical literature related to the topic. This means that an extensive literature review needs to be conducted as the basis for the proposal
and the dissertation, in defense of the chosen topic. The extent and type of literature search strategy should be discussed with your mentor. You should have a table or algorithm that describes your search strategy and results and approach to finding and reviewing the relevant research. This literature review must also widely and firmly support the research questions, the research design, and any hypotheses that may be tested.

Here you review the state of the literature relevant to your thesis. The idea is to present the major ideas right up to, but not including, your own personal brilliant ideas.

This section is organized by idea, and not by author or by publication.

Where did the problem come from? What is already known about this problem? What other methods have been tried to solve it?

Ideally, you will already have much of the hard work done, if you have been keeping up with the literature. If you have summarized those papers, then you have some good starting points for the review.

For example, when you start reading about a topic, you should open a spreadsheet file, or at least a word processor file, for your literature review. Of course, you want the reference but you also write a summary (anything from a couple of sentences to a couple of pages, depending on the relevance). In other columns of the spreadsheet, you can add key words (your own and theirs) and comments about its importance, relevance to you and its quality.

How many papers? How relevant do they have to be before you include them? Well, that is a matter of judgment. You are the world expert on the topic of your thesis: you must demonstrate this.

**Problem Statement, Research Questions, Hypotheses**

You need to describe the overall or general "problem" to be solved and the specific research questions and/or hypotheses to be answered. In either case, this section has three main parts:

1. a concise statement of the problem, the research questions/hypotheses that your thesis tackles

2. justification, by direct reference to the Literature Review chapter, that your question is previously unanswered

3. discussion of why it is worthwhile to answer this question.

Item 2 above is where you analyze/critically appraise the information which you presented in the Literature Review. For example, maybe your problem is to "develop an algorithm capable of handling very large scale problems in reasonable time" (you would further describe what you mean by "large scale" and "reasonable time" in the problem statement). Now in your analysis of the state of the art you would show how each of the current approaches fails (i.e. can handle only small problems, takes too much time, requires very expensive software). In the last part of this section you would explain why having a large-scale fast algorithm is useful; e.g., by describing applications where it can be used.

You must make it clear in this section how what you want to do differs from what has been done before and how it builds upon the past work. You should also be able to show that the question you want to answer will further the state of knowledge in your field. Finally, the statement of problem should culminate in the identification of one or more testable hypotheses/research questions that you think will address the statement of problem.

**Chapter 2 Elements**
Theoretical OR Conceptual Model
The dissertation must have a theoretical framework that is steeped in and builds upon the relevant knowledge base. Theoretical frameworks must contribute to conceptual or theoretical models that can be tested by theoretical or empirical means. The theoretical or conceptual framework should be used to motivate the hypotheses and the empirical specifications that are used to test hypotheses.

Study Design, Methods and Statistical Approach
The topic of the dissertation and the nature of the research question(s) or hypothesis(es) must lead the research design. Some questions/hypotheses may require different research designs. For example, some topics and research questions in the field are best suited to some form of qualitative research while others may be best suited to some form of quantitative research. Some topics may be best suited for some combination of qualitative and quantitative research. It is the nature and research questions that determines the appropriate research design.

Methods of data collection and techniques of analysis must be consistent with the research design. For example, if the research questions call for survey research, then they must conform to the best standards of survey research and subsequent statistical analysis. If the research questions call for an econometric model, then the methods of data collection and analysis must conform to the best standards of econometric modeling. If the research questions call for some form of qualitative research design, then the methods of data collection and analysis must conform to the best standards of a particular form of qualitative research. Data collection and analysis, whether quantitative or qualitative must build a strong bridge between conceptualization and operationalization. Standard Operating Procedures should be mentioned and provided in Appendices. Data collection instruments are also provided in the Appendices.

IRB and IACUC
Include COMIRB and other IRB submitted to and approved along with the protocol number(s) for all research involving human subjects/participants. For live animals, animal tissue or observational animal work, include your IACUC protocol number. Include your IRB and or IACUC submissions in Appendices.

Chapter 3 Elements
Results
Results of the research are presented clearly and address the research questions/ hypotheses. Styles for presenting results in your dissertation may vary. In general, there are 3 options:

1. Results are described through tables, figures, graphs, images and text.
2. Results are written as full manuscripts that are in submission-ready form as they would be submitted for publications (3 papers).
3. Published, In Press or submitted peer-reviewed manuscripts (3 papers) of your research results are presented in the results section or contained in the dissertation as separate chapters following chapter 2 (theoretical/conceptual framework and methods).

For students that choose option 3, dissertations that use the style of presenting/inserting three Published, In Press or submitted peer-reviewed manuscripts may choose to have each published paper serve as a separate chapter of the dissertation. The published papers must be re-formatted to follow the Graduate School Format Guide for Theses and Dissertations. (See above at the top of the document). In addition, for multi-authored papers, a description must be included that provides the full reference citation and describes the student’s role and contributions. Students who use this approach may have shorter methods and final conclusions and discussion chapters. Students should discuss this option of the published papers for their thesis early in the
process (before the Comprehensive Examination). In addition, it is important to consult with your thesis committee regarding expectations for the methods and final conclusions and discussion chapters. For this option, at least one peer-review paper is published or in press before the doctoral dissertation defense.

**Last Chapter: Conclusions and Discussion**
Generally, three things are covered in the Conclusions and Discussion section/chapter, and each of these usually merits a separate subsection:

1. Conclusions
2. Summary of Contributions and Implications
3. Limitations of Research
4. Future Research

Conclusions are *not* a rambling summary of the thesis: they are *short, concise* statements of the inferences that you have made because of your work. It helps to organize these as short numbered paragraphs, ordered from most to least important. All conclusions should be directly related to the research question stated in the Problem Statement, Research Questions, Hypotheses chapter.

The Summary of Contributions and Implications will be sought and carefully read by the examiners. Here you list the contributions of *new* knowledge that your thesis makes and how it builds on existing literature as well as how your work contradicts the previous work of others. Of course, the thesis itself must substantiate any claims made here. There is often some overlap with the Conclusions, but that's okay. You also want to highlight/discuss the implications of your work. This summary should be organized around your contributions to and implications for research/methods, theories/models/framework, and clinical practice.

The Future Research subsection is included so that researchers picking up this work in future have the benefit of the ideas that you generated while you were working on the project. Future work should relate to the clinical area, methods, and theory.

*Dissertations that use the style of presenting three Published, In Press or submitted manuscripts approach* has the last chapter presents and discusses linkages (i.e., similarities and differences) between the separate manuscripts that are included in the dissertation, striving as much as possible to present the document as representative of a coherent body of work. The conclusion chapter ‘ties’ everything together and helps the reader see how the various manuscripts, taken together, make a contribution to the knowledge base regarding the problem. The conclusion chapter should present/discuss research imperatives, or knowledge gaps, not visible when each manuscript is considered individually and should articulate an agenda for future research on the issues addressed in the dissertation. It should be clear the contributions to the literature made by the student’s body of work in terms of research, theory, and practice as well as next steps to be taken or considered to move the state of the evidence forward.

**References**
The list of references is closely tied to the Literature Review. Most examiners scan your list of references looking for the important works in the field, so make sure they are listed and referred to in the Literature Review. All references given *must* be referred to in the main body of the thesis. Note the difference from a Bibliography, which may include works that are not directly referenced in the thesis.

