

University of Colorado Denver



Clinical Science Graduate Program

www.uchsc.edu/clinicalscience

Master's of Science in Clinical Science

Student Handbook

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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 Scientists by providing a formal, structured, and rigorous educational program in the clinical sciences. The Clinical Science Graduate Program was designed in response to the demand for well-qualified clinical researchers in academia and industry. This critical need for individuals who are able to conduct rigorous, credible and relevant patient-based research within stringent ethical and regulatory guidelines is expected to continue to grow. This Master's degree program provides opportunities for learning new areas of knowledge and skills in clinical research to prepare clinicians for careers and opportunities in clinical and translational sciences. Specifically, the Master's program provides a strong foundation in the computational and statistical sciences, clinical epidemiology, designs and methods used in clinical research, health services and outcomes, and biomedical ethics, through didactic course work and a mentored research project. Graduates will obtain a set of useful and practical skills for collaborative, team-based research focused on clinical and translational questions.

Purpose of Handbook

The intent of the Handbook is to provide key information to help you succeed in and benefit the most from the Clinical Science Graduate Program. This Handbook should be used in conjunction with the University of Colorado Denver Graduate School Rules, Graduate School Policies and Procedures, the Graduate School Handbook, the Course book, and other official documents prepared and distributed by the Clinical Science Program. (This would include packets developed for candidacy application, thesis preparation, and documents prepared for graduation). It is expected that students will be familiar with and knowledgeable of these documents. To access the Graduate School Student Handbook, please go to <http://www.uchsc.edu/gs/gs/handbook.htm>.

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 Advisor.

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 Graduate Program Core Faculty and Staff

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Master of Science in Clinical Science (MSCS) Degree Program

The Master of Science in Clinical Science (MSCS) degree program provides formal training in clinical 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 9-12 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. Your Academic Advisor assists with identifying and scheduling required coursework, and selecting committee members to serve on the Final Examination Committee. Your Academic Advisor is very helpful in identifying areas of research and existing possibilities and collaborations. It is expected that you meet with your Academic Advisor at least yearly to review, and if necessary revise, your program plan of study.

CLSC Program Curriculum

The Clinical Science Program curriculum for the MSCS is shown below:

Clinical Science MSCS Program Course Curriculum

Required Core Courses		<i>Credits</i>	<i>Term*</i>
BIOS 6601/ BIOS 6602	Applied Biostatistics I <i>and</i> Applied Biostatistics II	6	Fa/Sp
CLSC 7101	Grant Writing I	1	Sp
CLSC 7150	Ethics and Regulation in Human Subjects Research	1	Su/Sp
CLSC 6270	Critical Appraisal Seminars in Clinical Science	1	Fa
BIOS 6648 OR EPID 6626	Design of Clinical Trials and Experiments [†] (2 credits) OR Research Methods in Epidemiology (3 credits)	2-3	Sp
EPID 6630	Epidemiology	3	Fa
Total Required Core Course Credits		14-15	

Required Thesis / Research Hours		<i>Credits</i>	<i>Term*</i>
CLSC 6699	Masters Research Project: Publishable Paper	Var	All
CLSC 6950	Masters Research Project: Thesis	Var	All
Total Thesis / Research Credits		4-6[‡]	

Required Elective Hours		<i>Credits</i>	<i>Term*</i>
	Elective Courses	9-12	All

* The term(s) listed is when the course is usually offered. This is subject to change. Fa = Fall semester; Sp = Spring semester; Su = Summer session.

† BIOS 6648 is offered every other spring (even years)

‡ A minimum of 30 credit hours are required, of which no less than 4 and no more than 6 must be thesis/research hours.

Academic Advisement

Meeting with your Academic Advisor once a year to plan and discuss your progress through the program is crucial to a successful experience for you and is thus **mandatory**. Your Academic Advisor assists you with identifying and scheduling required coursework and is helpful in identifying areas of research and existing possibilities and collaborations, as well as selecting committee members for your research project. They may even help save you money by progressing through the program in the most expeditious manner.

At the time of your admission to the program, an Academic Advisor will be identified.

