

WHAT IS CAPSTONE?

The Capstone Scholarly Project (CSP) is a mentored, longitudinal project based on each student's personal passion. The project must be related to medicine, and meet at least one of the six [UMMS core competencies](#). Projects may range from bench or clinical research, to advocacy, to the humanities, to medical education. Students are the primary drivers of projects, working with LC mentors (for the FOM1 year) and then Project Advisors (through completion) who provide knowledge, skills, and experience to support students in the design, execution, writing, and presentation of their work. Students submit reports on their projects each term to help guide and document their efforts. Credit for the CSP is granted based on the Project Report and the formal presentation with reflection in the spring of their AS year. The Capstone course is *required* for graduation; grading is Credit/No Credit.

OVERVIEW

- The Capstone Scholarship and Discovery Course (CSD) Leadership: Rachel Gerstein PhD, Course Co-Leader; Lela Giannaris PhD, Course Co-Leader; Steven Hatch MD MS, Course Co-Leader; Christina Hermos MD, Course Co-Leader; Carolina Ionete MD PhD, Course Co-Leader; and Program Manager, Colleen Burnham, MBA
- The Capstone Faculty Committee (CFC): professionals from various departments, and student representatives
- Students are the primary drivers of their project, initially working with LC Mentors and then Advisors for assistance in finding resources, time management, right-sizing their projects, and reviewing and providing feedback on all written materials. Capstone course leaders serve throughout the process as an additional resource for their respective houses.
- **Timeline plan:** It is strongly recommended that students develop a timeline for the entire Capstone Project no later than at the time of submitting the Capstone Proposal, when the Project and design is determined
- **Project scope:** Capstone projects should be manageable over 3 years, with the bulk of the work often completed by the end of second year
- **Various steps in Project development and related reports** begin in the first year, and culminate in completion of project report and presentation in early spring of the 4th year. The longitudinal design of the course requires some form of Capstone effort across all 4 years. That effort may range from literature review, to discussions with experts in their topic area, to major project work, to writing about the Project
- **Report Submission:** Students are expected to have all reports reviewed for feedback prior to submission to CSD course leadership team for final evaluation. FOM1 reports are reviewed by LC Mentors; subsequent reports are reviewed by Project Advisors. For each report, a WORKSHEET including explanations, rubric, and resource links, is provided to use as a draft for review by LC Mentors and Advisors; the SUBMISSION version is used to "turn in" the requested information – all forms are available via BBL
- **Change of Topic:** Students are encouraged to carefully consider before doing so. If they determine to change topics altogether, or are planning to substantially **change existing project design or methodology**, changes may be made until January of the CCE year using the Change of Project Request form available via BBL and the course website. A Change in Advisor constitutes a "project change"
- **Group Projects:** Students may work in groups to a maximum of 3 students. Each student is responsible for a particular piece of the Project.
- **Capstone as it relates to Senior Scholars:** All students must fulfill Capstone requirements and timelines through the CCE year, at which time, if accepted into the Senior Scholars Program for 2-3 AS elective months, the student may "drop" the Capstone course.

STEPS AND REPORTS

Reports are reviewed to ensure students are successful in their work and meeting Capstone requirements

- CSD leadership house affiliates review all reports throughout medical school years
- CFC reviews Project Proposal and Final Project Write-up

1st year (FOM1)

- Fall Progress Report | Topic consideration | November 30

- Spring Progress Report | Potential topics, Summer research planning | April 30

2nd year (FOM2)

- Fall Advisor Selection and Project Proposal | December 15
- Spring Progress Report | May 31

3rd Year (CCE)

- Fall Progress Report, with Draft Introduction Section | October 31
- Spring Progress Report, with Draft Methods Section | April 30

4th Year (AS)

