University of Colorado
Denver | Anschutz Medical Campus

HEALTH SERVICES RESEARCH PHD PROGRAM STUDENT HANDBOOK

A Collaborative Program between the Clinical Science Program and the Colorado School of Public Health

FALL 2026

CLSC Program: 720-848-6249 (p) | 720-848-7381 (f)
https://cctsi.cuanschutz.edu/training/clsc

ColoradoSPH Program:
https://coloradosph.cuanschutz.edu/education/departments/health-systems-management-policy

TABLE OF CONTENTS:

Welcome! 4

Purpose of Handbook 4

Overview of Important Programs 6

Key Contact Information 8

Health Services Research PhD Program 11

Academic Advisement 17

Course Offerings 30

The CLSC Preliminary Examination (Part 1) – General Content 36

The HSR Preliminary Examination (Part 2) – HSR Methodological Content 41

Acknowledgment of NIH Funding on CCTSI Publications and Projects 43

Comprehensive Examination, Thesis Process and Thesis Defense 44

Graduate School Related Information 59

CLSC/HSR Programs Frequently Asked Questions 61

Useful Web Links 62

Welcome!

The Health Services Research (HSR) PhD Program is a collaborative program between the Clinical Science (CLSC) Graduate Program and the Health Systems Management and Policy (HSMP) Department within the Colorado School of Public Health (ColoradoSPH). The HSR PhD Program is an interdisciplinary program that evaluates organization, delivery, and reimbursement in health care. Studies focus on efficacy, outcomes, access to care, patient satisfaction, and cost efficiency of diagnostic, preventive, interventional, and therapeutic approaches. HSR includes identifying predictors of disease and determining the effectiveness of preventive interventions. The HSR PhD Program includes formal training in the following cross disciplines:

- Econometrics
- Biostatistics
- Healthcare Outcomes
- Study design
- Health policy
- Health economics
- Grant Writing

Students also personalize the program to their own research interests by working with their advisers to identify an area of concentration for their learning and research beyond the required coursework. The HSR PhD Program requires a minimum of 39 credits of course work and 30 credits for thesis. An important compliment to the rigorous training in the HSR PhD Program is the formal mentoring with interdisciplinary faculty working in the HSR PhD Program, CLSC Program and the ColoradoSPH. Graduates of our program are highly qualified and well-trained researchers who will be nationally competitive for grant funding and career advancement in the health sciences.

Your feedback and perspectives of the Collaborative HSR PhD 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 the Co-Directors of the program (Drs. Cathy Battaglia and Richard Lindrooth) or CLSC Program Administrator (Dr. Lisa Cicutto) at any time. Our contact information is below. We have an open-door policy and want to hear your thoughts, both good and bad.

Purpose of Handbook

The intent of the PhD Student Handbook is to provide key information to help you succeed in and benefit the most from the HSR PhD Program. This Handbook should be used in conjunction with the University of Colorado Anschutz Medical Campus Graduate School Rules, Graduate School Policies and Procedures, the Graduate School Handbook, the Course book, and other official documents prepared and distributed by the HSR Program. (This would include documents developed for candidacy application, thesis preparation and 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

Generally, 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.

Overview of Important Programs

Colorado Clinical & Translational Science Institute – The Colorado Clinical & Translational Science Institute (CCTSI) is a collaborative enterprise between University of Colorado Anschutz Medical Campus (CU Anschutz), University of Colorado at Boulder, six affiliated hospitals and health care organizations, and multiple community organizations with a goal to accelerate the translation of research discoveries into improved patient care and public health. The CCTSI was created in 2008 with funding from the Clinical and Translational Science Award (CTSA) initiative of the National Institutes of Health (NIH). The four main goals of the Institute are Transformation of the Institute, Transformation of the Clinical and Translational Scientist, Transformation of Discovery Translational Research, and Transformation of Community Translational Research and Practice.

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

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

Colorado School of Public Health – The ColoradoSPH is a collaborative school of public health with CU Anschutz, Colorado State University and the University of Northern Colorado. It is the first school of public health in a nine-state region of the Rocky Mountain West.

Emerging infectious diseases, chronic disease, emergency management, healthy lifestyles, environmental impacts of health, disparities and various other factors impact the health of our communities. The ColoradoSPH aims to meet the challenges our communities and various populations face by preparing a public health work force with the skills, research and knowledge necessary to advance our health. The combined faculty expertise located at the three partner institutions is at the forefront of various health issues and research, proactively addressing and improving the lives of our children, adults and aging populations.

As part of the commitment to meeting the training and research needs of the public health workforce, the ColoradoSPH offers various professional, graduate, doctoral, residency, and certificate programs. Program descriptions and materials are available through the ColoradoSPH website, http://coloradoSPH.cuanschutz.edu.

Department of Health Systems, Management and Policy (HSMP) – The HSR PhD Program is located in HSMP within the ColoradoSPH. HSMP is a national leader in health services research, with a rapidly expanding faculty in areas including economics, health policy, pharmaceutical policy, management, and outcomes research.

Faculty engages in cutting edge, methodologically sophisticated research, with an emphasis on the use of appropriate quantitative and mixed methods. Moreover, the faculty has active research agendas funded by agencies such as the National Institutes of Health, Agency for Healthcare Research Quality, Centers for Disease Control and Prevention, and the Robert Wood Johnson Foundation, among others.

The Department of HSMP is interdisciplinary in both philosophy and practice. Faculty actively works with local research partners, such as Denver Health, Kaiser Permanente, the Adult and Child Center for Outcomes Research (ACCORDS) and the Seattle-Denver Center of Innovation for Veteran Centered and Value Driven Care (Veterans Health Administration), and the University of Colorado Schools of Medicine, Nursing, Pharmacy and Dental Medicine. Active areas of research include cancer health services research, health insurance, health outcomes, hospital markets, long-term care, mental health, substance abuse treatment and many other topics.

Key Contact Information

HSR PhD Program:

Cathy Battaglia, PhD, RN Co-Director, HSR PhD Program	(303) 724-4471 catherine.battaglia@cuanschutz.edu
Richard Lindrooth, PhD Co-Director, HSR PhD Program	(303) 724-5165 richard.lindrooth@cuanschutz.edu
Brenda Witt Academic Program Manager	brenda.witt@cuanschutz.edu

CLSC Program:

Lisa Cicutto, PhD, MSCS, APN, RN Program Director	(303) 398-1538 cicuttol@NJHealth.org
Allan Prochazka, MD, MSc Education Director Track Director, Clinical Investigation	(303) 548-4760 allan.prochazka@cuanschutz.edu
Matthew R.G. Taylor, MD, PhD Track Director, Clinical Investigation	(303) 724-1400 matthew.taylor@cuanschutz.edu
Heather Haugen, PhD Track Director, Health Information Technology	(303) 483-4308 heather.haugen@cuanschutz.edu
Galit Mankin, MSW Program Administrator	T: (720) 848-6249 F: (303) 724-4495 galit.mankin@cuanschutz.edu
Amanda Whiting Program Assistant	T: (720) 848-6234 amanda.g.whiting@cuanschutz.edu

Main ColoradoSPH Office Address

University of Colorado Denver |Anschutz Medical Campus Health Services Research PhD Program Colorado School of Public Health
13001 E. 17th Place
Mail Stop B119
Fitzsimons Bldg
Aurora, CO 80045

HSMP Department:

Cathy Battaglia, PhD, MSHA, RN Professor	(303) 724-4471 catherine.battaglia@cuanschutz.edu
Cathy Bradley, PhD, MPA Professor and Dean	(303) 724-9526 cathy.bradley@cuanschutz.edu
Tran Doan, PhD, MPH Assistant Professor	tran.doan@cuanschutz.edu
Meredith Fort, PhD Research Assistant Professor	meredith.fort@cuanschutz.edu
Richard Lindrooth, PhD, MA Professor	(303) 724-5165 richard.lindrooth@cuanschutz.edu
Glen Mays, PhD, MPH Professor and Department Chair	(303) 724-3759 glen.mays@cuanschutz.edu
Beth McManus, PT, ScD, MPH Associate Professor	(303) 724-6528 beth.mcmanus@cuanschutz.edu
Marcelo Coca Perraillon, PhD Associate Professor	(303) 724-4777 marcelo.perraillon@ cuanschutz.edu
Gregory Tung, PhD, MPH Associate Professor	(303) 724-6698 gregory.tung@cuanschutz.edu

Main ColoradoSPH Office
Colorado School of Public Health
13001 E. 17th Place, B119
Aurora, CO 80045
Phone: 303-724-4585

HSR PhD students should contact Brenda Witt for administrative issues related to coursework, preliminary and comprehensive examinations, as well as thesis defense paperwork.

Statement about COVID-19 at ColoradoSPH

The Colorado School of Public Health ended its vaccination requirement, effective July 1, 2023. ColoradoSPH is operating on a hybrid model, with some areas operating remotely and in-person activity permitted, as specified by the school or unit. Masks are not required of vaccinated and boosted individuals at this time. ColoradoSPH students and ColoradoSPH at CU Anschutz staff and faculty are no longer required to be vaccinated against COVID-19.

The CU Anschutz Medical Campus guidance policies remains in effect for everyone – regardless of vaccination status – who has COVID-19-like symptoms, tests positive or may have been exposed to a COVID-19 case. Anyone fitting these categories is asked to follow the protocol listed for each category under the Guidance section of the COVID-19 Protocols & Resources website: https://www.cuanschutz.edu/coronavirus.