1. **The Academic Advisor** will assist you 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 the final project examination/defense will be recorded on the student's program plan form (see CLSC Master's Program Plan Form below). Students should visit with their 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 using the Program Plan Form (see form below). These plans are to be maintained electronically and can be obtained from the CLSC Program Office (steppl@NJHealth.org).

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 to the CLSC Graduate Program Office (Lori Stepp at steppl@NJHealth.org) 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. A copy will be placed in the student's file in the CLSC Graduate Program's Office. Confidentiality of data will be protected. **Updated program plans and current address and phone are the responsibility of the student. Please provide this information to the CLSC Graduate Program Office.**

Transfer of Credits

Pending Academic Advisor and Graduate School approval, transfer of up to 12 semester credits for the MSCS may be coordinated. More information is available through [Graduate School Student Services](#).

Transfer credit is defined as any credit earned at another accredited institution 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 UCD is 12 semester hours for M.S. degree programs. The Graduate School accepts transfer credits only after approval of those transfer credits by the student's program director and the Dean.

All courses accepted for transfer must:

- a. Be graduate level (M.S. / M.A. or Ph.D.);
- b. Have a grade of "B" or higher;
- c. Not have been applied toward an undergraduate degree or another graduate degree on the same level (e.g., M.A. to M.S.);
- d. Be validated if not completed within the time limit for completing all M.S. degree requirements; and
- e. Be transferred prior to the term in which the final research project examination is taken.

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

Masters of Science in Clinical Science Program Planning Form

STUDENT NAME

Clinical Science MSCS Student Program Plan Form

Research Mentor:

Date of Matriculation:

Required Courses for MSCS Students – March 2008 Approved Curriculum

Number	Credits	Description	Type	Plan	Credits Earned
BIOS 6601	3	Applied Biostatistics I	Core		
BIOS 6602	3	Applied Biostatistics II	Core		
BIOS 6648 or EPID 6626	2 or 3	Design of Clinical Trials and Experiments or Research Methods in Epidemiology	Core		
CLSC 7101	1	Grant Writing I	Core		
CLSC 7150	1	Ethics and Regulation in Human Subjects	Core		
CLSC 6270	1	Critical Appraisal Seminars in Clinical Science			
EPID 6630	3	Epidemiology	Core		
	9-12	Elective Courses	Elec.		
CLSC 6699	4-6	Masters Research Project: Publishable Paper	Paper Option		
CLSC 6950	4-6	Masters Research Project: Thesis	Thesis Option		
		<i>A minimum of 30 credits is required. Of these 30 credits, no fewer than 4 and no more than 6 thesis or research paper credits are required.</i>			
Final Exam					

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

Number	Credits	Description	Substitutes for	Credits Granted
Total				

Course Offerings

Course Information

Course titles, credits and semester of offering are listed on the Course Offering Schedule available on the CLSC website:

(http://www.uchsc.edu/clinicalscience/information/course/course_schedule.htm)

Consultation of the Graduate School Coursebook is also recommended:

(<http://www.ucdenver.edu/student-services/resources/registrar/faculty-staff/Courses/Pages/CourseDescriptions.aspx>)

The semesters listed are the semester 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 or modify the program plan for students who have decelerated or take less than 6 credit hours/semester.

Registration

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 under “Quick Links” on the Registrar’s website: <http://www.ucdenver.edu/registrar/>.) New students must register using paper forms, which require program approval. Lori Stepp (steppl@NJHealth.org, 303-398-1657) can help you with the process, which should be completed before the first day of the semester. The drop/add period ends one (summer) to two weeks (fall and spring) after the semester begins. Students remain 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 your registration date. Note that new students are not allowed to register until after being cleared by the Graduate School. It is, therefore, essential that all the required forms, information and payments have been submitted to and approved by the Graduate School.

The reduced tuition rate for Colorado residents is considered a State benefit. State law (HB-1023) requires that an affidavit be completed and submitted before anyone may take advantage of a State benefit. Therefore, all incoming students must complete this form and personally appear before Diana Warren with proof of citizenship (passport or government-issued ID) in the Registrar’s Office. Without this, students are also not eligible for other benefits, including payment of or reimbursement for tuition by any State institution (i.e., a student’s department).