**Appendices**
What goes in the appendices? Any material which impedes the smooth development of your presentation, but which is important to your dissertation. Generally, it is material that is of too nitty-gritty a level of detail for inclusion in the main body of the thesis, but which should be available for perusal by the examiners to convince them sufficiently. Examples include data collection instruments, immense tables of data, lengthy statistical formulae or outputs or derivations, etc.
Doctoral Dissertation Checklist

1. The title is clear and concise.
2. Abstract uses a structured format Background/Rationale, Objective/Purpose, Methods, Results, Conclusion and is within word limit.
3. Include COMIRB/IRB protocol number(s) in your Acknowledgements and Methods Chapter/Section. For live animals, animal tissue or observational animal work, include your IACUC protocol number in your Acknowledgements and Methods Chapter/Section.
4. Problem is significant and clearly stated.
5. Review of the literature is efficiently summarized.
6. Limitations of the literature are highlighted and well defined.
7. Important terms are well defined.
8. Hypotheses or research questions are clearly stated and are testable, discoverable, or answerable.
9. Problem statement, hypotheses, or research questions derive from the review of the literature. Rationale for work is clearly articulated.
10. Research design is clearly and comprehensively described, and demonstrated to be related to the research questions, and/or hypotheses.
11. Theoretical or conceptual model/framework used to guide work is well described.
12. Methods of data collection are clearly presented and demonstrated to be related to the research questions/hypotheses.
13. Plans for analysis whether quantitative or qualitative are clearly stated and justified within the context of the research design.
14. Tables and figures are used effectively. Textual explanation of the tables/figures is provided along with the tables and figures.
15. Results of the research are presented clearly and address the research questions/hypotheses.
16. Major findings are discussed clearly and related to previous research.
17. Importance of the findings is explained.
18. The relationship between the research and the findings is demonstrated with tight, logical reasoning.
19. Conclusions are clearly stated.
20. Conclusions are based on the results.
21. Generalizations are confirmed.
22. Limitations and weakness of the study/body of work are discussed.
23. Implications of findings to clinical care, research, methods and theory are discussed.
24. Relationship of the study to previous research is clear.
25. Suggestions for future research are offered regarding clinical care, research, methods and theory.
26. References are included (usually > 75).
27. Data collection instruments are included in Appendices.
28. IRB submission in Appendices
29. Sentence structure, grammar, spelling, and punctuation are correct.
30. Thesis is clearly written.
31. Tone is unbiased and impartial.

CLSC PhD Program Checklist for Thesis Defense
(Expectations of the Chair)

2-4 days prior to the Thesis Defense, ensure that you have received the necessary paperwork from Galit Mankin:

- Graduate School Defense Information/Instruction sheet
- Graduate School Thesis Defense Confirmation Sheet
- Graduate School Thesis Defense Results Report form
- CLSC Thesis Defense form
- CLSC Attendance Sheet
- Student’s completed coursework and grades record

- Copy of Student’s Thesis - should be provided by the student directly to the committee members

- Thesis/Dissertation Approval form – Student is instructed to complete the form on-line (from the GS website), and bring it to the defense in order to obtain signatures from all the committee members. The handling of this form is the responsibility of the student.

If you have not received these documents, please contact Galit Mankin at galit.mankin@ucdenver.edu or 720-848-6249

Day of the Thesis Defense

***Confirm with the student that they have completed their thesis precheck meeting at the Graduate School

1. Have attendees sign in using the CLSC attendance sheet.

2. Introduce the candidate student and the title of his/her thesis.

3. Explain the structure of the Defense:
   - Open forum session will include PhD candidate’s presentation (approx. 50-55 mins) followed by questioning (approx. 30 mins)
   - Closed session follows (only committee members and candidate)

4. Following the presentation and questioning, thank and dismiss attendees and begin the closed session (ONLY committee members and the candidate student).

5. Ask the candidate to step outside the room (5-10mins), while the examination committee discusses the following points:
   - Ensure all members have read the Thesis
   - Determine order and format of questioning
   - Determine if there are major concerns of the candidate

6. Call candidate back into the examination room to begin closed session questioning.
7. Once questioning is completed, ask student to step outside the room (10-15 mins) until asked to return.

8. Chair the Committee member executive session
   a. Determine examination grade: pass, pass with conditions, or fail
      - If pass with conditions, the conditions need to be clearly documented and a date by which the conditions must be met identified on paper (conditions must be satisfied within 60 days), which is submitted to the CLSC Program Administrator, Galit Mankin.
   b. Committee members sign Graduate School Thesis Defense Report form
   c. Complete the CLSC Thesis Form with committee member input

9. Call the candidate back into the room to join the committee and share the results of the examination. If there are conditions, explain the steps that the student must complete and the timeframe for completion

10. Remind the student that the CTSA grant must be cited in the finalized version of the student’s Thesis. The following language should be used when citing the grant:
    "This project/publication is supported in part by NIH/NCATS Colorado CTSA Grant Number UL1 TR002535. Contents are the authors’ sole responsibility and do not necessarily represent official NIH views."

    In addition, publications should be registered with PubMed Central.

11. Scan and e-mail the completed Graduate School forms and the CLSC forms to: Galit.Mankin@ucdenver.edu

    AT NO TIME IS THE STUDENT TO HAVE POSSESSION OF ANY OF THE GRADUATE SCHOOL FORMS
UNIVERSITY OF COLORADO DENVER
PhD PROGRAM, CLINICAL SCIENCE GRADUATE PROGRAM

Permission to Proceed to Defense

The following members of the Dissertation Committee have approved the thesis submitted by ______________ for the Thesis Defense Examination.

Doctoral Candidate

Dissertation Chairperson

Print name

Signature Date

Research Mentor

Print name

Signature Date

Committee Member

Print name

Signature Date

Committee Member

Print name

Signature Date

Committee Member

Print name

Signature Date

This form is to be submitted to the Clinical Science Graduate Program’s Administrative Office: Galit.mankin@ucdenver.edu
CLSC PhD Dissertation\Thesis Defense Report

Student:_________________________________  Date of Exam:_______________________  
Chair:_______________________________           Research Mentor:___________________ 
Members in Attendance:_______________________________________________________

Rate the student’s ability regarding the CLSC core competencies taking into account the written thesis/dissertation, the oral presentation and response to questioning:

1. Applies legal, ethical and regulatory issues related to clinical research and principles for Responsible Conduct of Research.
   □ Exceeds expectations  □ Meets expectations  □ Below expectations

2. Critically appraises existing literature and sources of information.
   □ Exceeds expectations  □ Meets expectations  □ Below expectations

3. Accurately select, use and interpret commonly used statistics.
   □ Exceeds expectations  □ Meets expectations  □ Below expectations

4. Apply and use appropriate study designs and methods to address research questions/hypotheses.
   □ Exceeds expectations  □ Meets expectations  □ Below expectations

5. Identify and measure clinically relevant and meaningful outcomes.
   □ Exceeds expectations  □ Meets expectations  □ Below expectations

6. Design and conduct clinically and patient oriented research studies.
   □ Exceeds expectations  □ Meets expectations  □ Below expectations

7. Demonstrate effective communication and leadership skills.
   □ Exceeds expectations  □ Meets expectations  □ Below expectations

8. Participate in interdisciplinary collaboration.
   □ Exceeds expectations  □ Meets expectations  □ Below expectations

Type of research (select all that apply)  □ T0.5  □ T1  □ T2  □ T3  □ T4  □ N/A

Clinical Translational Research Spectrum

Comments:

This form is to be submitted to the Clinical Science Graduate Program’s Administrative Office: Galit.Mankin@ucdenver.edu

Rev. 4/9/19
GRADUATE SCHOOL INSTRUCTIONS

FOR DOCTORAL
STUDENTS PLANNING TO GRADUATE

All forms must be typed.

