

**COURSE SYLLABUS
MENTORED SCHOLARLY ACTIVITY (MSA) CURRICULUM
2023-2034**

**Part of IDPT 5031/6083/8083
Electives: 5091/8091/8093**

The Mentored Scholarly Activity – Scholarship for Life-Long Learning

The CU-AMC School of Medicine’s curriculum includes a four-year longitudinal course requirement for all students to pursue and complete a mentored scholarly activity (“MSA”). The MSA project is aimed at fostering self-directed, life-long learning. Students will do an in-depth scholarly project in an academic area of interest related to medicine or health care with the mentorship of a CU faculty member. The MSA project culminates with a Capstone Presentation prior to graduation. MSA requirements may also be satisfied through the successful completion of the MSTP program or the School of Medicine’s Research Track. For more detailed information on the MSA and resources, please refer to [the MSA Website](#).

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For questions related to the MSA:

You are welcome to email any of the Associate Directors directly or email the MSA coordinator at SOM.MSA@cuanschutz.edu. Please email or set up a time to connect. Please also check the calendar regularly for session updates and watch for messages in Canvas.

MSA Course Goals

- Demonstrate progress through the Phases and display independence and collaboration.
- Demonstrate ability to formulate a specific problem statement, question, hypothesis or aim.
- Demonstrate ability to work effectively with a mentor and often with a team.
- Demonstrate ability to critically review and analyze literature on an important scholarly topic.
- Demonstrate ability to prepare a scholarly project with appropriate methods and develop a plan to complete the project.
- Demonstrate ability to synthesize and present results of a scholarly project.

Common Components of all Scholarly Projects

The following components are an important part of any scholarly project. They do not necessarily have to be followed in sequence.

- Meet with your Associate Director to explore potential projects and strategies.
- Identify your general goals—what do you want to learn, where do you want to go, with what kind of mentor would you like to work?
- Meet with one or more potential mentors to refine your ideas.
- Identify a question, need, or idea that you could explore and ultimately make a new contribution.
- Define a hypothesis and/or specific aim.
- Define objectives that are realistic and achievable.
- Demonstrate an understanding of the existing scholarship (both theory and methods) relevant to your project.
- Develop a protocol with a clear hypothesis and set of objectives and a work plan that will lead to meeting them.
- If human research participants are involved, obtain [COMIRB](#) approval (if not in place already).
- Develop the necessary skills and support to do the work.
- Allocate resources needed to complete the project on time.
- Apply scholarly methods effectively.
- Modify the project objectives and methods in response to changes, learning and experience.
- Write a report in a style appropriate for your area of scholarship.
 - Describe what is known and unknown on your topic as background.
 - Describe and analyze the results or products of your project.
 - Critically evaluate your work considering relevant evidence and indicate how it contributes to relevant fields of scholarship.
 - Identify areas for improvement, further study, and exploration.
- Clearly communicate your work to others in the [Capstone presentation](#) and in other forums.
- Consult with your mentor and [Associate Director](#) regularly for support and help in reaching your goals.

Group MSA Projects

It is acceptable for groups of students to work on MSA projects. These groups may be composed of students in a single class or may be spread out over several classes. The latter is particularly appropriate for projects that have a long lead time for administrative approval (e.g., international research for students in the Global Health Track) or that involve ongoing interventions (e.g., a school curriculum change). The first class may lay all the groundwork for the project and subsequent classes may then move to data collection and to expansion to other project goals.

If groups of students work on a project, a couple of points need to be kept in mind regarding MSA Plan Forms, the final paper, and Capstone:

- 1) Teams of students may do an MSA together.
- 2) Each student must independently submit an MSA Plan Form that defines their role in the project.
- 3) Each student must make his/her own scholarly contribution to the work.
- 4) A single paper, published or unpublished, can be submitted to describe the work on a project that involves several students. The authorship of this paper should reflect the contributions of the participants. Each student on a group project will submit an additional 1-page supplement that describes their role in more detail and describes what they have learned due to participation in the project.
- 5) A group of students in the same class can use the same physical poster for their Capstone presentation. Each student will, however, present the findings to the reviewers separately. Since there are three poster sessions, a project that involves more than 3 students in a single year will need to prepare an additional poster so that each student will have the opportunity to present the work independently.