CLSC 6650 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 Guided Research Tutorial) cannot exceed 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, discuss your intent and plan for the Guided Research Tutorial with your Academic Advisor to get approval.
2. Discuss with proposed course instructor his/her availability to supervise the course and your study and to review and agree on the course plan. Specifically, a course plan should be mutually developed and agreed upon that includes:
 - proposed number of credit hours,
 - the course objectives
 - the course content covered, activities, and timeframe (outline),
 - assignments or outcomes/products of the course and when these are due to the course instructor.
3. Determine the appropriate number of credit hours
 - Regular meetings (once per week) 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 for approval by Educational Director or the Program Director.

Steps 1-4 need to be completed prior to registering for CLSC 6650 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 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

Grading within the CLSC Program

Standards for assigning grades are as follows:

Letter Grade	GPA	% Grade
A	4.00	93-100
A-	3.70	90-92
B+	3.30	87-89
B	3.00	83-86
B-	2.70	80-82
C+	2.30	77-79
C	2.00	73-76
C-	1.70	70-72
D+	1.30	68-69
D	1.00	63-67
D-	0.70	60-62
F	0.00	<60

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

Incomplete Grades

After the 10th week, courses may not be dropped unless there are special circumstances. As of January 1, 2009, students wanting additional time to complete the course requirements may request a grade of “Incomplete” (I). Previously available grades of IW (Incomplete Withdrawal) and IF (Incomplete Fail) are no longer allowed. The student must ask the instructor for a grade of “Incomplete” and the instructor may grant the request if the student’s circumstances warrant it. If granted, the student and the Instructor of Record sign a grade change form (available through the Office of the Registrar (<http://www.ucdenver.edu/registrar/>)) and provide a record of what work will be required and how the student will complete the work missing within a specified timeframe. If the agreed upon work is not completed by the agreed upon time, the course grade will be changed to “Fail” (F).

Online Courses

Blackboard is used in almost all courses available through the CLSC Program. Course syllabi, notes, lectures, articles, discussion groups, and assignments can be found here. Online quizzes, exams, and assignments are also conducted on or submitted via Blackboard. Blackboard 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. Blackboard is primarily used for web-enhanced courses (traditional courses with Internet enhancement), and hybrid courses (courses that blend the traditional format with online).

Blackboard can be accessed at <http://blackboard.cuonline.edu> and accessed with the student ID and PIN number assigned through the Registrar's Office at student orientation. Upon enrollment, your registered courses will be attached to Blackboard and content made available at the beginning of the semester.

eCollege[®] is used by UC Denver for its 100% online courses. The CLSC Program does not currently have any fully online courses available in its core curriculum, but some electives are provided through eCollege[®].

For Blackboard and/or eCollege[®] assistance, call the CU Online Help Desk at 303-315-3700 (Monday through Friday, 7:00 am – 7:00 pm), or email blackboardhelp@ucdenver.edu or helpdesk@cuonline.edu. The help desk provides email assistance 24 hour a day, 7 days a week. They guarantee a 24-hour response time to inquiries, but generally respond in much shorter time.

Online Course Evaluations

CourseEval, an online course and instructor evaluation or assessment system, is used to get students' comments, feedback and evaluation of courses. Ongoing student assessment is critical and is a required component of any Graduate School program to maintain accreditation. Course evaluation requests will be emailed to students at their campus email throughout or at the end of a course. Please complete these evaluations for each instructor and for each course.

A note on anonymity: The online evaluation system protects your identity.

For courses that use multiple guest lecturers, we recommend that you complete each guest instructor's assessment/evaluation immediately following the lecture or as soon as the evaluation is made available. You will have two to three weeks after the last day of the semester to complete all course evaluations. At the end of the semester you will also have a course assessment in which you will evaluate the course overall and the performance of the course director or coordinator(s).