Signature Instructions:

If you are using Adobe Acrobat reader, you will need to fill out the form, print it, and obtain hard
signatures. You cannot save any changes you make to the document, so be sure to print the form once you
have completed it.

If you are using Adobe Acrobat professional, you can obtain all digital signatures. To sign the form
digitally, you will click on the signature box in the form. A pop up box will appear that asks what you
would like to do. You can choose an existing digital ID (choose this option if you already have created a
signature and follow the process you would for other forms). If you have not digitally signed a PDF before,
choose “A new digital ID I want to create now” and click “next”. On the next screen, choose “New PKCS
#12 digital ID file” and click “next” (If you are a Mac user, this screen will not appear. Skip this step and
move onto the next one). Enter your identifying information and click “next”. On the next screen, choose a
file in which to store your signature for future use and create a password. Then click “Finish”. You will
then be prompted to sign the document by entering your password. Enter your password and click “sign”.
You will be prompted to save the form and once you have done so your digital signature will appear.

Once you have completed the form and signed it electronically, you can email onto others to sign digitally
using the mail (it looks like a small envelope) at the top of the screen.

1. Deadlines Calendar
   A deadline calendar is provided for your information on the Graduate School website. Please call the Graduate
   School at 303-724-2915 (CU Anschutz) or 303-315-2183 (CU Denver) if you have any questions. There are no
   exceptions to these deadlines.

2. Application for Graduation
   The Registrar’s Office requires that students complete this diploma application at the beginning of the term in
   which you will graduate. The deadline is published on the Academic Calendar, but generally is the last day of
   add/drop registration for that semester.

3. Request for Thesis Defense
Students should fill out this form, obtain the required signatures, and return to the Graduate School at least two weeks prior to the date you plan to take the thesis defense.

STUDENT NAME - Your name as it appears on University records. No nicknames.
STUDENT NUMBER - Check with Admissions and Records if you are unsure of this.
DEGREE/PROGRAM - e.g. –PhD, Immunology; PhD, Civil Engineering
DATE OF EXAM - the month/day/year that you will take exam. Check with program advisor/program director if unsure.
TIME - the time the exam will begin (not any pre-exam seminar).
ROOM NUMBER - list the building and room number (NOT the room's name).
SEMINAR – If applicable (not all programs require). Include the time and room number of your pre-defense seminar.
THESIS TITLE - Please type in upper and lower case letters.
THESIS ADVISOR - Type the name of the faculty member mentoring your thesis work - they may not be the chairperson for your committee (see below).
EXAMINATION COMMITTEE - All members must have current Graduate Faculty appointments. The chair of the committee must hold a regular graduate faculty appointment in the Graduate School. The student’s dissertation advisor may not chair the examination committee. List each member by their full name (don't use nicknames or initials) and their graduate program affiliation per the drop down box.

CU Anschutz students: Your committee must consist of a minimum of five Graduate Faculty members. See the Graduate Faculty list online to check the faculty appointment term and program affiliations. At least one of the committee members must be outside your program’s core training faculty. The majority of the members, including the chair, must be from your program’s core training faculty. If the faculty member has multiple program affiliations listed on the website, list your program if that is one of their affiliations, or list their “sponsor” program if they are not affiliated with your program.

CU Denver students: Your committee must consist of a minimum of four Graduate Faculty members. Your committee chair must be a member of the degree-granting program. Please contact Jessica Halliday at 303-315-2183 or Jessica.halliday@ucdenver.edu for any questions regarding the status of an appointment for a committee member.

THESIS CHAIRPERSON REQUIRED APPROVAL SIGNATURE - Your chairperson’s signature is required to authorize the scheduling of the thesis defense on the date listed on the form. See information at the top of this page regarding signature instructions.

GRADUATE PROGRAM DIRECTOR REQUIRED APPROVAL SIGNATURE - This would be your Graduate Program Director. See information at the top of this page regarding signature instructions.
4. **Registration for the Examination**

Students defending between semesters must register for the subsequent semester.

**CU Anschutz students:** You are required to register for at least 5 thesis hours (8990) the semester you defend regardless of the number of thesis hours that have accumulated to date.

**CU Denver students:** You are required to register for at least 1 thesis hour (8990) the semester you defend regardless of the number of thesis hours that have accumulated to date.

5. **Biographical Sketch**

This form must be completed as directed and submitted to the Graduate School at least **two weeks** prior to the thesis defense. The form should be turned in with your *Request for Scheduling PhD Thesis Defense* form.

Fill out the information on both pages. List your name and the date of the exam. In listing your committee, list only faculty member names and graduate program affiliation per the drop down box. The graduate program you list for your faculty will be the same as on your Request to Schedule Exam form. In the “Biographical Notes” section, you will list all of your previous **academic** degrees, including school, degree, and year of award; and then list your publications. If there are too many to fit within the established space, list only those that are applicable to your thesis. List your thesis title and advisor on the second page of the biosketch. Take the abstract from your thesis and copy it in the summary section. It should be no more than 350 words, single-spaced.

6. **Thesis Specifications**

The thesis specifications that are available online are the required guidelines that you must follow for the formatting of your thesis.

**CU Anschutz students:** You must complete a mandatory thesis precheck that should be scheduled prior to your defense. Please call Milinda at 303-724-2911 at least two weeks prior to your defense to schedule the precheck.

**CU Denver students:** You are required to submit an unbound, hard copy of your theses to the Graduate School by the deadline listed on the deadline calendar for format review.

Final copies of theses are submitted electronically and must be submitted by the published deadline. If you miss the submission deadline, you will graduate the following semester. The information regarding the [electronic submission process](#) is available online.

7. **Statement of Approval of the Thesis**

You must submit this form prior to the electronic submission deadline. Original signatures of all faculty are required. This form becomes a University document so care should be taken to keep the form unblemished prior to submission to the Graduate School (no staples, folding, white out).

8. **Survey of Earned Doctorates in the U.S.**

From this link, you will be directed to the Survey of Earned Doctorates website to complete the survey. Once completed, you will be provided a *certificate of completion*. Print the certificate and submit it to the Graduate School prior to electronically submitting your final thesis. This certificate is part of the required documents for graduation.

9. **Electronic Thesis Submission**

All information needed regarding fees, submission, and forms, is outlined on the [Electronic Theses and Dissertations website](#).
CU Anschutz students: Please review the information specific to the CU Anschutz submission process. When you submit your thesis electronically, there are three forms you must submit to the Graduate School:

- Statement of Approval of the Thesis - complete with signatures
- Survey of Earned Doctorates certificate
- PhD exit survey completion email

CU Denver students: Please review the information specific to the CU Denver submission process. When you submit your thesis electronically, there are two forms you must submit to the Graduate School:

- Statement of Approval of the Thesis-complete with signatures
- Survey of Earned Doctorates certificate
Academic Advisement

Advisor Responsibilities & Program Plans

This section describes important information that details a faculty member’s responsibilities as an Academic Advisor. It defines the Academic Advisor’s role and the use of the MSCS and PhD track specific Program Plan as a roadmap for charting the student’s progress. As well, steps needed to prepare for and details regarding the PhD Preliminary Exam are addressed.