- AS Capstone Month | May (EE1) – January (M7) | EVOS CCE Spring Term
- AS Fall Progress Report, with Draft Results Section (unless CSD month is EE1-M2) | August 31
 - Exception: CSD month EE1 – M2 no Fall Progress Report due. Final write-up due October 31
- AS Final Project Write-up - due based on scheduled AS Capstone month
 - 5-10 page scholarly paper, including: Introduction, Methods, Results, Conclusions, Discussion, and References
- Deliverables – due as appendices to Final Project Write-up
 - Any work integral to the actual Project such as research protocols, surveys, educational pamphlets, or any presentation(s) done in addition to the final Capstone presentation
- AS Capstone Presentation | March
- Guided Reflection paper – due at the time of Capstone Presentation
- Remediation must occur by April 30 of the AS year

PROJECT WORK TIME (Examples of when project work may be done)

- **FOM1** (1st year): unscheduled time, the summer between FOM1 and FOM2 year, interest group participation, optional enrichment elective or learning communities activities, new or ongoing research, international experiences or volunteer time
- **FOM2** (2nd year): Population Health Clerkship, and other opportunities as above
- **CCE** (3rd year): self-designed Flexible Clinical Experience (FCE), existing FCE or opportunities as above
- **AS** (4th year): related electives, Capstone month (scheduled May – January) is dedicated time intended for report writing and compiling the final presentation

PROJECT TYPES AND DEVELOPMENT

Student A: clinical focus

- Worked in a community health clinic between college and medical school
- Identifies a patient to follow longitudinally (COPD, diabetic pregnant mother who delivers...) during the two years with Longitudinal Preceptor Program (LPP) at a community health center
- Completes an FCE in a related clinical field as part of the CCE year
- Writes a detailed **case report**, including **literature search** related to this patient and **presents** it as the CSP
- **Writes up** background, **discusses results**, and creates scholarly **poster** as CSP

Student B: research

- Enters medical school directly from college
- Works in genetics lab summer between FOM1 and FOM2 as part of summer research program developing genetic test X
- Completes FCE working with genetic counselors as part of the CCE year
- Writes **informational flier** about genetic test X, receives feedback as the result of a **pilot** with pediatric patients/families, **edits** and **writes up** process and findings as CSP
- **Writes up** background, **discusses results**, and creates scholarly **poster** as CSP

Student C: patient/community advocacy focus

- Joins the Community Assistantship program in the summer between FOM1 and FOM2 working with a group that focuses on refugee help
- Continues this effort with the 'refugee health' group for the Population Health Clerkship in the FOM2 year
- Develops mentoring program for immigrant children implemented during occasional volunteer days in CCE year

- Researches background data on this population and **writes about mentoring program** as CSP; engages junior students to adopt elements as a future Capstone legacy project
- **Writes up** background, **discusses results**, and creates scholarly **poster** as CSP

Student D: humanities focus

- Flutist in college, plays in Seven Hills Symphony
- Completes FCE in the CCE year with palliative care team; **surveys** patients on hospital environment and well-being
- Plays flute on hem-onc floor and **surveys** new set of patients on effects of the music on their sense of well-being
- Completes **poster** on music in medicine and presents **data** collected as CSP
- Shares idea with another Seven Hills member who decides to pick this up for their Capstone as a legacy project
- **Writes up** background, **discusses results**, and creates scholarly **poster** as CSP

Student E: bench research focus

- Interested in basic science research but has no experience from college
- Completes summer research project in UMMS laboratory
- Discusses with lab mentor and is connected with a PhD student in the lab to help identify focused lab project, including background reading
- Completes clinical or research FCE related to summer research
- **Writes up** background, **analyzes data** and creates scholarly **poster** as CSP

Student F: medical education

- Entered medical school directly from college with interest in medical education
- In the summer between FOM1 and FOM2 as part of the Summer Curriculum Development pilot program, worked with mentor on creating modules for students that better correlate histology with clinical disease.
- In CCE year, completes FCE working on creating high quality surveys to collect feedback from students about modules.
- Creates PowerPoint modules including 2-4 min voiceover annotated histology videos and various consolidation questions of different formats designed for FOM1/FOM2.
- Presents scholarly project at the Northeastern Group on Educational Affairs (NEGEA), presents modules and scholarly poster as the CSP

ADVISORS

- Students engage a Project Advisor in the fall of the FOM2 year. Advisors replace LC Mentors in the role of providing Capstone oversight for the students. Advisors may be from any professional discipline and do not need to be UMMS faculty or located at UMass. Residents or Fellows may serve as advisors with the consent of their supervising program director if they are expected to remain in that program through the duration of the student's Capstone work.
- It is recommended that Advisors accept only one student, or one student group, from each class year. Advisors may submit the Advisor Exception Request to the CSD leadership if interested in taking on additional students.