Global MSA Projects

If you are not a member of the Global Health Track, you cannot travel internationally to collect data for your MSA. If you have any additional questions regarding the Global Health Track, please contact the Associate Director for Global Health (listed above).

MSA Course Requirements and Due Dates

MSA Due Dates

AY 2023-2024

Plains/MS1: Class of 2027 – Trek Curriculum

- Fall 2023 Assignments
 - MSA Introduction Lecture – 10:00 AM Aug 25, 2023
 - Interest Form – September 8, 2023
 - One-on-ones – Complete by November 1, 2023
- Spring 2024 Assignments
 - Capstone Poster Review (MS4 posters) – April 26, 2024 (asynchronous)
 - Phase I Project Outline – May 10th, 2024
 - Online Research Module – July 19, 2024
 - COMPASS follow up about MSA project during touch points by Traverse 4 week

Summer Elective (IDPT 5091): Class of 2027 – Trek Curriculum

Note: The summer elective is optional. If completed, this course fulfills the Fall Phase 2 IDPT 6083 requirements, and the Spring Annotated Bibliography requirement. The student would not be enrolled for IDPT 6083 during the Phase 2 Fall term.

- Summer Elective Orientation – July 22, 2024. Time and location to be determined.
- Abstract and Annotated Bibliography – August 15, 2024
- Work in Progress (WIP) Slide Upload – August 21, 2024
- Work in Progress (WIP) – August 22-23, 2024

Foothills/MS2: Class of 2026 – Trek Curriculum

- Fall 2023 Assignments
 - MSA Reminder Lecture – September 5, 2023
 - One-on-Ones with MSA Directors – October– December 2023 students who completed Summer MSA Elective course are excused.)
- Spring 2024 Assignments
 - Watch Video Recording: [How to Do a Literature Review](#)
 - Submit annotated bibliography – March 20, 2024

Alpine/MS3: Class of 2025 – Trek Curriculum

- Fall 2023 Assignments
 - Phase III Project Update – December 1, 2023
- Spring 2024 Assignments
 - Work In Progress: January 10th or 17th, 2024 (All complete by January 19th)
 - Phase III Narrative Reflection March 15, 2024

Summit/MS4: Class of 2024 – Hybrid Curriculum

- Fall 2023 Assignments
 - Draft Paper – December 1, 2023
- Spring 2024 Assignments
 - Final Paper – February 1, 2024
 - Capstone Data Entry Form – March 4, 2024
 - Upload Capstone Abstract and Poster Files – March 11, 2024
 - Capstone Presentation Event – April 8, 2024

Early Completion Option

The final MSA Paper may be turned in before the deadline. If there are major scheduling conflicts and if approved by their associate MSA director, students may present at an earlier year Capstone. Students completing this option will be required to participate in their class's Capstone as evaluators (remotely, if needed). This allows students increased flexibility to submit the final MSA Paper and complete the oral/poster presentation if special circumstances arise.

The MSA is a Pass/Fail Course

Each student will receive a grade (Pass/Fail) on their transcript at the end of each semester based on their progress through the course requirements. You must complete each component of the MSA requirements by each assignment's deadline to receive a passing grade. If extenuating circumstances make completing an assignment on time difficult, this must be discussed with the MSA team prior to the deadline. MSA associate

directors will provide all feedback on assignments through the MSA Canvas Course for classes 2025-2026 and through North Star for the class of 2026 (until 7/2023). Make sure that you have all system notifications on, to ensure you are receiving your grade and/or feedback information. Edits may be needed on incomplete submissions, so it is important that you check your assignments in Canvas for any comments from the MSA Faculty and act on them promptly.

Grade Definitions

The School of Medicine uses the following grades for the official transcript for the MSA Course: Pass (P), Pass with Remediation (PR), Incomplete (I), In Progress (IP), Fail (F), and Withdrawal (W). The Block, Course and Clerkship Directors have the latitude to not use the full range of grades available.