Meeting with an Academic Advisor once a year to plan and discuss a student’s progress through the program is crucial to a successful academic experience and is thus mandatory. The Academic Advisor will assist the student with identifying and scheduling required coursework, identifying areas of research and collaborations, and selecting committee members for the student’s thesis and comprehensive examination. At the time of the student’s admission to the program, an Academic Advisor will be identified.

1. The Academic Advisor will assist the student in selecting and sequencing courses and planning other activities to progress through the program. The projected courses for meeting the degree requirements, plans for additional course requirements, and a projected date for completion of the Preliminary and Comprehensive Examinations and the Thesis Defense will be recorded on the Program Plan Form (see CLSC track specific PhD Program Plan Forms). Students should visit with their Academic Advisor regularly (at least once per year) for discussions of research ideas, grant and course opportunities, and other advisement.

   New students should familiarize themselves with the curriculum requirements prior to meeting with their Academic Advisor. In conjunction with their Academic Advisor, all new students should develop a proposed plan of study. Copies of the track-specific planning forms are provided (See below). These plans are to be maintained electronically and accessed securely via a link provided by the program administrator.

2. It is expected that every Clinical Science Graduate Program student, for every year that s/he is in the program, will have a program plan form completed or updated, approved by the Academic Advisor, and submitted electronically the first week of September. You may receive notices from your Academic Advisor of specific requirements and timelines for this process. This information is key for planning future course offerings and insuring completion of the program in a reasonable period of time. Accurate program plans help prevent unnecessary closure of classes due to low enrollment. Updated program plans are the responsibility of the student.

3. Program Plans for both the MSCS and the PhD degrees are shown on the following pages. For returning-student program plans, visit the Resources section of the CLSC website at http://www.ucdenver.edu/research/CCTSI/education-training/clsc/Resources/Pages/default.aspx
CLSC MSCS Student Program Plan (students admitted during or after fall 2019)

Note that course schedules may vary from term to term. To verify schedules and prerequisites for specific courses, please visit the CLSC courses and registration web page at: http://www.ucdenver.edu/research/CCTS\i\education-training/clsc/Resources/Pages/Course-Books-Schedules.aspx

STUDENT NAME: ___________________________     DATE OF LAST REVISION: __________

Matriculation: _____     Research Mentor: _____     Advisor: _____

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
<th>Description</th>
<th>Semesters (Term -- Year)</th>
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</thead>
<tbody>
<tr>
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<td></td>
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</tr>
<tr>
<td>BIOS 6601 or BIOS 6611</td>
<td>3</td>
<td>Applied Biostatistics I or Biostatistical Methods I</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
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<td>Applied Biostatistics II or Biostatistical Methods II</td>
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<tr>
<td>EPID 6630</td>
<td>3</td>
<td>Epidemiology</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>CLSC 6270</td>
<td>1</td>
<td>Critical Appraisal Seminars in Clinical Science</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>BIOS 6648 or EPID 6626 or BIOS 6623 or EPID 6631</td>
<td>2-3</td>
<td>Design and Conduct of Clinical Trials (2 credits) or Research Methods in Epidemiology (3 credits; BIOS 6602 is a pre-requisite) or Advanced Data Analysis (3 credits) or Analytical Epidemiology (3 credits)</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>CLSC 6210†</td>
<td>1</td>
<td>Research Seminars in Clinical Science</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>CLSC 7150</td>
<td>1</td>
<td>Ethics and Responsible Conduct of Research</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>CLSC 7101</td>
<td>1</td>
<td>Grant Writing I</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>

**TOTAL REQUIRED HOURS FOR DEGREE = 30**

8-11 Elective Courses

Rev. 4/9/19
### Required Thesis/Research Hours

Indicate # of Credit Hours taken per Semester:
- Fa/Sp/Su-Year

<table>
<thead>
<tr>
<th>EXAMS: 4-6</th>
<th>Research Project: Thesis OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>*CLSC 6950 or *CLSC 6699</td>
<td>Research Project: Publishable Paper</td>
</tr>
</tbody>
</table>

† CLSC 6210 is taken over 1 year typically during the second year of your MSCS

* Must take the following prerequisite classes prior to registering for CLSC 6699 or CLSC 6950: BIOS 6601 & BIOS 6602 or BIOS 6611 & BIOS 6612, CLSC 7150, EPID 6630

### Courses to Transfer – must be approved by Program and the Graduate School

<table>
<thead>
<tr>
<th>Number</th>
<th>Credits</th>
<th>Description</th>
<th>Substitutes For</th>
<th>Credits Granted</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Pending successful completion of all planned courses (B or better in all courses), ≥ 30 credit hours completed (including 4-6 thesis/research hours), approval and validation of courses proposed for transfer, AND passing the final research examinations (Masters Research Project OR Publishable Paper), this schedule would fulfill the requirements of the Clinical Science MSCS Program.

Student’s Approval Date: ____________________  Track Director’s Approval Date: ____________________
### CLSC PhD Student – Clinical Investigation Track Program Plan (students admitted during or after Fall 2019)

Note that course schedules may vary from term to term. To verify schedules and prerequisites for specific courses, please visit the CLSC courses and registration web page at: http://www.ucdenver.edu/research/CCTSI/education-training/clsc/Resources/Pages/Course-Books-Schedules.aspx

#### STUDENT NAME: ________________________   DATE OF LAST REVISION: __________

Matriculation: _____   Research Mentor: _____   Advisor: _____

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS 6601* or BIOS 6611*</td>
<td>3</td>
<td>Applied Biostatistics I or Biostatistical Methods I</td>
</tr>
<tr>
<td>BIOS 6602* or BIOS 6612*</td>
<td>3</td>
<td>Applied Biostatistics II or Biostatistical Methods II</td>
</tr>
<tr>
<td>BIOS 6648 or EPID 6626 or BIOS 6623 or EPID 6631</td>
<td>2-3</td>
<td>Design and Conduct of Clinical Trials (2 credits) or Research Methods in Epidemiology (3 credits; BIOS 6602 is a pre-requisite) or Advanced Data Analysis (3 credits) or Analytical Epidemiology (3 credits)</td>
</tr>
<tr>
<td>CLSC 6210*</td>
<td>1</td>
<td>Research Seminars in Clinical Science</td>
</tr>
<tr>
<td>CLSC 6270</td>
<td>1</td>
<td>Critical Appraisal Seminars in Clinical Science</td>
</tr>
<tr>
<td>CLSC 7101</td>
<td>1</td>
<td>Grant Writing I</td>
</tr>
<tr>
<td>CLSC 7150*</td>
<td>1</td>
<td>Ethics and Responsible Conduct of Research</td>
</tr>
<tr>
<td>CLSC 7202</td>
<td>3</td>
<td>Clinical Outcomes and Applications</td>
</tr>
<tr>
<td>CLSC 7300</td>
<td>1</td>
<td>Scientific Grant Review Process: CCTSI Proposals-Doctoral</td>
</tr>
<tr>
<td>EPID 6630*</td>
<td>3</td>
<td>Epidemiology</td>
</tr>
<tr>
<td>EPID 6631</td>
<td>3</td>
<td>Analytical Epidemiology</td>
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**TOTAL REQUIRED COURSE HOURS FOR DEGREE = 31**

<table>
<thead>
<tr>
<th>Credit Earned</th>
<th>Semesters (Term -- Year)</th>
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<tbody>
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<td></td>
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</table>

**8-9 Elective Courses**
Courses required before Preliminary Exam (biostatistics, ethics, epidemiology). In addition, a second methods class is required (EPID 6626 or EPID 6631 or BIOS 6648 or BIOS 6623 or CLSC 6270 or CLSC 7202). *CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination).