Health Services Research PhD Program

The PhD in HSR is designed for students interested in research. Students receive training in HSR, with an emphasis on specialized skills suitable for conducting rigorous quantitative analysis. The curriculum is designed to provide students with the methodological training to conduct applied research in health care organization, financing, and policy. The HSR PhD Program is offered in collaboration with the CLSC doctoral Program. The HSR PhD Program requires: 1) a minimum of 39 credits of course work including six credits of cognate or minor area of emphasis, 2) passage of preliminary examination (CLSC Part 1 and HSR Part 2), 3) successful completion of comprehensive examination, and 4) a minimum of 30 credits for thesis and successful completion of thesis defense.

Core Competencies

To prepare students to perform state of the art translational research, graduates of the HSR Graduate Programs will:

- PhD-HSR 1: Identify the main components and issues of the organization, financing, and delivery of health services and public health systems in the U.S.
- PhD -HSR 2: Identify and measure clinically meaningful and/or policy relevant outcomes and apply evidence-based practice principles.
- PhD -HSR 3: Critically appraise existing literature and evaluate manuscripts published in peer-reviewed journals.
- PhD -HSR 4: Demonstrate a breadth of health services research theoretical and conceptual knowledge by applying alternative organizational and behavioral models from a range of relevant disciplines.
- PhD -HSR 5: Pose innovative and important health service research questions, informed by systematic reviews of the literature, stakeholder needs, and relevant theoretical and conceptual models.
- PhD -HSR 6: Select the appropriate econometric/statistical specifications and estimation techniques, including using specification tests and theoretical justifications for distributional assumptions, the choice of link function, and estimation approach for a variety of outcomes.
- PhD -HSR 7: Choose and define the appropriate unit of analysis and approach to computing standard errors for conducting hypothesis test.
- PhD -HSR 8: Understand and apply methods for causal inference and identify the assumptions that may or may not hold for a causal interpretation.
- PhD -HSR 9: Write and know how to submit grant proposals to federal, state, and non-governmental organizations.
- PhD -HSR 10: Describe and adhere to legal, ethical and regulatory issues related to clinical research.
- PhD -HSR 11: Demonstrate the ability to effectively communicate the findings and implications of health service research through multiple modalities to an interdisciplinary audience.
- PhD -HSR 12: Independently design, conduct, and defend research studies using health services research methods.
- PhD -HSR 13: Participate in interdisciplinary collaboration, provide constructive reviews and feedback to colleagues, and demonstrate leadership in the appropriate application of health services research methods.

Health Services Research Curriculum
(Beginning with the Fall 2024 Cohort)

Course Number	*Course Title*	*Credits*
BIOS 6611*!	Biostatistical Methods I	3
BIOS 6680	Data Management Using SAS	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*	Ethics and Responsible Conduct of Research	1
CLSC 7202	Clinical Outcomes and Applications	2
EPID 6630*	Epidemiology	3
HSMP 6604	Health Care Economics	3
HSMP 7601	Research Design and Proposal Preparation	3
HSMP 7607II	Health Services Research Methods I	3
HSMP 7609III	Health Services Research Methods II	3
HSMP 7010*‡	Foundations in Health Services Research	2
PUBH 6600**	Foundations of Public Health	2
EHOH 6601**	Public Health Concepts for Non-MPH	1
Total Required Health Services Research Course Credits		***29-32***
Cognate Course Credits^		***6***
HSMP Elective***		***3***
Minimum Number of Required Course Credits (Required +Cognate)		***38-41***
HSMP 8990***	Doctoral Thesis	**≥ 30**

*I. Courses required before the CLSC Preliminary Exam: Biostatistics (BIOS 6611), Ethics (CLSC 7150), Epidemiology (EPID 6630), Foundations in Health Services Research (HSMP 7010 Fall and Spring Semester).
II: Must complete BIOS 6611 or equivalent prior to registering for HSMP 7607.
III: Must complete HSMP 7607 or equivalent prior to registering for HSMP 7601 and HSMP 7609. Must complete HSMP 7609 and CLSC 7202 prior to HSR preliminary examination.
! Must complete a statistics course with programming and a year equivalent of calculus prior to registering for BIOS 6611
† CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination).
‡ HSMP 7010 must be taken in a Fall and Spring Semester (1 credit per semester)
**Credits may be waived for students who have a prior graduate-level degree from a CEPH-accredited institution. If waived, no further course work is required.
***IV: Must complete all required coursework or be concurrently registered for remaining coursework and pass the General Content preliminary exam prior to registering for HSMP 8990
****3 credits of HSMP Electives: recommended courses include HSMP 6605 (3 credits), HSMP 6602 (3 credits) or HSMP 6609 (2 credits) and HSMP 6616 (1 credit)
^The goal of the Cognate Courses is to develop a minor area of study that supports the student's research interest. The student will need academic advisor approval for the cognate.

Health Services Research Curriculum
(Fall 2020-2022 Cohorts)

Course Number	*Course Title*	*Credits*
BIOS 6611*!	Biostatistical Methods I	3
BIOS 6612*!	Biostatistical Methods II	3
BIOS 6680	Data Management Using SAS	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 7151*	Ethics and Responsible Conduct of Research	1
CLSC 7202	Clinical Outcomes and Applications	3
EPID 6630*	Epidemiology	3
HSMP 6604	Health Care Economics	3
HSMP 7607II	Health Services Research Methods I	3
HSMP 7609III	Health Services Research Methods II	3
HSMP 7010*‡	Foundations in Health Services Research	2
PUBH 6600**	Foundations of Public Health	2
EHOH 6601**	Public Health Concepts for Non-MPH	1
Total Required Health Services Research Course Credits		***30-33***
Cognate Course Credits^		***6***
HSMP Elective***		***3***
Minimum Number of Required Course Credits (Required +Cognate)		***39-42***
HSMP 8990***	Doctoral Thesis	**≥ 30**

*I. Courses required before Preliminary Exam: Biostatistics (BIOS 6611, 6612), Ethics (CLSC 7150), Epidemiology (EPID 6630), Foundations in Health Services Research (HSMP 7010 Fall and Spring Semester).
II: Must complete BIOS 6612 or equivalent prior to registering for HSMP 7607.
III: Must complete HSMP 7607 or equivalent prior to registering for HSMP 7609. Must complete HSMP 7609 and CLSC 7202 prior to HSR preliminary examination.
! Must complete a calculus course prior to registering for BIOS 6611
† CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination).
‡ HSMP 7010 must be taken in a Fall and Spring Semester (1 credit per semester)
**Credits may be waived for students who have a prior graduate-level degree from a CEPH-accredited institution. If waived, no further course work is required.
***IV: Must complete all required coursework or be concurrently registered for remaining coursework and pass the General Content preliminary exam prior to registering for HSMP 8990
****3 credits of HSMP Electives: recommended courses include HSMP 7601 (3 credits), HSMP 6605 (3 credits), HSMP 6602 (3 credits) or HSMP 6609 (2 credits) and HSMP 6616 (1 credit)
^The goal of the Cognate Courses is to develop a minor area of study that supports the student's research interest. The student will need to present his/her ideas to academic advisor for approval.

Health Services Research Curriculum
(Beginning with the Fall 2018 Cohort)

Course Number	*Course Title*	*Credits*
BIOS 6611*!	Biostatistical Methods I	3
BIOS 6680	Data Management Using SAS	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 7151*	Ethics and Responsible Conduct of Research	1
CLSC 7202	Clinical Outcomes and Applications	3
EPID 6630*	Epidemiology	3
HSMP 6604	Health Care Economics	3
HSMP 7607	Health Services Research Methods I	3
HSMP 7609II	Health Services Research Methods II	3
HSMP 7010*‡	Foundations in Health Services Research	2
PUBH 6600**	Foundations of Public Health	2
EHOH 6601**	Public Health Concepts for Non-MPH	1
Total Required Health Services Research Course Credits		***27-30***
Cognate Course Credits^		***6***
HSMP Elective***		***3***
Minimum Number of Required Course Credits (Required +Cognate)		***36-39***
HSMP 8990***	Doctoral Thesis	**≥ 30**

*I. Courses required before Preliminary Exam (biostatistics, ethics, and epidemiology, research methods (HSMP 7010 Fall and Spring Semester).
II: Must complete HSMP 7607 or equivalent prior to registering for HSMP 7609. Must complete HSMP 7609 and CLSC 7202 prior to HSR preliminary examination.
! Must complete a calculus course prior to registering for BIOS 6611
† CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination).
‡ HSMP 7010 must be taken in a Fall and Spring Semester (1 credit per semester)
**Credits may be waived for students who have a prior graduate-level degree from a CEPH-accredited institution. If waived, no further course work is required.
***IV: Must complete all required coursework or be concurrently registered for remaining coursework and pass the General Content preliminary exam prior to registering for HSMP 8990
****3 credits of HSMP Electives: recommended courses include HSMP 7601 (3 credits), HSMP 6605 (3 credits), HSMP 6602 (3 credits) or HSMP 6609 (2 credits) and HSMP 6616 (1 credit)
^The goal of the Cognate Courses is to develop a minor area of study that supports the student's research interest. The student will need to present his/her ideas to academic advisor for approval.

Academic Advisement

Student Responsibilities & Program Plans

Meeting with your Academic Advisor (Program Director or designee) once a year to plan and discuss your progress through the HSR PhD Program is crucial to a successful experience for you and is thus **mandatory**. Your Academic Advisor assists you with identifying and scheduling required coursework, identifying areas of research and collaborations, and selecting committee members for your thesis and comprehensive examination. 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 HSR PhD Program. The projected courses for meeting the degree requirements, plans for additional course requirements, and a projected date for completion of the Preliminary and Comprehensive Examinations and the Thesis Defense will be recorded on the **Program Plan Form** (See next pages). 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. Copies of the track-specific planning forms are provided (See below). These plans are to be maintained electronically and accessed securely via a link provided by the program administrator.