ETHICAL USE OF SUBJECTS

We cannot overly stress the importance of the required institutional review of the Capstone research project that uses human or animal subjects.

INSTITUTIONAL REVIEW BOARD (IRB)

If you plan to conduct research involving human subjects, the research study must be reviewed and approved by the UMass Institutional Review Board before the study begins. Please refer to the [UMass Medical School Institutional Review Board website](#) for additional information.

STUDENTS AS STUDY SUBJECTS IN EDUCATIONAL RESEARCH (SAS)

All scholarly projects or surveys in medical education that will recruit SOM students as study subjects will be referred to the SAS Advisory Group for review. This review will occur in advance of IRB review for those projects that may require IRB review. Please refer to the [Lamar Soutter Library guide](#) for more information about the requirement.

UMMS INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)

If you plan to conduct research involving animal subjects, the research protocol must be reviewed and approved by the UMMS IACUC prior to receiving animals and/or conducting of any research on existing animals. Please refer to the [UMMS Institutional Animal Care and Use Committee \(IACUC\)](#) for guidance.

RESOURCES

- CSD House Affiliates
 - House-based discussion sessions
- Blackboard-LEARN (BBL)
 - links and video instruction
- Mentors and Advisors
- House Librarians and the Library website
- CFC members and CSD leaders assist students with:
 - general information about Capstone and its requirements
 - selecting topics
 - finding advisors
 - writing and presentation skills

Please contact us at any time: CSD@umassmed.edu

Report / Submission	DUE	Pre-submission Activity Overseer	Report Reviewer	2nd Reviewer
CSD FOM1 Fall Topic Selection	Nov 30	LC Mentor	CSD	
CSD FOM1 Spring Progress Report	April 30	LC Mentor	CSD	
MD PhD FOM1 Fall Progress Report	Nov 30	MD PhD Mentor	MD PhD Mentor	
MD PhD FOM1 Spring Progress Report	April 30	MD PhD Mentor	MD PhD Mentor	
CSD FOM2 Fall Advisor Selection & Project Proposal	Dec 15	CSP Advisor	CFC	CSD
CSD FOM2 Spring Progress Report	May 31	CSP Advisor	CSD	
MD PhD FOM2 Fall Progress Report	Dec 15	MD PhD Mentor	MD PhD Mentor	
MD PhD FOM2 Spring Progress Report	May 31	MD PhD Mentor	MD PhD Mentor	
CSD CCE Fall Progress (Introduction)	Oct 31	CSP Advisor	CSD	
CSD CCE Spring Progress Update	April 30	CSP Advisor	CSD	
MD PhD CCE Report: Fall of transition to SOM [post-exit]	Oct 31	MD PhD Mentor	MD PhD Mentor	
MD PhD CCE Report: End of Thematic Block 2	April 30	MD PhD Mentor	MD PhD Mentor	
CSD AS Fall Progress Report	August 31	CSP Advisor	CSD	
CSD CSD presentation plan (AS fall submission)	TBD	CSD		
CSD Capstone Project Report (AS varied submission dates)		CSP Advisor	CFC	CSD
CSD Capstone Presentation (AS mid-spring)	March	CSP Advisor	CSD	review team
MD PhD AS Report (4.1) <i>to be developed</i>		Thesis Mentor	MD PhD Mentor	
MD PhD AS Report (4.2) <i>to be developed</i>		Thesis Mentor	CFC, CSD	review team
MD PhD Capstone Presentation (4.3)		Thesis Mentor	CFC, CSD	review team