Clinical Science PhD Program: Clinical Investigation

Student Name: ____

<table>
<thead>
<tr>
<th>Thesis Credit Hours</th>
<th>Indicate # of Thesis Credit Hours taken per Semester: Fa/Sp/Su-Year</th>
<th>Total Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*CLSC 8990 Doctoral Thesis (after completing prerequisite classes)</td>
<td></td>
<td>≥ 30</td>
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</table>

<table>
<thead>
<tr>
<th>Comp/Thesis Committee Meetings</th>
<th>Indicate the Semester in which Committee Meetings are held: Fa/Sp/Su-Year</th>
<th>Total Meetings</th>
</tr>
</thead>
</table>

Committee Meetings Held

<table>
<thead>
<tr>
<th>Exams</th>
<th>Semester: Fa/Sp/Su-Year</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prelim Exam</td>
<td></td>
<td></td>
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<tr>
<td>Comp Exam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thesis Defense</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Courses to Transfer – if applicable – must be approved by Program and the Graduate School

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<thead>
<tr>
<th>Number</th>
<th>Credits</th>
<th>Description</th>
<th>Substitutes For</th>
<th>Credits Granted</th>
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</table>

Pending successful completion of all planned courses (B or better in all courses), ≥ 30 thesis credit hours completed, approval and validation of courses proposed for transfer, AND passing the required program examinations (Preliminary Examination, Comprehensive Examination and the Final Thesis Defense), this schedule would fulfill the requirements of the Clinical Science PhD Program (Clinical Investigation Track).

Student’s Approval Date: _____________________  Track Director’s Approval Date: _____________________
**CLSC PhD Student – Health Information Technology Track Program Plan (students admitted during or after Fall 2019)**

Note that course schedules may vary from term to term. To verify schedules and prerequisites for specific courses, please visit the CLSC courses and registration web page at:

[http://www.ucdenver.edu/research/CCTS/education-training/clsc/Resources/Pages/Course-Books-Schedules.aspx](http://www.ucdenver.edu/research/CCTS/education-training/clsc/Resources/Pages/Course-Books-Schedules.aspx)

<table>
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<tr>
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</table>

<table>
<thead>
<tr>
<th>Courses</th>
<th>Semesters (Term – Year)</th>
<th>Credits Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL REQUIRED COURSE HOURS FOR DEGREE = 31</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27-29</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Required Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOS 6601* or BIOS 6611*</td>
<td>3</td>
<td>Applied Biostatistics I or Biostatistical Methods I</td>
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<tr>
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<td>Research Seminars in Clinical Science</td>
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<tr>
<td>CLSC 6270</td>
<td>1</td>
<td>Critical Appraisal Seminars in Clinical Science</td>
</tr>
<tr>
<td>CLSC 6800</td>
<td>3</td>
<td>Introduction to Health Information Technology</td>
</tr>
<tr>
<td>CLSC 6820 or NURS 6289</td>
<td>3 or 4</td>
<td>Management of Health Information Technology or Information Life Cycle</td>
</tr>
<tr>
<td>CLSC 7101</td>
<td>1</td>
<td>Grant Writing I</td>
</tr>
<tr>
<td>CLSC 7150*</td>
<td>1</td>
<td>Ethics and Responsible Conduct of Research</td>
</tr>
<tr>
<td>CLSC 7202</td>
<td>3</td>
<td>Clinical Outcomes and Applications</td>
</tr>
<tr>
<td>EPID 6630*</td>
<td>3</td>
<td>Epidemiology</td>
</tr>
<tr>
<td>NURS 6293 or ISMG 6080</td>
<td>3</td>
<td>Database Management Systems (Informatics focus) or Database Management Systems (Information Systems focus)</td>
</tr>
<tr>
<td><strong>2-4 Elective Courses</strong></td>
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<td></td>
</tr>
</tbody>
</table>

Rev. 4/9/19
Courses required before Preliminary Exam (biostatistics, ethics, epidemiology). In addition, a second methods class is required (EPID 6626 or EPID 6631 or BIOS 6648 or BIOS 6623 or CLSC 6270 or CLSC 7202). CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination).

Clinical Science PhD Program: Health Information Technology

Student Name: ______

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</tbody>
</table>

Pending successful completion of all planned courses (B or better in all courses), ≥ 30 thesis credit hours completed, approval and validation of courses proposed for transfer, AND passing the required program examinations (Preliminary Examination, Comprehensive Examination and the Final Thesis Defense), this schedule would fulfill the requirements of the Clinical Science PhD Program (Health Information Technology Track).

Student’s Approval Date: __________________ Track Director’s Approval Date: __________________
The PhD Preliminary Examination

At the end of the first year of didactic course work, doctoral students will take a Preliminary Exam (http://www.ucdenver.edu/research/CCTSI/education-training/clsc/phd-program/Requirements/Pages/Preliminary-Exam.aspx) to assess their comprehension of the educational concepts covered in the coursework. The Graduate School requires a Preliminary Examination to ensure that students are qualified for doctoral study. The purpose of the Preliminary Examination is to determine potential for successful completion of the program and to use the results in subsequent academic advising. The Preliminary Examination covers the core content areas of:

- Biostatistics
- Ethics
- Research Methods

The Preliminary Examination is held every year over a 3-day period between the end of the spring and beginning of the summer terms (typically late May or early June). Students are asked to indicate their intent to take the examination about 3 months prior to the Preliminary Exam. Students typically take the Preliminary Exam after completing the 1st year of required core courses.

Course Requirements for Taking the Preliminary Exam

CLSC Students:
For students starting the program during or after summer 2012, the following courses must be completed prior to taking the Preliminary Examination:

- Biostatistics: BIOS 6601 and BIOS 6602 or BIOS 6611 and BIOS 6612
- Ethics: CLSC 7150
- Methods: EPID 6630
- Methods: EPID 6626 or EPID 6631 or BIOS 6648 or BIOS 6623 or CLSC 6270 or CLSC 7202

Exam Format

The Preliminary Examination is OPEN BOOK. Students should feel free to use textbooks, reference materials, class notes, peer-reviewed publications, and credible websites.

Students may choose to complete the Biostatistics section in the classroom or at work/home (you are still obligated to report to the classroom the morning of the exam in order to sign the honor codes and receive the exam folder). The other two sections (content areas) can be completed off campus.

Since the examination is open book, students should remember to bring the necessary materials, such as biostatistics textbooks and class notes. The other two sections (content areas) can be completed at work/home. A printer will be available locally for printing.

