



University of Colorado
Denver | Anschutz Medical Campus

CLINICAL SCIENCE GRADUATE PROGRAM

MASTER'S OF SCIENCE IN CLINICAL SCIENCE

STUDENT HANDBOOK

303-724-1214 (p)

<https://cctsi.cuanschutz.edu/training/clsc#masters>

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Welcome!

The overall goal of the University of Colorado Denver | Anschutz Medical Campus 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.

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 Cicutto, CLSC Director, at any time by email (lisa.cicutto@cuanschutz.edu) or by phone at 303-398-1538.

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 | Anschutz Medical Campus Graduate School Policies and Procedures, the Course book, and other official documents prepared and distributed by the Clinical Science Program. (This would include packets developed for candidacy application, Final Research Examination 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 Policies and Procedures, please go to <https://graduateschool.cuanschutz.edu/forms-resources/resources>

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:

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

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 research hours, and the completion and defense/final exam of a 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. 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 MSCS Program Curriculum

The Clinical Science Program MSCS curriculum for students admitted **during or after Fall 2021** is shown below:

Required Core Course Hours		Credits
BIOS 6601	Applied Biostatistics I	3
BIOS 6602	Applied Biostatistics II	3
BIOS 6648 or EPID 6626 or BIOS 6623 or EPID 6631	Design and Conduct of Clinical Trials or Research Methods in Epidemiology (BIOS 6602 is a pre-requisite) or Advanced Data Analysis or Analytical Epidemiology	3
CLSC 6210 [†]	Research Seminars in Clinical Science	1
CLSC 6270	Critical Appraisal Seminars in Clinical Science	1
CLSC 7101	Grant Writing I	1
CLSC 7150 or CLSC 7152	Ethics and Responsible Conduct of Research or Ethics and Responsible Conduct of Research in the Digital Age	1
EPID 6630	Epidemiology	3
Total Required Core Course Credits for All Students		16

Required Research Hours		Credits
CLSC 6699	Masters Research Project: Publishable Paper	Var
Total Research Credits		4-6

Required Elective Hours		Credits
Total Elective Course Credits		8-10

Total Required Hours for Degree = 30

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

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

MSCS to PhD Program Transfer

MSCS students who are interested in transferring into the CLSC PhD program can submit a request for a program degree transfer from the MSCS to the PhD to the CLSC Executive Committee for consideration. The request should be submitted after completing the majority of all of the required courses or 6-8 months prior to MSCS degree completion. Your request to transfer should include:

- A letter from you describing the reasons for requesting the transfer into the CLSC doctoral program, the specific area of focus, and identification of your research mentor and thesis committee members.
- A 3-5 page document describing the proposed research dissertation project including how it builds (or not) on your MSCS research project, your general specific aims, research questions or hypotheses and methodological approaches.
- A timeline for research project, thesis and degree completion.
- Letters of recommendations and support from your named research mentor and committee members. The letters should **explicitly detail** their commitment to serve as your mentor or thesis committee throughout the doctoral program.

The CLSC Executive Committee will also review the student's academic transcript. Grades in required courses should be at a minimum a B. In addition, the CLSC Executive may request an interview. The entire process for review and decision by the CLSC Executive Committee takes about 6-8 weeks.

If you are interested in transferring from the MSCS in to the CLSC PhD program, you should speak with your Academic Advisor and the Program Director to plan the best approach and timing. In order to qualify and sit for the preliminary examination, requests to transfer should occur no later than early March for the May/June preliminary examination.

Academic Advisement

Student Responsibilities and Program Plans

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.
- Completing and updating annually the CLSC Academic Plan
- Preparing a research plan and timetable in consultation with the Research Mentor including coursework and any fieldwork.
- Meeting with the Research Mentor and providing regular updates on progress and results of research project.
- Establishing a Final Research Project Examination 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 MSCS degree requirements in 2 years (the Graduate School's maximum duration for MSCS degree completion is 7 years)

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 assigned to you.