2. It is expected that every HSR PhD 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 the **first week of September.** You may receive notices from your Academic Advisor of specific requirements and timelines for this process. This information is key for planning future course offerings and insuring completion of the program in a reasonable period of time. Accurate program plans help prevent unnecessary closure of classes due to low enrollment. **Updated program plans are the responsibility of the student.**

Collaborative ColoradoSPH and CLSC PhD Program – Health Services Research PhD Student Plan (Beginning with Fall 2024 Cohort)

STUDENT NAME:_____ DATE OF LAST REVISION:_____ Matriculation:_____ Research Mentor:_____ Advisor: __

Courses			Semesters (Term -- Year)									
Number	**Credits**	**Description**	--	--	--	--	--	--	--	--	--	**Credits Earned**
TOTAL REQUIRED COURSE HOURS FOR DEGREE = 38-41												
	38-41	**Core & Track Courses**										
BIOS 6611*[I]	3	Biostatistical Methods I	☐	☐	☐	☐	☐	☐	☐	☐	☐	
BIOS 6680	3	Data Management Using SAS	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 6210†	1	Research Seminars in Clinical Science	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 6270	1	Critical Appraisal Seminars in Clinical Science	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 7101	1	Grant Writing I	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 7151*	1	Ethics and responsible conduct of research	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 7202	2	Clinical Outcomes and Applications	☐	☐	☐	☐	☐	☐	☐	☐	☐	
EPID 6630*	3	Epidemiology	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 6604	3	Health Care Economics	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 7601	3	Research Design and Proposal Preparation	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 7607[II]	3	Health Services Research Methods I	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 7609[III]	3	Health Services Research Methods II	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 7010*‡	2	Foundations in Health Services Research	☐	☐	☐	☐	☐	☐	☐	☐	☐	
PUBH 6600**	2	Foundations in Public Health	☐	☐	☐	☐	☐	☐	☐	☐	☐	
EHOH 6601**	1	Public Health Concepts for Non-MPH	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP Elective***	3		☐	☐	☐	☐	☐	☐	☐	☐	☐	
	6	**Cognate Courses^**										
TBD1			☐	☐	☐	☐	☐	☐	☐	☐	☐	
TBD2			☐	☐	☐	☐	☐	☐	☐	☐	☐	

*I. Courses required before CLSC Preliminary Exam: (Biostatistics (BIOS 6611), Ethics (CLSC 7150), and Epidemiology (EPID 6630), Foundations in Health Services Research (HSMP 7010 Fall and Spring Semester). II: Must complete BIOS 6611 or equivalent prior to registering for HSMP 7607. III: Must complete HSMP 7607 or equivalent prior to registering for HSMP 7601 and HSMP 7609. Must complete HSMP 7609 and CLSC 7202 prior to HSR preliminary examination.

! Must complete a statistics course with programming and the equivalent of a year of calculus prior to registering for BIOS 6611. † CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination). † CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination). ‡ HSMP 7010 must be taken in a fall and spring semester (1 credit per semester) **Credits may be waived for students who have a prior graduate-level degree from a CEPH-accredited institution with approval from the Associate Dean of Academic Affairs in ColoradoSPH. If waived, no further coursework is required.

***3 credits of HSMP Electives: recommended courses include HSMP 6605 (3 credits), HSMP 6602 (3 credits) or HSMP 6609 (2 credits) and HSMP 6616 (1credit)

^The goal of the Cognate Courses is to develop a minor area of study that supports the student's research interest. The student will need to present his/her ideas to academic advisor for approval.

Health Services Research PhD
Student Name:

Thesis Credit Hours	**Indicate # of Thesis Credit Hours taken per Semester: Fa/Sp/Su-Year**												**Total Credits ≥ 30**
*HSMP 8990 Doctoral Thesis (after completing prerequisite classes)													
Comp/Thesis Committee Meetings	**Indicate the Semester in which Committee Meetings are held: Fa/Sp/Su-Year**												**Total Meetings**
Committee Meetings Held													

*Must complete all required coursework or be concurrently registered for remaining coursework and pass the General Content preliminary exam prior to registering for HSMP 8990

Exams	**Semester: Fa/Sp/Su-Year**
Prelim Exam Part 1 – General Content	
Prelim Exam Part 2 – HSR-Specific Content	
Comp Exam	
Thesis Defense	

NOTES

Prerequisite: BIOS 6611, CLSC 7150, EPID 6630; HSMP 7010 Fall & Spring Semester

Prerequisite: Pass Prelim Exam Part 1 and Complete HSMP 7607, HSMP 7609 and CLSC 7202

Students may take dissertation credit hours prior to passing HSR-Specific Preliminary Exam (Part 2)

Courses to Transfer – if applicable – 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 thesis credit hours completed, approval and validation of courses proposed for transfer, AND passing the required program examinations (Preliminary Examination, Comprehensive Examination and the Final Thesis Defense), this schedule would fulfill the requirements of the Clinical Science PhD Program (Health Services Research Track).

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

Collaborative ColoradoSPH and CLSC PhD Program – Health Services Research PhD Student Plan (Fall 2020-2022 Cohorts)

STUDENT NAME:_____ **DATE OF LAST REVISION:**_____ **Matriculation:**_____ **Research Mentor:**_____ **Advisor:** _____

Courses			Semesters (Term -- Year)									
Number	**Credits**	**Description**	--	--	--	--	--	--	--	--	--	**Credits Earned**
TOTAL REQUIRED COURSE HOURS FOR DEGREE = 38-41												
	38-41	**Core & Track Courses**										
BIOS 6611*[I]	3	Biostatistical Methods I	☐	☐	☐	☐	☐	☐	☐	☐	☐	
BIOS 6612*[I]	3	Biostatistical Methods II	☐	☐	☐	☐	☐	☐	☐	☐	☐	
BIOS 6680	3	Data Management Using SAS	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 6210[†]	1	Research Seminars in Clinical Science	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 6270	1	Critical Appraisal Seminars in Clinical Science	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 7101	1	Grant Writing I	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 7151*	1	Ethics and responsible conduct of research	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 7202	3	Clinical Outcomes and Applications	☐	☐	☐	☐	☐	☐	☐	☐	☐	
EPID 6630*	3	Epidemiology	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 6604	3	Health Care Economics	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 7607[II]	3	Health Services Research Methods I	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 7609[III]	3	Health Services Research Methods II	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 7010*[‡]	2	Foundations in Health Services Research	☐	☐	☐	☐	☐	☐	☐	☐	☐	
PUBH 6600**	2	Foundations in Public Health	☐	☐	☐	☐	☐	☐	☐	☐	☐	
EHOH 6601**	1	Public Health Concepts for Non-MPH	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP Elective***	3		☐	☐	☐	☐	☐	☐	☐	☐	☐	
	6	**Cognate Courses^**										
TBD1			☐	☐	☐	☐	☐	☐	☐	☐	☐	
TBD2			☐	☐	☐	☐	☐	☐	☐	☐	☐	

*I. Courses required before Preliminary Exam: (Biostatistics (BIOS 6611, 6612), Ethics (CLSC 7150), and Epidemiology (EPID 6630), Foundations in Health Services Research (HSMP 7010 Fall and Spring Semester). II: Must complete BIOS 6612 or equivalent prior to registering for HSMP 7607. III: Must complete HSMP 7607 or equivalent prior to registering for HSMP 7609. Must complete HSMP 7609 and CLSC 7202 prior to HSR preliminary examination. ! Must complete a calculus course prior to registering for BIOS 6611. † CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination). [†] CLSC 6210 is taken over 1 year typically during the second or third year of your PhD (after passing the Preliminary Examination but before completing the Comprehensive Examination). ‡ HSMP 7010 must be taken in a fall and spring semester (1 credit per semester)

**Credits may be waived for students who have a prior graduate-level degree from a CEPH-accredited institution with approval from the Associate Dean of Academic Affairs in ColoradoSPH. If waived, no further coursework is required.

***3 credits of HSMP Electives: recommended courses include HSMP 7601 (3 credits), HSMP 6605 (3 credits), HSMP 6602 (3 credits) or HSMP 6609 (2 credits) and HSMP 6616 (1credit)

^The goal of the Cognate Courses is to develop a minor area of study that supports the student's research interest. The student will need to present his/her ideas to academic advisor for approval.

Student Name:

Thesis Credit Hours	**Indicate # of Thesis Credit Hours taken per Semester: Fa/Sp/Su-Year**												**Total Credits ≥ 30**
*HSMP 8990 Doctoral Thesis (after completing prerequisite classes)													
Comp/Thesis Committee Meetings	**Indicate the Semester in which Committee Meetings are held: Fa/Sp/Su-Year**												**Total Meetings**
Committee Meetings Held													

*Must complete all required coursework or be concurrently registered for remaining coursework and pass the General Content preliminary exam prior to registering for HSMP 8990

Exams	**Semester: Fa/Sp/Su-Year**
Prelim Exam Part 1 – General Content	
Prelim Exam Part 2 – HSR-Specific Content	
Comp Exam	
Thesis Defense	

NOTES

Prerequisite: BIOS 6611, BIOS 6612, CLSC 7150, EPID 6630; HSMP 7010 Fall & Spring Semester

Prerequisite: Pass Prelim Exam Part 1 and Complete HSMP 7607, HSMP 7609 and CLSC 7202

Students may take dissertation credit hours prior to passing HSR-Specific Preliminary Exam (Part 2)

Courses to Transfer – if applicable – 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 thesis credit hours completed, approval and validation of courses proposed for transfer, AND passing the required program examinations (Preliminary Examination, Comprehensive Examination and the Final Thesis Defense), this schedule would fulfill the requirements of the Clinical Science PhD Program (Health Services Research Track).