On the morning of the exam, students will be given an exam folder. Once the seal is broken, students have committed to taking the exam in its entirety. Students will be asked to read the instructions completely and to ask questions prior to starting the exam. All questions raised will be answered openly and shared with all students. A failing grade will be given to any exam section not completed.
Honor Code and Grading Policy

Before beginning the Preliminary Examination (Part 1 and Part 2), each student must sign the honor code policy for each exam section and submit this to the Program staff.

All doctoral students taking the Preliminary Examination will be requested to sign the following statement for their work:

“As noted in the exam instructions, I have abided by the UCD Graduate School honor system whereby I have not used any reference material, computer files, or worked with any person in a manner that would unfairly advantage my performance on this Ph.D. Program in CLSC Preliminary Examination. Moreover, I will not share a copy of this Preliminary Exam (either the questions or my responses) with anyone without written pre-authorization from the Ph.D. Program in CLSC administration.”

Faculty members will be using a grading rubric for scoring each exam section. The pass/fail designation students receive will reflect faculty scores submitted for the four questions of the examination.

The scoring is as follows:
- 100 to 80 score = Pass
- Less than 80 = Fail

Historically, the most common error made is not reading the instructions carefully and/or not answering ALL components of each question. This exam process is the equivalent to writing academic papers. Students should ensure that their thoughts are well thought out, articulated, and supported by references.

Skipping a question or a section of a question is not a wise choice. It is better to provide the best answer possible than no answer at all. Students should respond in full sentences – not outline format. The use of tables and figures to illustrate points is encouraged. Overall writing style and correct use of spelling and grammar are taken into consideration during scoring. Organizing responses according to the sections of the examination questions and sub-questions (with headers) is a useful approach (and makes the exam easier to grade).

Criteria Used for Grading

ANALYSIS
- Identify and organize elements in ways that demonstrates a logical coherent response
- Explain the central issues, problems and “puzzles” with respect to the topic under discussion
- Identify and explain unstated assumptions, logical fallacies, and extraneous aspects of an issue, problem or position
- Project the implications of an issue, problem, or position
- Explain and compare alternative views

SYNTHESIS
- Present succinct summaries of ideas that reflect comprehension of the whole while building a deliberate message concerning the topic under discussion
- Convey abstract relationships that form conceptual wholes
- Integrate a variety of sources to form a foundation for the student’s unique ideas
CRITICAL SCHOLARLY ABILITIES

• Demonstrate critical self-awareness and reflective thinking
• Provide succinct, complete and direct responses to the issues
• Demonstrate a breadth of knowledge of the topic under discussion that is consistent with the breadth covered in the entry doctoral level courses
• Interpret existing literature without misrepresentation
• Demonstrate the ability to defend a logical position without prejudice

Transfer of Credits

Pending CLSC Program and Graduate School approval, transfer of up to 12 semester credits for the MSCS and 30 semester credits for the PhD may be coordinated.

Transfer credit is defined as any credit earned at another accredited institution, at another campus of the CU system, or as a non-degree student within the CU system. The maximum amount of transfer work that may be applied toward a graduate degree at CU Denver | Anschutz Medical Campus is 12 semester hours for M.S. and 30 semester hours for Ph.D. degree programs. The Graduate School accepts transfer credits only after approval of those transfer credits by the student’s Program Director and the Dean of the Graduate School. However, if a student is seeking to transfer credit from a Master in Public Health (MPH) degree or any other “professional” program then the Associate Dean of Academic and Student Affairs in the CSPH must also review and approve all transfer credits. This must be completed prior to the Graduate School approval process.

All courses accepted for transfer must:

• Be graduate level (5000 or above);
• Have a “letter” grade (courses in which the grading is either satisfactory/unsatisfactory or pass/fail are not accepted);
• Have a grade of “B” or better
• Not have been applied toward an undergraduate degree or another graduate degree on the same level (e.g., Ph.D. to Ph.D.);
• Be validated by the Program Director if not taken within seven (7) years of the PhD comprehensive exam or the Master’s final exam, if applicable, to ensure that the course content is still considered current; and
• Be transferred prior to the semester in which the PhD comprehensive or Master's final examination, if applicable, is taken.

Credit cannot be transferred until the student has established a satisfactory record of at least one term of enrollment at the CU Denver and earned a minimum 3.00 GPA. Transferred courses do not reduce the residency requirement but may reduce the amount of work required at CU Denver for the degree.

Transfer of Credits for Core CLSC Courses: Students must contact the current course instructor for each course that they are substituting (or attempting to transfer in) to determine that the course is comparable. This will involve submitting the course syllabus to the course instructor for review to assist with determining comparability. Students must copy/forward emails from the current course instructors identifying whether or not the course being transferred is comparable to the core CLSC course to Ms. Galit Mankin (galit.mankin@ucdenver.edu).
Transfer of credits for elective courses into the CLSC program: Students will submit a copy of the course syllabus to their Academic Advisor for each course that they are seeking to transfer into the program and apply towards the degree. The Academic Advisor will review the materials in light of the focus of the student’s program of research and level of academic rigor. Ms. Galit Mankin (galit.mankin@ucdenver.edu) needs to be copied on or forwarded emails detailing the decision to recommend or not the transfer of credit hours.

Students wishing to transfer credits for courses taken over 7 years prior to completing the comprehensive exam need to be validated. The validation process is similar to the transfer of core credit hours. Students need to contact the course instructor for each of the courses taken more than 7 years ago to determine whether or not the course content has changed substantially since the student completed the course. Emails of the instructor’s assessment must be forwarded or copied to Ms. Galit Mankin (galit.mankin@ucdenver.edu).

The onus for contacting instructors, collecting course syllabus/syllabi for review, and the coordination of the review and communication process, as well as, paperwork is on the student.

Finally, a Graduate School form (http://www.ucdenver.edu/academics/colleges/Graduate-School/current/Pages/resources.aspx) detailing the recommended courses for transfer is required to be signed by the program and submitted to the Graduate School. The Transfer of Credit form is not required for non-degree credit transfers as these courses appear on the University of Colorado transcripts. Approval of the courses by the program and the Graduate School on the Application for Candidacy will constitute approval of the transfer of courses toward the degree.
Clinical Science Program Frequently Asked Questions

Where is the Graduate School located?
The Graduate School is located on the Anschutz Medical Campus in Aurora, CO at 13001 E. 17th Place in Building 500, Room W5107.

Where is the Clinical Science Program Administrative Office located?
The Clinical Science Program Administrative office is located on the Anschutz Medical Campus in Aurora, CO at 12401 E. 17th Avenue in the Leprino Office Building, Room 351.

I am interested in the Clinical Science Program and would like to know more about the admissions requirements. Who do I contact?
Please contact Galit Mankin at 720-848-6249 or galit.mankin@ucdenver.edu for more information.

What forms do I need to complete for exams/graduation?
Forms, deadlines and instructions for exams/thesis defense are located on the Graduate School website. See the Master’s Resources page if you are a master’s student. PhD students should refer to the PhD Resources page.

How can I verify that members of my committee have current Graduate Faculty appointments?
See the Graduate Faculty Directory for a list of faculty with current or expired appointments. New appointment paperwork is received on a regular basis from the programs. If a faculty member's appointment is showing as expired or they are not currently listed on the website, contact Galit Mankin, CLSC Program Administrator, to see if appointment paperwork has already been forwarded to the Graduate School or to request new appointment paperwork be completed.