Evaluations will be sent to your ucdenver.edu email account. The email will have a log-in and password prompt to complete prior to accessing the online evaluation. **The username and password are the same as for your ucdenver.edu email account.** If you have log-in issues, contact CLSC Program Administrator Zach Robison (zach.robison@ucdenver.edu).

The 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;

- 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.

The two final research project options differ primarily in the form of the final written product. 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 already collected 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 Completing the Final Project and Examination

The general process follows:

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 online (www.uchsc.edu/gs/gs/graduate_faculty.htm). 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 Lori Stepp (steppl@NJHealth.org) a biosketch of the nominee 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: www.uchsc.edu/gs/gs/graduate_faculty.htm.

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 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 Master's Thesis and students who complete the publishable paper option are to enroll in CLSC 6699 Research in Clinical Science for Master's Students. The total number of course credit hours that students may complete for their final project (thesis or publishable paper) is 3-6 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 and Regulation 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.

When the committee chair agrees that the written proposal is ready to present, a time acceptable to all committee members can be scheduled. Plan on a meeting of 1.5 hours

unless the chair advises differently. This is a closed meeting, attended only by the committee members and the student.

When the proposal is finalized, a copy of the approved proposal is to be provided to the program office. The committee may suggest modifications to the proposal prior to signing the Project Proposal Approval form (*see page 21*). The Project Proposal Approval form is to be signed by all members of the examination committee indicating their approval of the project plan. This constitutes an agreement between the student and the examination committee and the program on the scope of work for the thesis or publishable paper research project.

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 rationale 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;
- 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. 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.

8. Scheduling the Thesis/Publishable Paper Final Exam.

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 (shown at the end of this section), 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.**

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.

Students must submit the Request for Scheduling Exam form to the program coordinator with the signed Final Exam Schedule Approval form. Allow a minimum of **ten business days for the CLSC to process the forms.**

Please note that the following forms are needed for the above process:

- 1) Request for Scheduling 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 Graduate School calendar available at the Office of the Registrar website: (<http://www.uchsc.edu/registrar>). You **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 Graduation 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.

9. Thesis/Publishable Paper Final Exam.

The thesis/publishable paper defense is open to the public and is publicly advertised. Upon completion of the student's presentation and answering of any questions from attendees, 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.

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.

10. Prepare final document for Defense.

After the oral defense, incorporate any additional changes into the final version of the thesis or publishable paper.

Thesis: Copies of the current Style and Policy Manual for Theses and Dissertations are available from the Graduate School. The Graduate School also provides technical assistance in theses preparation to students by offering a "thesis clinic" twice annually and through individual advising by appointment. Two bound copies of the final version of the thesis are submitted to the Graduate School for final approval. This MUST occur within 60 days of your Final Exam date.

Please note: A bound copy of the thesis must also be submitted to the Anschutz Medical Campus CLSC program office for inclusion in our library. The Clinical Science Program Office is located in the Leprino Building, Suite 350, Anschutz Medical Campus. The mailing address is:

Attn: Zach Robison
University of Colorado Denver Clinical Science Program
Colorado Clinical & Translational Sciences Institute (CCTSI)
12401 E. 17th Ave.
Leprino Building, Suite #350
Campus Box B141
Aurora, CO 80045

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.

11. Preparation for Graduation following successful Defense.

The MS Graduation Packet with corresponding forms and important deadlines is available at: http://www.uchsc.edu/gs/gs/student_services.htm and additional information provided on the next page.

UNIVERSITY OF COLORADO DENVER
CLINICAL SCIENCE GRADUATE PROGRAM
MASTERS DEGREE

Project Proposal Approval Form

The following members of the Final Research Project Examination Committee have approved the final research project proposal submitted by

Masters Candidate

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.

UNIVERSITY OF COLORADO DENVER
CLINICAL SCIENCE GRADUATE PROGRAM
MASTERS DEGREE

Final Exam Schedule Approval Form

The following members of the Final Research Project Examination Committee 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.

Awards and Recognition

Every year the Clinical Science Graduate Program recognizes outstanding students and faculty through a variety of awards that are presented at a ceremony in the spring. The awards and associated criteria are described below.