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

Collaborative ColoradoSPH and CLSC PhD Program – Health Services Research PhD Student Plan (Beginning with Fall 2018 Cohort)

STUDENT NAME:_____ **DATE OF LAST REVISION:**_____ **Matriculation:**_____ **Research Mentor:**_____ **Advisor:** _____

Courses			Semesters (Term -- Year)									
Number	**Credits**	**Description**	--	--	--	--	--	--	--	--	--	**Credits Earned**
TOTAL REQUIRED COURSE HOURS FOR DEGREE = 36-39												
	36-39	**Core & Track Courses**										
BIOS 6611*!	3	Biostatistical Methods I	☐	☐	☐	☐	☐	☐	☐	☐	☐	
BIOS 6680	3	Data Management Using SAS	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 6210†	1	Research Seminars in Clinical Science	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 6270	1	Critical Appraisal Seminars in Clinical Science	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 7101	1	Grant Writing I	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 7151*	1	Ethics and responsible conduct of research	☐	☐	☐	☐	☐	☐	☐	☐	☐	
CLSC 7202	3	Clinical Outcomes and Applications	☐	☐	☐	☐	☐	☐	☐	☐	☐	
EPID 6630*	3	Epidemiology	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 6604	3	Health Care Economics	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 7607*	3	Health Services Research Methods I	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 7609	3	Health Services Research Methods II	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP 7010*‡	2	Foundations in Health Services Research	☐	☐	☐	☐	☐	☐	☐	☐	☐	
PUBH 6600**	2	Foundations in Public Health	☐	☐	☐	☐	☐	☐	☐	☐	☐	
EHOH 6601**	1	Public Health Concepts for Non-MPH	☐	☐	☐	☐	☐	☐	☐	☐	☐	
HSMP Elective***	3		☐	☐	☐	☐	☐	☐	☐	☐	☐	
	6	**Cognate Courses^**										
TBD1			☐	☐	☐	☐	☐	☐	☐	☐	☐	
TBD2			☐	☐	☐	☐	☐	☐	☐	☐	☐	

*Courses required before Preliminary Exam (biostatistics, ethics, epidemiology, methods (HSMP 7010 fall semester and HSMP 7607).

! Must complete a calculus course prior to registering for BIOS6611

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

‡ HSMP 7010 must be taken in a fall and spring semester (1 credit per semester)

**Credits may be waived for students who have a prior graduate-level degree from a CEPH-accredited institution with approval from the Associate Dean of Academic Affairs in ColoradoSPH. If waived, no further coursework is required.

***3 credits of HSMP Electives: recommended courses include HSMP 7601 (3 credits), HSMP 6605 (3 credits), HSMP 6602 (3 credits) or HSMP 6609 (2 credits) and HSMP 6616 (1credit)

^The goal of the Cognate Courses is to develop a minor area of study that supports the student's research interest. The student will need to present his/her ideas to academic advisor for approval.

Health Services Research PhD
Student Name: _____

Thesis Credit Hours	**Indicate # of Thesis Credit Hours taken per Semester: Fa/Sp/Su-Year**												**Total Credits ≥ 30**
*HSMP 8990 Doctoral Thesis (after completing prerequisite classes)													
Comp/Thesis Committee Meetings	**Indicate the Semester in which Committee Meetings are held: Fa/Sp/Su-Year**												**Total Meetings**
Committee Meetings Held													

*Must complete all required coursework or be concurrently registered for remaining coursework and pass the General Content preliminary exam prior to registering for HSMP 8990

Exams	**Semester: Fa/Sp/Su-Year**
Prelim Exam Part 1 – General Content	
Prelim Exam Part 2 – HSR-Specific Content	
Comp Exam	
Thesis Defense	

NOTES

Prerequisite: BIOS 6611, CLSC 7150, EPID 6630; HSMP 7607; HSMP 7010 Fall & Spring Semester

Prerequisite: Pass Prelim Exam Part 1 and Complete HSMP 7607, HSMP 7609 and CLSC 7202

Students may take dissertation credit hours prior to passing HSR-Specific Preliminary Exam (Part 2)

Courses to Transfer – if applicable – 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 thesis credit hours completed, approval and validation of courses proposed for transfer, AND passing the required program examinations (Preliminary Examination, Comprehensive Examination and the Final Thesis Defense), this schedule would fulfill the requirements of the Clinical Science PhD Program (Health Services Research Track).

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

Transfer of Credits

Pending HSR Program, ColoradoSPH and Graduate School approval, transfer of up to 30 semester credits for the PhD may be coordinated. Students seeking to transfer credits must review the additional information available through the Graduate School Student Services area at

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

Transfer credit is defined as any credit earned at another accredited institution, at another campus of the CU system, or as a non-degree student within the CU system. The Graduate School accepts transfer credits only after approval of those transfer credits by the student's Program Director and the Dean of the Graduate School. However, if a student is seeking to transfer credit from a Master in Public Health (MPH) degree or any other "professional" program then the Associate Dean of Academic and Student Affairs in the ColoradoSPH must also review and approve all transfer credits. This must be completed prior to the Graduate School approval process.

All courses accepted for transfer must:

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., Ph.D. to Ph.D.);
d. Be validated if not completed within the time limit for completing all Ph.D. degree requirements; and
e. Be transferred prior to the term in which the Comprehensive 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 CU Anschutz and a minimum 3.00 GPA. Transferred courses do not reduce the residency requirement but may reduce the amount of work required at the CU Anschutz for the degree.

Transfer of Credits for Core HSR 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.

Transfer of credits for elective courses into the HSR Programs: 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.

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.

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

It is not always a good idea to transfer in core credit hours for HSR core courses, especially if they were completed several years ago. It is often wiser to repeat similar coursework so that you are well prepared for your preliminary and comprehensive examinations.

Course Offerings

Course Information

Course titles, credits and semester of offering are listed on the Course Offering Schedule available on the CLSC website:
https://cctsi.cuanschutz.edu/training/clsc

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

https://coloradosph.cuanschutz.edu/education/courses-and-registration

The semesters listed are the semester that each course is usually offered and are 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 taken less than 6 credit hours/semester.

Registration

Graduate School registration opens three to four weeks before the beginning of summer and fall semesters, and even earlier for spring semester. Registration for ColoradoSPH courses opens in March for the summer semester and fall semesters, and October for the spring semester. The student registration portal is found at https://portal.cusys.edu/UCDAccessFedAuthLogin.html.

The Academic Calendar is posted on the CU Denver | Anschutz Medical Campus Registrar's website at https://www.cuanschutz.edu/registrar/academic-calendars. 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. Information on residency can be found at https://www.cuanschutz.edu/registrar/residency. 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).

You may also email TuitionClassification@CUAnschutz.edu with any additional questions.

CLSC 7650 Guided Research Tutorial

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

2. Discuss with the proposed course instructor his/her availability to supervise your course of study and to review and agree on the course plan. Specifically, a course plan should be mutually developed and agreedupon and include:
   - proposed number of credit hours,
   - course objectives
   - course content covered, activities and the timeframe (outline),
   - assignments or outcomes/products of the course and due dates to the course instructor.

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

4. Submit the course plan that has the approval (as evidenced by signatures or emails acknowledging approval) of the Academic Advisor and the course instructor to Ms. Brenda Witt (brenda.witt@cuanschutz.edu) for approval by the Educational Director or the Program Director.

Steps 1-4 need to be completed prior to registering for CLSC 7650 Guided Research Tutorial. This is a closed registration course meaning that registration without a permission number is not allowed. The CLSC Program must provide the students with the permission number in order to register.

Sample Course Plan for CLSC 7650

Clinical Science (CLSC) 7650 Guided Research Tutorial
Fall 2008

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

Course Objectives:

At the end of this course, I will be able to:

1. Perform literature searches related to surviving a PhD and avoiding bankruptcy
2. Synthesize and integrate the literature related surviving a PhD and avoiding bankruptcy by writing a literature review
3. Write a structured abstract related to pilot study re: surviving a PhD and avoiding bankruptcy
4. Describe and write the statistical analyses section of the manuscript
5. Prepare tables and figures that support the text in the manuscript forpublication
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. Only with 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 HSR 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 PhD in HSR PhD 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 and articles) without crediting the source

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

Incomplete Grades

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

Canvas

Canvas is used in almost all courses available through the HSR PhD 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 UCDenver email log-in. Upon enrollment, your registered courses will be attached to Canvas and content made available at the beginning of the semester.

For access assistance, please contact the UC Denver Online Help Desk at 303.315.3700 (Monday through Friday, 7:00 am – 7:00 pm), or email cuonlinehelp@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.

The CLSC Preliminary Examination (Part 1) –General Content

At the end of the first year of didactic course work, students will take a written General Preliminary Exam (Part 1) to assess their comprehension of the educational concepts covered in the coursework. The Graduate School requires a Preliminary Examination to ensure that students are qualified for doctoral study. The purpose of the General Preliminary Examination is to determine potential for successful completion of the HSR PhD Program and to use the results in subsequent academic advising. The General Preliminary Examination covers the core content areas of:

- Biostatistics
- Ethics
- Epidemiology
- Research Methods

The General Preliminary Examination is held every year over a three-day period between the end of the spring and beginning of the summer terms (typically late May or early June). You will be asked to indicate your intent to take the examination about 3 months prior to the date of the Preliminary Examination. Students typically take the Preliminary Examination after completing the first year of required core courses.