What is the maximum number of credits I can transfer?
Master's degree students can transfer in 12 semester hours. PhD degree students can transfer in 30 semester hours. Credits must meet the transfer credit requirements and be approved for transfer by the program and the assistant dean.

What opportunities are there for loan repayment for clinical researchers?
The NIH Loan Repayment Program (LRP) for Clinical Research is designed to recruit and retain highly qualified health professionals as clinical investigators, repaying lenders directly for the existing principal, interest, and related expenses of qualified government and commercial education loans obtained for undergraduate, graduate, and health professional school expenses. For more information, visit the LRP website.

Is financial support available for international students?
No student financial support [for either educational costs (e.g., tuition) and/or stipend support] is available through the Clinical Science Program. As part of the application materials required, all international applicants must document that adequate financial support will be available for the entire period of study. For additional information, please review the International Student Requirements for Graduate School admissions.

Who might I contact for a CLSC course billing-related question?
For billing questions, contact the Anschutz Medical Campus Bursar's Office (in Education 2 North) at 303-556-2170 or http://www.ucdenver.edu/student-services/resources/CostsAndFinancing/billing/Pages/StudentBilling.aspx

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I have questions about in-state/out-of-state tuition. Who should I contact?
Residency requirements and forms can be found on the CU Denver | Anschutz Medical Campus Graduate School website under the Financial Aid & Tuition tab at http://www.ucdenver.edu/anschutz/studentresources/Registrar/StudentServices/Pages/Residency.aspx.
Useful Web Links

CU Denver | Anschutz Medical Campus Student Page (links to Financial Aid, Student Services, Bursar’s Office, Registrar, Graduate School, Canvas, Parking and Shuttle Service): http://www.ucdenver.edu/academics/colleges/Graduate-School/current/Pages/resources.aspx

Clinical Science Program: http://www.ucdenver.edu/research/CCTSIEducation-training/clsc/Pages/default.aspx

CLSC Course Schedule: http://www.ucdenver.edu/research/CCTSIEducation-training/clsc/Resources/Pages/Course-Books-Schedules.aspx

CSPH Course Schedule: http://www.ucdenver.edu/academics/colleges/PublicHealth/Academics/academics/Pages/CoursesRegistration.aspx

Graduate School: http://www.ucdenver.edu/academics/colleges/Graduate-School/current/Pages/resources.aspx

CU Denver | Anschutz Medical Campus Registrar: http://www.ucdenver.edu/student-services/resources/registrar/Pages/default.aspx

CU Denver | Anschutz Medical Campus Course Descriptions (“Course Books”): http://www.ucdenver.edu/anschutz/studentresources/Registrar/CourseListings/Pages/default.aspx

CU Denver | Anschutz Medical Campus Bookstore: http://cuanschutz.bncollege.com/webapp/wcs/stores/servlet/BNCBHomePage?storeId=87741&catalogId=10001&langId=-1

Anschutz Medical Campus Health Sciences Library: http://hslibrary.ucdenver.edu/

Academic Integrity Expectations

Please refer to the Academic Honesty Policies and Academic Dishonesty definitions at the University of Colorado Denver, Anschutz Medical Campus Catalog Website (http://catalog.ucdenver.edu/content.php?catoid=6&navoid=530#Academic_Honor_Code_and_Discipline_Policies).

Honor Code Guidelines

Education at the CU Denver | Anschutz is conducted under the honor system. All students who have entered graduate and health professional programs should have developed the qualities of honesty and integrity, and each student should apply these principles to his or her academic and subsequent professional career. All students are also expected to have achieved a level of maturity, which is reflected by appropriate conduct at all times. Expectations, definitions, and procedures regarding graduate student conduct are outlined in the Code of Conduct (http://www.ucdenver.edu/life/services/standards/Documents/CUDenver-CodeofConduct.pdf).

Academic Honesty

Students should adhere to the highest standards of academic honesty and integrity, to include completing individual work as assigned, adhering to department requirements, accurately documenting sources of information and records, and engaging in personal conduct both on and off campus that reflects well on the University, your professional duties, and your ability to perform in classroom and/or laboratory environments. Examples of behavior that violates these standards include: plagiarism (including the undocumented use of internet and web-based information), cheating, illegitimate possession and/or use of examinations, violation of the ethical standards for conducting research, and falsification of official records.

Professional Conduct

As current and/or future professionals, students are expected to adhere to the highest standards of professionalism during their academic career. This means that students adhere to the professional and ethical standards of their respective fields, and the academic and honor code expectations for the University of Colorado Graduate School.

The University of Colorado Graduate School has a commitment to accepting a diverse culture and highly values multiple perspectives. This means that not only is discrimination of any form unacceptable, but the University upholds the expectation that students remain open-minded, and respectfully discuss and interact with diverse backgrounds and perspectives.

Examples of unprofessional conduct include misrepresentation of effort, credentials, or achievement in either the academic or professional setting; any action which compromises the quality or safety of consumer care; violation of confidentiality; and any other conduct unbefitting a professional practitioner or researcher. When conducting research, individuals need to comply with research guidelines established by the IRB.
Although it is not possible to list every situation that violates the Academic Integrity Expectations of the Graduate School at University of Colorado Denver and Anschutz Medical Campus, the following examples will provide a reference point:

- Academic Dishonesty
- Complicity with Academic Dishonesty
- Plagiarism
- Cheating
- Fabrication and Falsification
- Submission of the same papers more than once or for different classes
- Misuse of Academic Materials
- Any conduct, both on and off campus, that interferes with the student’s ability to perform his/her classroom, laboratory, or professional duties or reflects poorly on the University
- Violation of any University of Colorado, Anschutz Medical Campus, Denver Campus, or Graduate School policy

**Relationship of Honor Code to Local, State and Federal Laws**

The University adheres to all applicable local, state and federal laws, and cooperates with law enforcement officials in all matters. Any alleged violation of local, state or federal laws will be referred to the appropriate law enforcement agency and such laws have precedence over the provisions of this policy.

**Reporting Violations of the Honor Code**

The primary responsibility for reporting violations of the student honor code rests with the individual who has committed the violation. However, fellow students and members of the faculty and staff also share in this responsibility. Students, faculty, and staff must report violations of the Honor Code to the Graduate School. As part of the orientation process, each student is required to electronically sign an agreement to adhere to the Honor and Conduct Codes.

**Guidelines for Implementation of the Student Honor Code**

Members of the Graduate School community, including faculty and students, accept the responsibility to maintain the highest standards of intellectual honesty and ethical and professional conduct. Upon admission, all students in the Graduate School electronically review or receive a copy of the Graduate School guidelines and procedures for implementing the Graduate School Honor Code. Students indicate their willingness to adhere to the Code by electronically signing the acknowledgment form. Ignorance of the guidelines and procedures may not constitute an affirmative defense to a violation of the Honor or Conduct Codes. All questions or concerns regarding the Honor and Conduct Codes should be directed to the appropriate Graduate School office.