Outstanding Faculty Awards

Outstanding Research Mentor Award is based on student nominations that describe the attributes of the person and details examples that make this individual an outstanding mentor.

Outstanding Teaching Award is based on student evaluations of courses taught during that academic year. Student online course evaluations determine the award recipient.

Outstanding Service Award recognizes someone who has put forth extra effort and assistance to enhance the student experience and/or Clinical Science Graduate Program.

Outstanding Student Awards

There are several Outstanding Student Awards:

- Outstanding Master's Degree Program Student
- Outstanding Doctoral Degree Program Student (1 awarded for each track)
 - Clinical Investigation Track Doctoral Student
 - Health Information Technology Track Doctoral Student
 - Health Services Research Track Doctoral Student

The determination of student awards is based on the grade point average for the academic year of the award. In other words, this is not based on a cumulative grade point average and if students are only currently taking thesis/project hours they would be ineligible for the award.

Graduate School Related Information

I.D. Badge and Parking Information

As a new student you will be contacted by email to receive your badge. 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://administration.ucdenver.edu/admin/facilities/parking>).

Guidelines for Studying

A good rule of thumb to remember is that for each credit hour of a course, you will spend about double that number of hours each week doing work for the class. Thus, you will spend

about 6 hours each week, out of class, on average, for a 3-credit-hour class. Students with less experience in the subject matter of a particular unit or course should anticipate a greater time commitment.

Ordering Books and Software

Books required for use in CLSC courses are available 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. Course notes packets, when used, are only available through the AMC bookstore. Most material will be made available on Blackboard. 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://www.uchsc.edu/bookstore/>.

The Health Sciences Library at Anschutz Medical Campus

As a student 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, which 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://hsclibrary.uchsc.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 (<http://www.cudenver.edu/Admissions/CostsFinancing/AnschutzMedicalCampus/FinancialAid/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.

Clinical Science Program Frequently Asked Questions

What opportunities are there for loan repayment for clinical researchers?

The [NIH Loan Repayment Program \(LRP\)](http://www.lrp.nih.gov/about_the_programs/) (http://www.lrp.nih.gov/about_the_programs/) 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 Graduate School "[Information for Prospective Graduate Students from Other Countries](#)" brochure.

Whom might I contact for a CLSC course billing-related question?

For billing questions, the bursar's office website is available at: (<http://www.ucdenver.edu/Admissions/CostsFinancing/AnschutzMedicalCampus/StudentBillingBursarsOffice/Pages/StudentBilling.aspx>).

Whom might I contact for an in-state/out-of-state tuition question?

Residency requirements and forms can be found online (www.ucdenver.edu/registrar) under the "residency" link.

Useful Web Links

UCD Health Sciences Center **Student Page** (links to Financial Aid, Student Services, Bursar's Office, Registrar, Graduate School, Blackboard, Parking and Shuttle Service):
<http://www.ucdenver.edu/students/Pages/Students.aspx>

Clinical Science Program: <http://www.uchsc.edu/clinicalscience>

CLSC Course Schedule:
http://www.uchsc.edu/clinicalscience/information/course/course_schedule.htm

CSPH Course Schedule:
<http://www.cudenver.edu/Academics/Colleges/PublicHealth/Academics/coursesandregistration/Pages/CourseOfferings.aspx>

Graduate School: <http://www.uchsc.edu/gs>

Graduate School Student **Handbook:** <http://www.uchsc.edu/gs/gshandbook.htm>

Graduate School **Student Services:** http://www.uchsc.edu/gs/gstudent_services.htm

UCD Anschutz Medical Campus **Registrar:** <http://www.ucdenver.edu/registrar>

UCD **Coursebooks:** <http://www.ucdenver.edu/student-services/resources/registrar/faculty-staff/Courses/Pages/CourseDescriptions.aspx>

UCD Health Sciences Center **Bookstore:** <http://www.uchsc.edu/bookstore>

UCD Health Sciences Center **Library:** <http://hsclibrary.uchsc.edu/>