Course Requirements for Taking the CLSC Preliminary Exam (Part 1)

For students starting the program *during or after* summer 2024, the following courses must be completed prior to taking the Preliminary Examination:

- Biostatistics: BIOS 6611
- Ethics: CLSC 7150
- Epidemiology: EPID 6630

For students starting the program *during or after* summer 2020, the following courses must be completed prior to taking the Preliminary Examination:

- Biostatistics: BIOS 6611 and BIOS 6612
- Ethics: CLSC 7150
- Epidemiology: EPID 6630

For students starting the program *between* summer 2013 and 2019, the following courses must be completed prior to taking the Preliminary Examination:

- Biostatistics: BIOS 6611
- Ethics: CLSC 7150
- Epidemiology: EPID 6630
- Methods: HSMP 7010

Exam Format

The Preliminary Examination Part 1 is **OPEN BOOK**. Students should feel free to use textbooks, reference materials, class notes, peer-reviewed publications, and credible websites.

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

Since the examination is open book, students should remember to bring the necessary materials, such as

biostatistics textbooks and class notes. The other two sections (content areas) can be completed at work/home. A printer will be available locally for printing.

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

Honor Code and Grading Policy

Before beginning the exam, you must sign the honor code policy for each exam section and submit this to the CLSC Program staff.

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

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

Faculty members will be using a grading rubric for scoring each exam section. The pass/fail designation you receive will reflect faculty scores submitted for: 1) Research Methods, 2) Ethics, and 3) Biostatistics. **In order to pass the Preliminary Exam, you will need to receive a passing designation in ALL three sections. If you fail any section, you will need to talk with the Program Director and your Academic Advisor to identify the next steps. If you fail any two or all three sections, you may be administratively withdrawn from the HSR PhD Program.** Possible next steps include re-taking the failed section of the exam within a designated time period, completing additional courses before retaking the examination, or withdrawal from the program.

The exams will be scored Pass (80% or higher) or Fail (<80%). No additional feedback will be provided.

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

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

Criteria Used for Grading

ANALYSIS

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

SYNTHESIS

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

CRITICAL SCHOLARLY ABILITIES

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

Preparation Tips and Study Guide

At a minimum, it is suggested that you dedicate at least 40 hours of study time for the Preliminary Exam.

You should review the course reading materials, textbooks, and class notes, as well as spend time reviewing the literature.

Biostatistics Section

The objectives for the biostatistics section are three-fold:

1) To demonstrate your familiarity with fundamental concepts and elements of probability, descriptive statistics and hypothesis testing;
2) To demonstrate that you can define and carry out a basic design and analytic plan for a study; and
3) To demonstrate that you can use appropriate computer packages for design and analysis.

Students should be comfortable with the following concepts:

- Dichotomous and continuous variables
- Power of a statistical test
- Sample size calculation
- Power calculation
- Normal distribution
- Inference from two-way tables

Be sure that you are comfortable programming in SAS and PASS (or some statistical software that can be used for sample size/power calculations).

Research Methods Section

From your epidemiology and research methods course material, you should review study designs that are commonly used in the field of clinical science research. The primary objectives for the research methods section of the exam are to ensure that students have the ability to:

1) Describe in detail each type of research design studied (providing definitions of key terms and appropriate examples);
2) Compare and contrast the strengths and weaknesses of various study designs, as well as in comparison

to the randomized, controlled clinical trial;

3) Design and compare alternative design approaches to the randomized, controlled clinical trial; and
4) Select the best design to answer a clinical question or hypothesis and provide the rationale for the selection.

The questions in this section of the HSR Preliminary exam will expect you to identify the "optimal" study design for a specific clinical question or hypothesis. Thus, you should examine each study design's applicability to different types of clinical science research questions. Be sure to highlight and discuss literature-based examples of how different study designs have been used successfully.

Ethics Section

The primary objectives for the ethics section of the exam are to ensure that students have the ability to:

1) Describe the COMIRB requirements for paperwork and approvals (based on COMIRB web site). Additionally, it is important that student can explain the common pitfalls to avoid (based on COMIRB reviewer criteria) in preparing an informed consent document for approval;
2) Explain the historical foundations of the current requirements for ethical review of human subjects research. Please review the seminal works (e.g., Declaration of Helsinki, the Nuremberg Code, and the Belmont Report) carefully to identify the basic ethical principles that should guide the conduct of human subjects research; and
3) Apply their knowledge of ethical principles and regulatory issues to be addressed in a human subjects research to a selected case study situation.

The HSR Preliminary Examination (Part 2) –HSR Methodological Content

At the end of the second year of didactic course work, students will take a written Part 2 of the Preliminary Exam to assess their comprehension of HSR Methods covered in HSMP 7607, HSMP 7609, and core tenets of outcomes research covered in CLSC 7202. HSR students must pass both Part 1 and Part 2 of the Preliminary Examination to satisfy the Gradual School Preliminary Exam Requirement. This requirement ensures that students are qualified for doctoral study.

The purpose of the HSR Preliminary Examination (Part 2) is to determine potential for successful completion of the HSR PhD Program and to use the results in subsequent academic advising. The HSR-Specific Preliminary Examination is an in-class exam held every year in the week prior to the beginning of fall classes. The exam will be between 3 and 4 hours.

You will be asked to indicate your intent to take the examination about 4-6 weeks prior to the date of the HSR Preliminary Examination. At that time you will be given study materials that include a description of the exam and a copy of a previous year's exam.

Exam Format

The format of **Part 2** of the Preliminary Examination (HSR-Specific Content) will be announced prior to the exam. A study guide will be given to students prior to the examination. Students should use textbooks, reference materials, class notes, peer-reviewed publications, and credible websites to prepare for the examination. The exam will include written content and may include an exercise that requires a statistical analysis. An oral exam may take place after the written portion of the exam is completed at the discretion of the exam committee. Generally, there will be at least 4 days between the written exam and the oral exam. Students will be given their grade at the end of the day on which the oral exam takes place.

Honor Code and Grading Policy

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

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

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

Faculty members will be using a grading rubric for scoring each exam section. The pass, pass with conditions, or fail designation you receive will reflect faculty scores submitted for Part 2 of the Preliminary Examination. **If you fail, you will need to talk with the Program Director and your Academic Advisor to identify the next steps.** Possible next steps may include retaking the failed section of the exam within a designated time period, completing additional courses before retaking the examination, or withdrawal from the program.

The exams will be scored as Pass, Pass with Conditions, or Fail.

Historically, the most **common error** made is **not reading the instructions carefully** and/or **not answering ALL components** of each question. This exam process is the equivalent to carefully written academic papers. Ensure your thoughts are well thought out, articulated, and supported by references. Skipping a question or a section of a question will substantially increase the chance that the exam is score as Fail. It is better to provide your best answer possible than no answer at all. You should respond in full sentences – not outline format. The use of tables and figures to illustrate points is encouraged. Overall writing style and correct use of spelling and grammar are taken into consideration during scoring. Organizing responses according to the sections of the examination questions and sub-questions (with headers) is a useful approach (and makes your exam easier to grade).

The result "Pass with conditions" may require additional exercises or problem sets, additional coursework, or other suitable activities designed to help the student learn the required material. The Preliminary Exam and the conditions are designed to enable the students to demonstrate readiness for independent doctoral research.

Criteria Used for Grading

ANALYSIS

- Identify and organize elements to create logical coherent response
- Explain the central issues, problems and "puzzles" with respect to the topic under discussion
- Identify and explain unstated assumptions, logical fallacies, and extraneous aspects of an issue, problem or position
- Project the implications of an issue, problem, or position
- Explain and compare alternative views

SYNTHESIS

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

CRITICAL SCHOLARLY ABILITIES

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

Preparation Tips and Study Guide

At a minimum, it is suggested that you plan ahead and make sure you are able to dedicate sufficient time to master the material for Part 2 of the Preliminary Exam.

A study guide will be given to each student registered for the Part 2 of the Preliminary Examination. You should review the course reading materials, textbooks, and class notes, as well as spend time reviewing the literature.

Acknowledgment of NIH Funding on CCTSI Publications and Projects

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

The following language should be used when citing the grant:
"This project/publication is supported in part by NIH/NCATS Colorado CTSA Grant Number UL1 TR001082. 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

Comprehensive Examination, Thesis Process and Thesis Defense

Comprehensive Examination and Thesis Committee

The Comprehensive and Thesis Examination Committee will examine the student for both the Comprehensive Examination, to qualify for PhD candidacy, and the Thesis Defense Examination to complete the requirements of the PhD degree. Students select at least five members to serve on the Comprehensive Examination and Thesis Committee. This committee will administer both the Comprehensive Examination and the Thesis Defense Examination. This committee is typically formed after the student has a well-formed dissertation topic and after successful completion of the Preliminary Examination. Students are encouraged to reach out to a variety of faculty as they formulate their dissertation topic. Typically, students will have a written draft of their Dissertations Aims when they form a committee. The students are required to meet with committee members at least once per year, but it is strongly recommended that the students meet with committee members more frequently (two or more times/year).

We encourage students to talk with a number of faculty members about possible topics during the first two years. If not already done, this must occur right after completing the Part 1 and 2 of Preliminary Examination. Contact faculty you might want to work with or faculty in an area that interests you. Academic Advisors are a wonderful resource for networking and identifying potential Research Mentors and committee members. When meeting with various faculty, you are not making any commitment to work with that person nor they with you. Do not assume that you need to find a topic on your own, but also do not assume that you will be handed a topic to work on. It will be helpful if you have some interests or specific things to suggest as you are meeting with faculty.