Unless otherwise specified, “grades” once assigned become a permanent part of the student’s academic record and transcript. Incomplete (I) and In Progress (IP) are temporary grades which will be permanently replaced by one of the other listed grades.

| Transcript Grades | Mentored Scholarly Activity (Phases I, II, III, and IV) |
|----------------------------|---|
| General Info | Mentored Scholarly Activity (MSA) is a longitudinal course that runs across Phases I, II, III, and IV. Students receive a grade for each semester of each Phase (Fall, Spring). |
| Honors (H) | Not used. |
| High Pass (HP) | Not used. |
| Pass (P) | A grade of Pass is given to a student whose performance meets the minimum requirements established by the MSA. |
| Fail (F) | A grade of F is given when a student's performance is clearly below the passing standards of the MSA, and minimum requirements are not met. |
| Pass with Remediation (PR) | This grade is assigned when the student has either received an “F” and has successfully remediated OR when an “I” has originally been assigned (due to failure to complete course requirements) and these requirements are now successfully completed. |
| In Progress (IP) | An 'In-Progress' grade is used when a student cannot complete course requirements due to illness or other extenuating circumstance as determined by the Course Director. |
| Incomplete (I) | A temporary grade of incomplete is given when a student has not successfully completed all of the course requirements at the end of the course AND requires remediation as determined by the Course Director in order to meet the minimum requirements. |
| Withdrawal (W) | <ul style="list-style-type: none"> • Must be recommended by appropriate Assistant Dean and approved by Associate Dean of Student Life. • Must be in good academic standing. • Must occur before the last 2 weeks of the Block, Course, or Clerkship. <p>Student Promotions Committee must be notified by the Associate Dean of Student Life.</p> |

Required only if your project includes human participants:

- CCTSI Scientific Advisory and Review Committee (SARC)- If your project involves human participants beyond the exempt/expedited category at UC Hospital, Children’s Hospital, or the CU Anschutz campus it first needs to be reviewed by SARC if it did not undergo a prior multidisciplinary review (i.e., by NIH, NCI, AHA, etc.) The purpose of SARC is to evaluate the scientific merit of clinical research protocols that have not had review prior to COMIRB review. After receiving scientific and feasibility approval by SARC, the protocol then moves on for approval by COMIRB (see next bullet). The research portal manager at CU Anschutz COMIRB will direct your application to SARC if that is necessary (a separate application is not needed).
- Colorado Multiple Institutional Review Board ([COMIRB](#)) – If your project involves human participants of any kind, you must complete [COMIRB](#) training/certification online (“CITI”), upload a CV, and declare any conflicts of interest (COI). Plan accordingly to submit your protocol as soon as possible, if IRB approval has not already been obtained by your mentor.
- IRB applications for students completing international research projects the summer between Phase I and Phase II must be submitted by March 15th.
- If you are submitting a Global Health protocol, it must be reviewed by the Global Health Director prior to submission to [COMIRB](#).

MSA Mentor Expectations (pass these along to your mentor)

- Meet with students to explore potential scholarly projects.
- Determine if you are the person to mentor the project.
- Develop an agreement, including meeting/communication schedule, authorship details and develop your professional relationship.
- Review student’s critical literature reviews
- Help the student develop a scholarly and “do-able” project.
- Review the student project and plan form before submission in Spring of their MS1 year.
- Review and provide feedback on the student’s scholarly proposal, abstract, bibliography, work-in-progress presentation, paper, and poster.
- Submit any concerns about progress via e-mail to SOM.MSA@cuanschutz.edu.
- Help develop and review the work plan and timing.
- Communicate with the student’s MSA Associate Director when needed, i.e., the student is not achieving milestones.
- Help the student gather, analyze, and prepare for their Capstone presentation.
- This is a 4-year project-- the mentor and student should work together for that entire period.
- Always be attentive to the student’s rigor and professional development.
- Students need at least one mentor/co-mentor that is CU Faculty on the project. Associate Directors are NOT project mentors (and do not usually mentor MSA Projects directly).

Associate Directors will work with the mentor-student teams to provide ongoing support.

Narrative Comments and Assessment

Narrative comments from individual MSA mentors will be solicited in Year 2 and Year 4. Narrative comments from MSA Associate Directors will be submitted for each student’s Work In Progress (WIP) session and for their initial draft of the MSA paper (required in year 4). This will be used to obtain faculty input and to jointly develop individual student goals to improve their skills.