**CU Anschutz location:** Academic Office 1, room 1503 (303-724-2911)

**CU Denver location:** Lawrence Street Center, Suite 1251 (303-315-2183)

The Graduate School has developed the following guidelines and procedures to review alleged violations of the Student Honor Code and to make recommendations concerning violations of the Code. Alleged violations by faculty or students of the Code are first reported to the Dean or Assistant Dean. Normally, disciplinary action should not be taken against the alleged violator until the Honor Code Committee and Assistant Dean have
reviewed the case and made a recommendation to the Dean; however, if the alleged violation threatens the welfare or safety of others or is against the law (see Relationship of Code to the Laws above), appropriate action should be taken immediately.

**Honor Code Committee**
The committee generally consists of four faculty members and one student representative.

The faculty members are selected on an ad hoc basis from outside the school of the alleged violator(s). The student representative is also selected on an ad hoc basis from a different program and school than the alleged violator(s). Faculty selected to serve in this ad hoc capacity commit to be available to serve for a two year period as needed. Students commit to one year. Faculty and students can be reappointed for additional terms. The Chairperson of the committee will be one of the faculty members and will be elected by the Committee. Decisions of the committee shall be reached based upon a simple majority vote. The primary focus of this advisory committee is to examine alleged violations of the honor code as defined above, to hear testimony, and to make recommendations to the Assistant Dean as appropriate. All matters referred to the Student Honor Code Committee shall be confidential to the extent practical and permitted by law, throughout the proceedings. Note: Issues regarding violations of student conduct will be considered under guidelines as outlined in the Code of Student Conduct. Issues related to academic grievance or suspension will be dealt with as outlined in the procedure in Appendix B of the Graduate Student Handbook.

**Procedures**
The Honor Code Committee will be convened as necessary by the Assistant Dean. The Honor Code Committee shall follow these guidelines to the extent possible. However, the Committee reserves the right to modify these procedures if necessary based on extraordinary circumstances to be determined on a case-by-case basis.

1. Faculty, staff, and other students have the responsibility to report alleged violations of the Student Honor Code. The failure of a student to report an observed violation of the honor code may constitute a violation of the honor code and may subject the observer to an honor code proceeding. Any reasonable suspicion of a violation of the Student Honor Code shall be reported to the Graduate School Assistant Dean. All charges must be submitted in writing. Normally, disciplinary action will not be taken against the alleged violator until the Student Honor Code Committee has deliberated. However, if the alleged violation threatens the welfare or safety of others, or is against the law, the Graduate School Dean or designee will take appropriate action if necessary (e.g., immediate suspension).

2. If the reporting party is a student who has evidence that another student has violated the Student Honor Code, he/she may meet with the student to discuss the issue. The reporting party may seek the counsel of a neutral person such as the Campus Ombudsperson or another professor. The reporting party or a third party representing the reporting party shall give the student the opportunity to self-report. If the student refuses to self-report, the party shall report the suspicion to a professor, the Program Director, or School Associate Dean. The party must submit a written statement, including evidence, in writing to the Graduate School Assistant Dean within 5 working days of discussing the situation with the student.

3. If the reporting party is a faculty member who has evidence that a student has violated the Student Honor Code, he/she may meet with the student to discuss the issue. The faculty member may seek the counsel of a neutral person such as the Campus Ombudsperson or another professor. The reporting party or a third party representing the reporting party shall give the student the opportunity to self-report. If the student refuses to
self-report, the faculty member shall report the suspicion to their graduate Program Director or School Associate Dean. That party must submit a written statement, including evidence, in writing to the Graduate School Assistant Dean within 5 working days of discussing the situation with the student.

4. The Assistant Dean will review the information submitted concerning the alleged violation. If the student(s) has been confronted with the violation and admits having violated the honor code, the case may be referred immediately to the Assistant Dean for review and action. If there is no admission of wrongdoing, the case will be referred to the Honor Code Committee for a hearing. The Assistant Dean will coordinate the hearing process.

5. When an alleged violation is referred to the Honor Code Committee, the reporting party and student(s) will be notified of the charges in writing within 10 working days of the date of referral to the Committee and the date of the scheduled hearing.

6. The Honor Code Committee will hold a hearing. The Assistant Dean will coordinate the activities of the Committee and attend the hearings as a non-voting observer. The hearing will be held, if possible, within thirty 30 days of the student(s) being notified of the alleged Honor Code violation. (a) The student(s) shall have the opportunity to submit a written pre-hearing statement in response to the charges. (b) The student(s) shall have the opportunity to review any evidence against him/her prior to the hearing upon submission of a written request to the Assistant Dean. (c) The reporting party shall also have the opportunity to review any evidence presented by the student(s) so they might clarify or update their statements prior to them being given to the Honor Code Committee. Full transparency shall be provided to all parties for evidence provided to the Committee.

The student accused of violating the Honor Code will be given an opportunity to be heard during the hearing and to present any evidence or witness he/she wishes. The reporting party may either attend the proceedings in person or submit a statement of the incident in lieu of personally attending the hearing. The Committee shall have no power to compel any individual to testify.

Legal counsel will not be present for either the student or the University parties.

The student may have a representative of her/his choice present at the hearing for advice and/or support during the proceedings. This representative shall not advocate on behalf of the student.

If the student has been properly notified of the charges and the date of the hearing yet elects not to attend, the hearing will proceed in his or her absence.

The Committee shall keep an adequate record of the hearing. Evidence will be reviewed during the hearing, the allegation of a violation must be proven using the standard of a preponderance of the evidence.

7. Following the hearing, the Student Honor Code Committee will discuss the proceedings outside the presence of the parties and determine a course of action to follow with respect to the student in question. Upon a majority vote of the Honor Code Committee, they will make their recommendation in writing to the Graduate School Assistant Dean, which may include but is not limited to the following actions:

- Take no action against the student based on a finding of no violation.
- Place the student on disciplinary probation for a specified period of time.
• Suspend the student's registration at the University of Colorado, including Extended Studies, for a specified period of time.

If the Committee is unable to reach a majority opinion on whether the student violated the Honor Code and what, if any, discipline should occur, the Chairperson will act as the tiebreaker.

8. A record of all documents associated with the case and a record of the action taken will be kept in a file in the Assistant Dean's office.

9. The Assistant Dean will review the decision of the Committee and notify the student(s) of her/his decision by email and certified U.S. mail within 5 working days of the hearing. The reporting party will also be notified by email of the decision.

10. The Assistant Dean will only reverse or modify the findings and recommendations of the Honor Code Committee if he/she concludes by a preponderance of the evidence that one of the following situations exists: (a) new information regarding the student's alleged violation of the Honor Code which was previously unknown to the student or the Committee is discovered; (b) there was an error in the process that prevented the student from presenting relevant information to the Committee that could have materially changed the Committee’s decision; or (c) there is evidence that the Honor Code Committee acted in an arbitrary or capricious manner.

11. If the student wishes to appeal the decision in the case, the appeal along with the rationale for the appeal shall be submitted in writing to the Graduate School Dean within 7 working days after the letter notifying the student of the Assistant Dean’s decision has been sent by certified U.S mail. The Dean will review the appeal within 14 working days and notify the student of the decision by email and US mail. Should extenuating circumstances necessitate an extended review or additional time, all parties will be notified. The decision of the Dean is final.

12. If the student is suspended, terminated/dismissed, or otherwise unable to continue his or her academic studies either temporarily or permanently because of disciplinary or other action, the Dean shall notify the appropriate CU Registrar of the change in the student's academic status and order the Registrar to suspend the student's registration.