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

Expectations of the Student

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

Expectations of the Research Mentor

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

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

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

Expectations of Members of the Comprehensive Exam and Thesis Committee

In order to provide good supervisory practice, Comprehensive Exam and Thesis Committee Members will:

- Commit adequate time to meet with students to advise and provide expertise.
- Provide input in the selection and planning of an original research topic that can be successfully completed within the expected time frame (4 years).
- Provide students with timely provision of feedback when requested.
- Ensure that students have an understanding of the relevant theories and the methodological and technical skills necessary for the research.
- Advise on and contribute to career development and professional development in academics, examples include: preparation of the CV, providing letters of reference, reviewing applications, and strategies for launching an academic career.

- Be honest with the student when academic performance is not meeting expectations.
- Attend Comprehensive Exam and Thesis Committee meetings at least once a year.

Expectations of the Comprehensive Exam and Thesis Committee Chair

- Chair is responsible for the completion and submission of the appropriate paperwork or form
- Chair is responsible for chairing the committee meetings and examinations
- Specific to PhD students,
  - Complete the Comprehensive Exam: Approval of Thesis Proposal after successful completion of the Comprehensive Examination and the accompanying Graduate School form.
  - Ensure that the committee meets at least yearly and completes the Thesis Committee Report of the student's progress.
  - Ensures that prior that the Approval of Thesis for Defense form is completed when the student is scheduling the PhD Final Thesis Examination/Defense.
  - If conflicts arise between the student and the Research Mentor or committee members, the Chair will take the lead for resolution of conflicts and will notify the Program Director or Educational Director of the CLSC, as appropriate.

Graduate School Faculty Appointment - All members of the committee must have or be eligible for a Graduate School faculty appointment. The Graduate Faculty Appointment Instructions and Application Forms for a Graduate School are posted on-line at https://graduateschool.cuanschutz.edu/forms-resources/resources

For a committee member who does not have a Graduate School appointment, students may request that the HSR PhD Program submit an appointment nomination to the Graduate School. To begin this process, the student must submit to Brenda Witt (Brenda.witt@cuanschutz.edu) the nominee's current CV. The nomination/approval process could take six to eight weeks, so nomination requests must be submitted to the HSR PhD Program no less than two months before the planned comprehensive and thesis proposal examination date.

Committee Composition for Collaborative CLSC-ColoradoSPH HSR

- The committee must contain at least 5 members of which the majority must be HSR faculty.
- Three committee members must be HSR faculty.
- Two committee members must be CLSC faculty.
- Your Research Mentor (the person you will work most closely with to develop and conduct your research project) is a member and MUST attend the Comprehensive Examination and the Thesis Defense Examination but is NOT allowed to chair the committee nor the exams. Your Research Mentor must be full time faculty with a primary appointment in the HSMP Department. Students can petition to have Research Mentor who does not have a primary appointment in the HSMP Department. In such cases, it is expected that the proposed mentor has a PhD in Health Services Research or a related field. The proposed Research Mentor should have demonstrated expertise required for the student to successfully complete their dissertation. Petitions will be reviewed by both HSR PhD co-directors with input from the HSMP and CLSC faculty.

The Chair of the Committee is typically one of the HSR PhD Program Directors or a full-time faculty member with

a primary appointment in the HSMP Department who have been trained to hold this position. This individual chairs the Comprehensive Examination, your committee meetings, and the Thesis Defense Examination.

Please refer to HSR In-Faculty and CLSC In-Faculty lists to identify appropriate faculty, or Ms. Brenda Witt(brenda.witt@cuanschutz.edu).

Following the above guidelines and with input from the Academic Advisor (Track Director) and Research Mentor, the student should prepare a list of proposed committee members for review and submit it for approval to Brenda Witt by e-mail, along with a copy to the Academic Advisor. This should be done at the latest two terms following passing of the Preliminary Examination (although it is encouraged that the committee be formed much earlier).

Comprehensive Examination Planning Process

Admission to Candidacy

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

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

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

Requirements Prior to Scheduling the Comprehensive Examination

- Preferably completed by the end of the student's third year.
- Successful completion of the Preliminary Examination.
- Completion of current registration for all program-required, non-thesis coursework.
- Validation of any course work to count toward the degree that was taken more than 7 years before the Comprehensive Exam.
- A cumulative G.P.A. of 3.00 or higher for completed HSR Program coursework.
- Registration for a minimum of one credit during the semester of the examination.
- Attendance at the public presentation portion of at least one CLSC/HSR peer's Comprehensive Examination.
- Complete paperwork required to form a dissertation committee, including a list of committee members, including the Research Mentor and Thesis Committee Chair.

- The student must have prepared a written research proposal in the form of an NIH grant submission or the first three chapters of a thesis that has already been read by your Research Mentor. Students are strongly encouraged to meet with their committee or its individual members prior to the Comprehensive Examination to determine general agreement regarding the content and form of the proposal.
- The student must submit his/her thesis proposal to all committee members at least 8 weeks before the exam.

All required paperwork must be completed and submitted to the Graduate School **NO LESS THAN 14 DAYS** before the exam is held.

- University-wide Instructions and Forms for the Comprehensive Examination are available in the Student Services section of the Graduate School website: https://graduateschool.cuanschutz.edu/forms-resources/resources. Please read all instructions carefully.
  An "Application for Admission to Candidacy and Exam Request" form must be submitted.
- The paperwork requires the HSR PhD Program Director to review, approve and sign the form before the Graduate School will accept it.
- Any student who does not meet the Graduate School deadlines will be required to re-schedule his/her Comprehensive Examination. Therefore, we strongly recommend students begin the paperwork process **NO LESS THAN 8 WEEKS** before the planned exam date.

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

- The student must register for dissertation credits during the semester in which he/she defends.
- Post-comp HSR students can register for 1 thesis credit each semester after completing 30 dissertation credits
- In addition to the maximum 10 dissertation hours that may be completed *prior* to the Comprehensive Exam (and *after* passing the preliminary exam), up to 10 additional dissertation hours may be completed *during* the semester in which the Comprehensive Exam is taken.

Scheduling

- Due to limited faculty availability during the summer semester, Comprehensive Exams will normally be held during Fall and Spring semesters.
- The Graduate School requires that students and committee members set aside 4 hours for the Comprehensive Exam.

  Contact UCD Educational Support Services to reserve a room and any necessary audio-visual equipment (e.g., projector).

Comprehensive Examination Process/Content

All members of the committee must be present for the examination either in-person or by interactive video. Any costs incurred to bring an outside member to campus or to connect the member by interactive video are the responsibility of the student. The examination form, indicating the pass, conditional pass, or fail status of the exam, must be signed by all committee members and returned to the Graduate School via DocuSign. Students might remind the chair of his/her responsibility to obtain signatures from all committee members while present. *Graduate School policy requires that the student never be in possession of the completed exam form; failure to comply with this requirement nullifies the examination results.*

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

Health Services Research Program – General Guidelines for Doctoral Dissertations

Please review and follow the Graduate School Formatting Guidelines:
https://graduateschool.cuanschutz.edu/forms-resources/resources under Graduate School Resources.

Length: Most range between 150-200 pages

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

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

Chapter 1 Elements
Introduction
This is a *general* introduction to what the thesis is all about -- it is *not* just a description of the contents of each section. Briefly *summarize* the question (you will be stating the question in detail later), some of the reasons why it is a worthwhile question, and perhaps give an overview of your main results. This is a birds-eye view of the answers to the main questions answered and how this thesis adds value to the known literature.

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

In the introduction, do not overestimate the reader's familiarity with your topic. You are writing for researchers in the

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

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

Literature Review

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

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

This section is organized *by idea*, and not by author or by publication.
Where did the problem come from? What is already known about this problem? What other methods have been tried to solve it?

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

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

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

Problem Statement, Research Questions, Hypotheses

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

1. A concise statement of the problem, the research questions/hypotheses that your thesis tackles
2. Justification, by *direct* reference to the Literature Review chapter, that your question is previously unanswered
3. Discussion of why it is worthwhile to answer this question.

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

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

Chapter 2 Elements

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

Study Design, Methods and Statistical Approach
The topic of the dissertation and the nature of the research question(s) or hypothesis(es) must lead the research design. Some questions/hypotheses may require different research designs. For example, some topics and research questions in the field are best suited to some form of qualitative research while others may be best suited to some form of quantitative research. Some topics may be best suited for some combination of qualitative and quantitative research. It is the nature and research questions that determines the appropriate research design.
Methods of data collection and techniques of analysis must be consistent with the research design. For example, if the research questions call for survey research, then they must conform to the best standards of survey research and subsequent statistical analysis. If the research questions call for an econometric model, then the methods of data collection and analysis must conform to the best standards of econometric modeling. If the research questions call for some form of qualitative research design, then the methods of data collection and analysis must conform to the best standards of a particular form of qualitative research. Data collection and analysis, whether quantitative or qualitative must build a strong bridge between conceptualization and operationalization. Standard Operating Procedures should be mentioned and provided in Appendices. Data collection instruments are also provided in the Appendices.

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

Chapter 3 Elements

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

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

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

is important to consult with your thesis committee regarding expectations for the methods and final conclusions and discussion chapters. For this option, at least one peer-review paper is published or *in press* before the doctoral dissertation defense.