Library Resources

The librarians can help MSA students with the following:

- Problem identification and focus (as far as helping with preliminary searching to identify whether a topic has been covered previously in the literature)
- Question formulations (asking answerable questions)

- Translating the question into a search strategy
- Identifying resources for literature review
- Organizing and managing citations and article reprints or other resources
- Accessing software for various research needs (e.g., SAS/SPSS, Endnote) and referral to training resources.
- Understanding manuscript style requirements
- Identifying opportunities for publishing or sharing research

Helpful information is available at: <https://library-cuanschutz.libguides.com/som/msa>

- Contact one of the MSA program librarians for an individual consultation. Consultations generally last one hour and may include discussion of your research topic, suggested resources for that topic, identification of key search terms, development of a search strategy, set up of a PubMed "My NCBI" account, and demonstration of resources such as PubMed or Google Scholar.
- Sections of immediate interest: Finding a Mentor, Online Tutorials, recommended books (reference resources on how to do research), information on software resources for the research process, statistical resources, EndNote and information on MyNCBI for organizing references, and other advice for organizing and Electronic Reprint File.
- Please email nina.mchale@cuanschutz.edu for suggestions or improvements.

To make an appointment with the librarian:

Students should identify themselves as working on the MSA project when contacting the library.

Laboratory-Based Biomedical Science: Nina McHale, MSLS, AHIP (303-724-2133)

Clinical Science Research: Kristen DeSanto, MSLS, MS, RD, AHIP (303-724-2121)

Bioethics, Humanities, Arts & Education Research: Christ Piper, MLIS, AHIP (303-724-2170)

Epidemiology, Public & Community Health Research: Ben Harnke, MLIS (303-724-2146)

Global Health Research: Nina McHale, MSLS, AHIP (303-724-2133)

Writing Center Resources

The campus [writing center](#) is an excellent and free resource to help you with your rough and final draft papers. To get more information or to make an appointment with the writing center.

- [Services for Students](#), The Online Drop Box is an asynchronous service whereby students submit a document and receive feedback in about four business days. CU Anschutz students might be especially interested in our Principles of Scientific Writing Handout. More handouts are available at [Services for Students](#).

Statistical Resources

The Center for Informative (Statistical) Design (CIDA) has partnered with the MSA program to provide guidance on how to design and analyze your MSA research project. Through the MSA Consulting Clinics, CIDA will help you move beyond a general research question to craft a testable hypothesis. You will develop a research plan consisting of your study design details, the specific data to be collected, and the methods you will use to analyze your data. During these clinics, you will also receive assistance with implementing your analysis and interpreting your findings. Each clinic will be a mix of small groups (2-3 individuals) and one-on-one interactions with biostatistics graduate students dedicated to answering your specific questions.

[Biostatistical support](#) - The Research Consulting Laboratory is available for consultation on statistical approaches without charge to MSA students. Please be sure to identify yourself as an MSA student. Registration is required and must be completed at least 48 hours in advance. To get more information or to sign up for assistance, please visit [here](#).

For projects requiring more involved biostatistical analysis, MSA students can apply for an MSA Small Grant from the CIDA for assistance in analyses. Click [here](#) for more information.

Course Evaluations

Students will be required to complete online evaluations. Class representatives and class officers will meet with the course directors as necessary to provide feedback.

How will students be graded in the Mentored Scholarly Activity Course?

For a full description of grading policy, please refer to the [Plains Pillars Grading Committee Criteria](#).

EXAMPLES of SCHOLARSHIP

To see examples of previous projects, you can visit the MSA website page dedicated to previous year's [Capstone Projects](#).

Plains/MS1 IDPT 5091 Summer 2024

Note: Summer IDPT 5091 elective is optional. If completed, this course fulfills Fall 2, Foothills, IDPT 6083 MSATraverse requirements.

Goals:

- Demonstrate ability to formulate a specific problem statement, question, hypothesis or aim.
- Demonstrate ability to work effectively with a mentor.
- Demonstrate ability to critically review and analyze literature on an important scholarly topic.
- Demonstrate ability to prepare a scholarly project with appropriate methods and develop a plan to complete the project.
- Demonstrate ability to synthesize and present results of a scholarly project.
- Demonstrate progress and display independence and collaboration.