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). 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 using the Program Plan Form (see form below). These plans are maintained electronically and accessed via a secure 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. **Updated program plans are the responsibility of the student.**

CLSC MSCS Student Program Plan (students admitted *during or after Fall 2021*)

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:
<https://cctsi.cuanschutz.edu/training/clsc#resource>

STUDENT NAME: _____

DATE OF LAST REVISION: _____

Matriculation: _____

Research Mentor: _____

Advisor: _____

Courses			Semesters (Term -- Year)									Credits Earned
Number	Credits	Description	--	--	--	--	--	--	--	--	--	
TOTAL REQUIRED HOURS FOR DEGREE = 30												
	16	Core & Track Courses										
BIOS 6601	3	Applied Biostatistics I	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
BIOS 6602	3	Applied Biostatistics II	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EPID 6630	3	Epidemiology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CLSC 6270	1	Critical Appraisal Seminars in Clinical Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
BIOS 6648 or EPID 6626 or BIOS 6623 or EPID 6631	3	Design and Conduct of Clinical Trials (3 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)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CLSC 6210 [†]	1	Research Seminars in Clinical Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CLSC 7150 or CLSC 7152	1	Ethics and Responsible Conduct of Research or Ethics and Responsible Conduct of Research in the Digital Age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CLSC 7101	1	Grant Writing I	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	8-10	Elective Courses										
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EXAMS:	4-6	Required Research Hours Indicate # of Credit Hours taken per Semester: Fa/Sp/Su-Year										
CLSC 6699		<input type="checkbox"/> Research Project: Publishable Paper										

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

Courses to Transfer – must be approved by Program and the Graduate School				
Number	Credits	Description	Substitutes For	Credits Granted

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

Student's Approval Date: _____ Track Director's Approval Date: _____

Transfer of Credits

Pending CLSC Program and Graduate School approval, transfer of up to 12 semester credits for the MSCS may be coordinated. Transfer credit is defined as any credit earned at another accredited institution. The maximum amount of transfer work that may be applied toward a graduate degree at CU | Anschutz Medical Campus is 12 semester hours for M.S. degree programs and 30 semester hours for Ph.D. degree programs.

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 taken within seven (7) years of the Master's final exam; and
- e. Be transferred prior to the term in which the final research project examination is taken.

Credit cannot be transferred until the student has established a satisfactory record of at least one term of enrollment at CU | Anschutz Medical Campus (CU|AMC) and earned a minimum 3.00 GPA. Transferred courses do not reduce the residency requirement but may reduce the amount of work required 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@cuanschutz.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@cuanschutz.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@cuanschutz.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 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.

Course Offerings

Course Information

This document provides information about courses commonly taken by CLSC students, including course numbers, titles, descriptions, credit hours, and terms of offering. For the most current CLSC schedule of courses, and to assist with developing your program plan, please consult the CLSC Course listings on the CLSC website:

<https://cctsi.cuanschutz.edu/training/clsc#resource>

Consultation of the Anschutz Medical Campus Graduate School Course Book is also recommended:

<https://catalog.cuanschutz.edu>. 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 student registration portal is found at

<https://portal.cusys.edu/UCDAccessFedAuthLogin.html>. The Academic Calendar is posted on the Graduate School's website at

<https://graduateschool.cuanschutz.edu/forms-resources/resources>

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 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.

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 3-4 weeks 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 course instructor to Dr. Lisa Cicutto, 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

SAMPLE

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.

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, articles, and AI) 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 Add/Drop deadline, courses may not be dropped unless there are special circumstances. The student must ask the instructor for an "I" (Incomplete) 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 (up to a year). If the outlined work is completed according to the agreed upon time frame, the Instructor of Record must submit the final grade to the CLSC administrative office for processing. If the agreed upon work is not completed by the agreed upon time frame, the course grade will be changed to an "F" (Fail).

Canvas

Canvas 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 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> and accessed with your CU|AMC 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@cuanschutz.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

Ongoing student assessment is critical and is a required component of any Graduate School program to maintain accreditation. 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.

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 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 CTSI Grant Number UL1 TR004399. 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 <https://cctsi.cuanschutz.edu/resources/grant-language>

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 (requires special permission from the Program Director). 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, and then submitted to the CLSC Program Administration Office (galit.mankin@cuanschutz.edu). 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. Two members, including the committee Chair, must have or be eligible for a Graduate School faculty appointment (Regular or Special). A Graduate School faculty appointment listing is posted on-line at https://gs.ucdenver.edu/tbl_gradfac_curr.php

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@cuanschutz.edu) a CV, and a written explanation of how this potential member contributes to the committee. The nomination/approval process takes 6-8 weeks. Guidelines are posted on-line at <https://graduateschool.cuanschutz.edu/forms-resources/resources>

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 Chair and Research Mentor must come from the CLSC faculty (listed as “IN CLSC” on the faculty appointment listing).

3. Prepare a written proposal for the research project.

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 can enroll in either of these two options in their last 1- 2 semesters in the program.***

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 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. 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.