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

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

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

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

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

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

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

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

Doctoral Dissertation Checklist

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

*Grossly borrowed with some adaptations from J. E. Mauch and J. W. Birch (1998), *Guide to the Successful Thesis and Dissertation*, Marcel Dekker.

Comprehensive Exam Structure

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

The public presentation should last approximately 30-40 minutes, followed by an open question-answer

session. Following the public presentation is a closed meeting with committee members. During this exam component, content from track-specific courses and the student thesis proposal will be covered (related fields of study, methodology, statistics). Listed below are some examples of core content areas.

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

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

Examination Grading

There are three possible outcomes for the Comprehensive Exam:

1) Pass – The student must receive affirmative (passing) votes from the majority of the committee members to pass.
2) Pass with conditions – The committee may decide that although the student has passed the examination the student should complete additional work on the thesis proposal or coursework. Areas of additional work or other conditions will be specified on the examination form and must be completed to the satisfaction of the examination committee within 4 months of the examination. The committee chair is responsible for monitoring the conditions and reporting the outcome to the Graduate School and to the CLSC Program office. Failure to satisfy these conditions will result in failure of the examination.
3) Fail – If the student fails the examination, per Graduate School Rules, the student may be subject to immediate dismissal from the program. At the program's discretion, the student may be allowed to re- take the examination once. The re-examination will be in the form designated by the committee and must be completed within twelve (12) months. The original examination form noting the failure is signed by the committee and returned to the Clinical Science Program office. New examination forms will be generated when the examination is rescheduled. The student will be required to meet registration requirements and be registered during the term in which the repeat exam is taken.

Post Comprehensive Exam Requirements

- After passing the Comprehensive Examination, students must register for at least 1 dissertation/thesis credits every semester (excluding the summer semester).
- The student must register for a minimum of 1 thesis credits during the semester in which he/she defends (summer is NOT excluded in this instance).
- A maximum of 10 thesis credits can be taken in any semester. Only 10 of the thesis credits taken prior to the Comprehensive Examination (and *after* passing the preliminary exam) may be counted towards the minimum 30 credit hours required.
- In addition to the maximum 10 thesis hours that may be completed *prior* to the Comprehensive Exam (and *after* passing the preliminary exam), up to 10 additional thesis hours may be completed *during* the semester in which the Comprehensive Exam is taken.
- If a ColoradoSPH student has met the 30-credit minimum dissertation requirement prior to defending thesis, then the student is only required to register for one credit per semester until graduation. The student only needs to register for the summer semester if s/he will defend during the summer semester.

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

UNIVERSITY OF COLORADO DENVER

HSR GRADUATE PROGRAM

Approval of Thesis Proposal

The following members of the Thesis Committee have approved the dissertation proposal submitted by _____
Doctoral Candidate

Chairperson _____
Print name

_____
Signature Date

Research Mentor _____
Print name

_____
Signature Date

HSR PhD Program
Comprehensive Examination Checklist
(Expectations of the Chair)

Day of the Comprehensive Examination

1. Introduce the student and the title of his/her thesis proposal
2. Explain the structure of the Comprehensive Examination
    - Open forum session will include PhD student's presentation (approx. 40-45 mins) followed by questioning (approx. 20-30 mins)
    - Closed session follows the open forum (only committee members and student)
3. Following the presentation and questioning, thank and dismiss attendees and begin the closed session (ONLY committee members and student)
4. Ask student to step outside room (10mins), while the examination committee discusses the following points:
    i. Ensure all members have read the proposal
    ii. Determine order and format of questioning
    iii. Review student's coursework and grades
    iv. Determine if there are major concerns of the candidate
5. Call student 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) while committee deliberates.
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 satisfy within months).

b. Committee members sign Graduate School Comprehensive Examination Report via DocuSign.

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. The following language should be used when citing the grant:
"This project/publication is supported in part by NIH/NCATS Colorado CTSA Grant Number UL1TR001082. Contents are the authors' sole responsibility and do not necessarily represent official NIH views."

In addition, publications should be registered with PubMed Central.

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

UNIVERSITY OF COLORADO DENVER | ANSCHUTZ MEDICAL CAMPUS
PhD PROGRAM, HEALTH SERVICES RESEARCH PROGRAM

Comprehensive Exam Report

Student Name:_____ **Date:**_____

Research Mentor:_____ **Committee Chair:**_____

Committee Members in Attendance:_____

The student's performance during the Comprehensive Examination and review of the written thesis proposal and coursework grades suggest that the student is progressing as follows towards HSR core competencies.
The student's written dissertation proposal should be attached. Rate the student's performance in the following areas using the following scale: 1=Exceeds expectations; 2= Meets expectations; 3=Below expectations.

1. Explain the main components and issues of the organization, financing, and delivery of health services and public health systems in the U.S. _____
2. Measure clinically meaningful and/or policy relevant outcomes and apply evidence-based practice principles _____
3. Critically appraise existing literature and evaluate manuscripts published in peer-reviewed journals _____
4. Demonstrate breadth of health services research theoretical and conceptual knowledge by applying alternative organizational and behavioral models from a range of relevant disciplines. _____
5. Pose innovative and important health service research questions, informed by systematic reviews of the literature, stakeholder needs, and relevant theoretical and conceptual models _____
6. Apply the appropriate econometric/statistical specification and estimation technique, including using specification tests and theoretical justifications for distributional assumptions, the choice of link function, and estimation approach for a variety of outcomes _____
7. Define the appropriate unit of analysis and approach to computing standard errors for conducting hypothesis test. _____
8. Apply methods for causal inference and identify the assumptions that may or may not hold for a causal interpretation. _____
9. Write and know how to submit grant proposals to federal, state, and non-governmental organizations. _____
10. Adhere to legal, ethical and regulatory issues related to clinical research. _____
11. Demonstrate the ability to effectively communicate the findings and implications of health service research through multiple modalities to an interdisciplinary audience. _____
12. Independently design, conduct, and defend research studies using health services research methods. _____
13. Participate in interdisciplinary collaboration, provide constructive reviews and feedback to colleagues, and demonstrate leadership in the appropriate application of health services research methods. _____

Other Comments:

Outcome (please circle): Pass / Pass with conditions / Not pass

HSR GRADUATE PROGRAM

THESIS COMMITTEE REPORT

Student:_____ **Date of Meeting:**_____

Research Mentor:_____ **Dissertation Chair:**_____

Committee Members in Attendance:

_____

_____

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

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

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

Rate the student's performance in the following areas using the following scale:
1=Exceeds expectations; 2= Meets expectations; 3=Below expectations

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

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

6. Did the student display the ability to select, use and interpret commonly used statistics and forms of analyses?
   ☐ Exceeds expectations ☐ Meets expectations ☐ Below expectations

7. Did the student demonstrate the ability to use appropriate research design to address the research questions or hypotheses?
☐ Exceeds expectations ☐ Meets expectations ☐ Below expectations

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

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

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

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

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

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

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

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

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

Thesis Process

1. Form the committee: See above Comprehensive Examination and Thesis Committee Membership.
2. Draft a proposal: See above Comprehensive Examination Process/Content.
3. Secure Thesis proposal approval: Ensure that the HSR PhD Program Approval of Thesis Proposal form is signed by committee members immediately following successful passing of the Comprehensive Examination. (See above)
4. Conduct the research: The student will work with the Research Mentor and committee members to carry out the proposal. As things develop there will likely be some variation from the proposal, which is okay. Research involves collaboration. Some committees or individual members meet regularly (e.g., weekly) while others meet upon request. However, the student should not spend long periods of time working alone without talking with the Research Mentor – this is a recipe for delay, expenses, and/or failure. Committees MUST meet at least once a year (preferably every six months), and complete a Thesis Committee Report form (found at the end of this section) to be submitted to the ColoradoSPH Administrative Offices (Brenda.witt@cuanschutz.edu). Students must register for at least five thesis hours each fall and spring semester extending through the semester of the thesis defense. The final grade for the thesis (thesis course credit hours) will be withheld until the thesis is completed and approved by the Graduate School; the student will receive a grade of "In Progress" (IP) until that time.
5. Write the thesis: The thesis must meet the formatting criteria outlined in the Format Guide for These and Dissertations: https://graduateschool.cuanschutz.edu/forms-resources/resources under Graduate School Resources.
6. . The student should access it through the Graduate School website. The student will draft his/her thesis and circulate it among committee members informally. The goal is for the student to incorporate all required changes/revisions to the draft thesis document PRIOR to the Thesis Defense Examination.

Thesis Chapter Content Requirements

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

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

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

Chapter 3- Study Hypothesis/es or Research Questions, Methods, and Analysis Plan: Provide the study's overall purpose, research question(s) hypothesis/es, specific aims, and a detailed description of the research methodology and analytical approach used. Where appropriate, detailed lab protocols should be specified (but may be included in an appendix). A power calculation/sample size calculation would normally be included. If qualitative or exploratory work was involved to complement the primary hypothesis-driven study approach, these study aims and methods should be described also. Appendices

are helpful to provide copies of instruments, calibration assessments, key diagnostic tests, clinical performance metrics, study data forms, study data definitions, survey instruments, or any other source documents related to the study. The student's thesis COMIRB application and (at a minimum) COMIRB approval documentation (including HIPAA documentation if appropriate) should be included as a separate appendix.

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

Chapter 5- Conclusion/Discussion: The project's conclusions are presented and a discussion of the implications (as related to the field of clinical science) provided. The impact on patient care should be discussed. Strengths and limitations of the work are also described. Future research directions and/or research projects planned may be discussed in this chapter or an additional chapter.

Thesis Defense

7. Prior to scheduling your PhD thesis defense, all Thesis Committee members should agree that the student and the thesis are ready to proceed to defense**. The Approval of Thesis for Defense form** should be signed by committee members.
8. Schedule thesis defense: Upon the request of the student and when all members of the committee have signed the Approval of Thesis for Defense form, a day and time acceptable to all committee members can be scheduled. Faculty signatures (electronic signatures are acceptable) on this form ensure that the full committee agrees that the student is ready to defend his/her final thesis. Students should plan on a meeting of at least four hours. The final draft of the thesis must be submitted to the committee members of the Thesis Defense Examination **at least four weeks in advance** of the planned defense date. The defense must be held in a room on the AMC campus or an AMC-affiliated campus.
   Please note that the following forms need to be completed and submitted via DocuSign:
   1) Biosketch and Exam Request Forms (Graduate School forms)
   2) Approval of Thesis for Defense form (an HSR Program form)

   Graduate School deadlines for graduation are listed on the Deadlines and Forms sections of the Graduate School website. ***It is crucial to check the Graduate School deadlines to ensure a smooth process.*** Graduation information including all necessary forms and paperwork are available on the Graduate School website; https://graduateschool.cuanschutz.edu/forms-resources/resources

   The *Exam Request and Biosketch* forms must be submitted to the Graduate School at least two weeks prior to the defense date. This form must be complete and have HSR Program approval prior to submission. This deadline is strictly enforced and if not met will necessitate the rescheduling of the exam.

   Students must be enrolled for a minimum of 1 thesis credits (HSMP 8990) during the semester in which the thesis defense is held.

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

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

   Similar to the Comprehensive Examination, the thesis defense consists of an open-to-the-public oral presentation and question period followed by a closed session with the members of the examination committee. All HSR Program faculty and students will be invited to attend the oral presentation. The public presentation should last approximately 30-40 minutes with 20-30 minutes available for open public discussion. All members of the committee must be present for the examination. One member, but not the chairperson or the student, may participate by interactive video.

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

10. Submit thesis: A Format Guide for Theses and Dissertations is available here: https://graduateschool.cuanschutz.edu/forms-resources/resources under Graduate School Resources. Your final thesis or dissertation must be submitted by the published deadline in order to graduate in that semester. In addition, an electronic copy of your thesis MUST be submitted to the program within 60 days of your thesis defense date.

HEALTH SERVICES RESEARCH PhD GRADUATE PROGRAM

APPROVAL OF THESIS FOR DEFENSE

The following members of the Dissertation Committee have approved the thesis submitted

By_____for the Thesis Defense Examination.

Doctoral Candidate

Dissertation Chairperson _____

Print name

_____

Signature Date

Research Mentor _____

Print name

_____

Signature Date

Committee Member _____

Print name

_____

Signature Date

Committee Member _____

Print name

_____

Signature Date

Committee Member _____

Print name

_____

Signature Date

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PhD PROGRAM, HEALTH SERVICES RESEARCH PROGRAM

THESIS DEFENSE REPORT

Student Name:_____ **Date:**_____

Research Mentor:_____ **Committee Chair:**_____

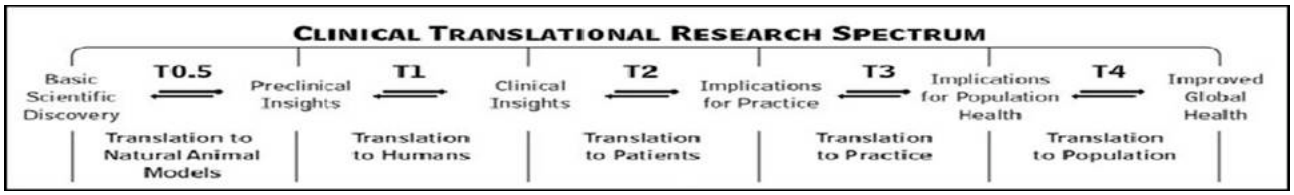
Committee Members in Attendance:_____

_____

The student's performance during the Thesis Defense Examination and review of the written thesis suggest that the student is progressing as follows towards HSR core competencies. The student's written dissertation proposal should be attached. ***Rate the student's performance in the following areas using the following scale: 1=Exceeds expectations; 2=Meets expectations; 3=Below expectations***

1. Explain the main components and issues of the organization, financing, and delivery of health services and public health systems in the U.S. _____
2. Measure clinically meaningful and/or policy relevant outcomes and apply evidence-based practice principles. _____
3. Critically appraise existing literature and evaluate manuscripts published in peer-reviewed journals _____
4. Demonstrate breadth of health services research theoretical and conceptual knowledge by applying alternative organizational and behavioral models from a range of relevant disciplines. _____
5. Pose innovative and important health service research questions, informed by systematic reviews of the literature, stakeholder needs, and relevant theoretical and conceptual models. _____
6. Apply the appropriate econometric/statistical specification and estimation technique, including using specification tests and theoretical justifications for distributional assumptions, the choice of link function, and estimation approach for a variety of outcomes _____
7. Define the appropriate unit of analysis and approach to computing standard errors for conducting hypothesis test _____
8. Apply methods for causal inference and identify the assumptions that may or may not hold for a causal interpretation. _____
9. Write and know how to submit grant proposals to federal, state, and non-governmental organizations. _____
10. Adhere to legal, ethical and regulatory issues related to clinical research. _____
11. Demonstrate the ability to effectively communicate the findings and implications of health service research through multiple modalities to an interdisciplinary audience _____
12. Independently design, conduct, and defend research studies using health services research methods. _____
13. Participate in interdisciplinary collaboration, provide constructive reviews and feedback to colleagues, and demonstrate leadership in the appropriate application of health services research methods. _____

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



Other Comments:

Outcome (please circle): Pass / Pass with conditions / Not pass

HSR PhD Program Checklist for Thesis Defense:

(Expectations of the Chair)

Day of the Thesis Defense

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

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

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

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

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

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

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

8. Chair the Committee member executive session
    a. Determine examination grade: pass, pass with conditions, or fail
        i. 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).
    b. Committee members sign Graduate School Thesis Defense Report form via DocSign.
    c. Complete the HSR Thesis Form with committee member input

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

10. Remind the student that the CTSA grant must be cited in the finalized version of the student's Thesis.
    The following language should be used when citing the grant:
    "This project/publication is supported in part by NIH/NCATS Colorado CTSA Grant Number UL1TR001082. Contents are the authors' sole responsibility and do not necessarily represent official NIH views."

    In addition, publications should be registered with PubMed Central.

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

Graduate School Related Information

I.D. Badge and Parking Information

Students are required to have an electronic security photo ID badge for the safety and protection of all faculty, staff, and students on campus. Additionally, this badge allows students access to buildings and computer labs after hours, as well as parking surfaces. Badge applications for the CU Anschutz Medical Campus are issued to the ID Badge Office by the education staff prior to the start of a student's first semester in the program. Students should pick up their badges at one of the badging pickup days or make alternate arrangements with the Office of Academic and Student Affairs.

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.

Ordering Books and Software

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

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

The Health Sciences Library at Anschutz Medical Campus

As a student in the HSR 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 HSR 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 HSR Program exist at this time. Financial aid information is available from the campus financial aid office:

https://www.cuanschutz.edu/student-finances/financial-aid

CLSC/HSR Programs 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 the Fitzsimons building Room C5000.

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

I am interested in the HSR PhD Program and would like to know more about the admissions requirements. Who do I contact?
Please contact ColoradoSPH.Admissions@cuanschutz.edu.

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. PhD students should refer to the PhD Resources page.

How can I verify that members of my committee have current Graduate Faculty appointments?
See the Graduate Faculty Directory for a list of faculty with current appointments. New appointment paperwork is received on a regular basis from the programs. If a faculty member is not currently listed on the website, contact Brenda Witt, HSR PhD 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?
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.

Can I audit a course?
Students are not allowed to audit courses at the Graduate School or School of Public Health. Students who have been officially accepted may register for a course for "no credit," but will still be required to pay associated tuition and fees. Students must designate "no credit" either at the time of registration or during the Drop/Add period. "No credit" forms are available in the Registrar's Office. The Registrar's Office is located in the Education 2 North Building, room 3123.

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 HSR 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 HSR course billing-related question?
For billing questions, contact the UCD Anschutz Medical Campus Bursar's Office (in Education 2 North) at 303-556-27100 or bursar@ucdenver.edu

I have questions about in-state/out-of-state tuition. Who should I contact?
Residency requirements and forms can be found on the CU Anschutz Registrar's website at: https://www.cuanschutz.edu/registrar/residency

Useful Web Links

CU Anschutz Medical Campus **Student Page** (links to Financial Aid, Student Services, Bursar's Office, Registrar, Graduate School, Canvas, Parking and Shuttle Service): https://www.cuanschutz.edu/education/student-resources

HSR Program: https://coloradosph.cuanschutz.edu/education/degrees-and-programs/doctor-of-philosophy/phd-in-health-services-research

CLSC Program: https://cctsi.cuanschutz.edu/training/clsc

ColoradoSPH Course Schedule:
https://coloradosph.cuanschutz.edu/education/courses-and-registration

Graduate School: https://graduateschool.cuanschutz.edu/

CU Anschutz Medical Campus **Registrar**: Registrar (cuanschutz.edu)

CU Anschutz Medical Campus **Bookstore**: http://cuanschutz.bncollege.com/

CU Health Sciences **Library**: https://library.cuanschutz.edu/

CU **Access** (Student Portal):https://portal.prod.cu.edu/UCDAccessFedAuthLogin.html