9. 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](#), 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 can be held in a room on the AMC campus or an approved affiliated campus or remotely by zoom. Contact CU Denver | Anschutz Medical Campus Educational Support Services to reserve a room and any necessary audio-visual**

equipment (e.g., projector): <https://www1.ucdenver.edu/offices/office-of-information-technology/services/academic-technology-and-classroom-support>

All members of the committee must be present for the examination.

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.

A maximum of 6 publishable paper (CLSC 6699) or theses credit hours (CLSC 6950) can be applied to the degree. If additional time is necessary to complete the MSCS publishable paper or thesis, registration/enrollment in CLSC 6699 or CLSC 6950 will be sustained but no more than 6 credits from these courses can be applied to the degree.

Please note that the following forms must be submitted to the Program Administrative Office at least 4 weeks in advance:

- 1) [Request for Exam form](#) (a Graduate School form SUBMITTED VIA DOCUSIGN)
- 2) [Application for Candidacy](#) (a Graduate School form SUBMITTED VIA DOCUSIGN)
- 3) [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.

10. 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 (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. The student is at no times to be in possession of the Graduate School Final Examination Results Report form.

11. Prepare final document for Defense.

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 on the [Graduate School website](#). 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. **The student must be registered in the semester they are graduating. If graduation does not occur in the same semester as the Final Exam, the student will be required to register for an additional 1 thesis credit (CLSC 6950) in the following semester.**

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 and approve the student for graduation. **The student must be registered in the semester they are graduating. If graduation does not occur in the same semester as the Final Exam, the student will be required to register for an additional 1 publishable paper credit (CLSC 6699) in the following semester.**

*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.*

UNIVERSITY OF COLORADO DENVER | ANSCHUTZ MEDICAL CAMPUS

CLINICAL SCIENCE GRADUATE PROGRAM

MASTERS DEGREE

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@cuanschutz.edu

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@cuanschutz.edu

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 by NIH/NCATS Colorado CTSI Grant Number UL1 TR004399. Contents are the authors' sole responsibility and do not necessarily represent official NIH views."
- In addition, publications should be registered with PubMed Central.
10. **Completed Graduate School forms will be submitted via DocuSign. CLSC forms should be emailed to: Galit.mankin@cuanschutz.edu**

AT NO TIME IS THE STUDENT TO HAVE POSSESSION OF ANY OF THE GRADUATE SCHOOL FORMS

CLINICAL SCIENCE GRADUATE PROGRAM: MScS Final Project Examination Report

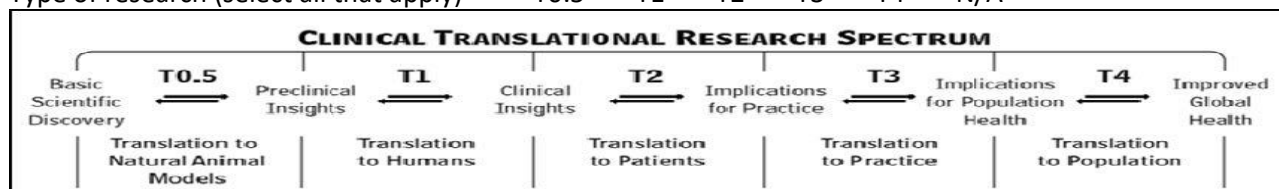
Student: _____ **Exam Date:** _____

Chair: _____ **Members in Attendance:** _____

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@cuanschutz.edu

General Graduate School Related Information

I.D. Badge and Parking Information

New students 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@cuanschutz.edu.

Pay parking is available at the Anschutz Medical Campus. For maps, permits and rates, go to <https://www.cuanschutz.edu/offices/facilities-management/parking-transportation-maps/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 to triple that number of hours each week doing work for the class. Thus, you will spend about 6-12 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.

The Strauss 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 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: (<https://library.cuanschutz.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 specifically designed to support students of the MSCS Program exist at this time. Financial aid information is available from the campus financial aid office: <https://www.cuanschutz.edu/student-finances/financial-aid>

Honor Code

Students are expected to review and follow the Graduate School Honor Code Guidelines and Academic Integrity Expectations: <https://graduateschool.cuanschutz.edu/forms-resources/resources>

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 C5000.

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 1890 N. Revere Ct. in the Anschutz Health Sciences Building, Room 6149.

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 303-724-1214 or galit.mankin@cuanschutz.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.

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. Transfer credit is defined as any credit earned at another accredited institution. 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 UCD Anschutz Medical Campus Bursar's Office:
<https://www.cuanschutz.edu/student-finances/billing-payments>