Learning Objectives:

- Present work in progress (WIP) to peers and faculty in an oral presentation.
- Effectively respond to comments and questions from peers and faculty about your scholarly work.
- Demonstrate effective interaction with the mentor on the scholarly project.

Benchmarks

Summer IDPT 5091 Requirements and Timeline: This course is optional for MSA Students. All enrolled students must complete the following requirements by the end of the course:

Note: All submissions will be electronic.

- **July 29, 2024, 9-10 AM:** Attend IDPT 5091 Introductory Orientation Course.
- Meet/communicate with your mentor at least bi-weekly. You will be expected to work on your MSA project for 25 hours per week, for 4 weeks.
- **August 22, 2024:** Submit an Abstract and Annotated bibliography (20 references minimum), via Canvas.
- **August 22, 2024:** Upload Work in Progress materials (PowerPoint), via Canvas by 11:59 PM (MT).
- **August 28-29, 2024:** Present status of project and participate in Work in Progress sessions. A specific schedule will be communicated closer to the presentation dates.
- [COMIRB](#) certification and approval notice (if your project requires COMIRB approval).
- Students will be required to complete online evaluations and meet with the course directors as necessary to provide feedback.

Attendance

Attendance is required at the Orientations, WIP presentation sessions as assigned, and the Capstone event. Details for all of these sessions will be communicated via e-mail to your CU Anschutz e-mail account. Otherwise, you will be expected to organize your own schedule, with guidance from your Associate Director and mentor. Please refer to SOM General Information for a full description of requirements.

Failure to attend a required session will be considered a Professionalism issue:

1st unexcused absence the MSA Associate Director will contact the student, the situation will be discussed, and the student will be warned that a second infraction will result in filing a Professionalism Feedback Form.

2nd or subsequent unexcused – the student will meet with an Assistant Dean, who will file a Professionalism Feedback Form.

At any time, if a second Professionalism Feedback Form is filed owing to a student's unexcused absence at a required session, the student's case will be referred to the Professionalism committee.

Having a negative impact on the learning environment (including arriving late for a session) or not responding to communications from the MSA team will be treated as a separate Professionalism issue.

Instructions for Abstract Submission

Type your abstract into a .doc/docx or .pdf formatted document. You will upload this document to Canvas. Simple graphs and tables may be included if applicable.

TITLES AND AUTHORS

The title should be brief, clearly indicating the nature of the study. Do not use abbreviations in the abstract title.

CAPITALIZE ENTIRE TITLE. State all authors' initials and last names, (presenting author first), including the name of the faculty sponsor of the research, other major contributors, and the Department or Institution in which the work was done. Underline presenting author only. After presenting author's name, state degree sought and School or Program. i.e., for Alicia C. Brown, BS, MD Candidate, AC Brown, (BS, SOM).

BODY

Organize the body of the abstract to include a purpose of study, methods used, *summary of results, and conclusions reached. Do not skip a line between the title and body of the abstract. Indent the first line of text at least three spaces.

*(Note progress to date, issues encountered and implications of those issues in the abstract in cases where results are not yet available).

ABBREVIATIONS

Abbreviations should conform to the Style Manual for Biological Journals (American Institute for Biological Sciences, 3900 Wisconsin Ave., Washington, DC 20016). Place nonstandard abbreviations in parentheses after the full word the first time it appears.

Proper Form

ARRHYTHMIAS OF THE HEART: MECHANISIM(S). AC Brown, (BS, MD Candidate, SOM), JB Green, and RT White, Department of Medicine, University of Colorado, Denver, CO.

Digitalis, potassium (K+), and nicotine induce automaticity and propagation block. The initial event is enhanced conduction...

Instructions for Annotated Bibliography

These references should be those most relevant to your project and ideally those you expect to use in your MSA Paper and abstract. You will be required to have at least 20 references for your Annotated Bibliography and final paper.

The easiest way to conceptualize an annotated bibliography is to imagine what you would write about a paper in a review article on the topic. This writing would comprise 2-3 sentences about the importance of the article, the key findings, the implications of the findings, etc. For this purpose, one wouldn't want a complete summary of the article.

Here's what one might write about a recent NEJM article. 'Follow-up of glycemic control and cardiovascular outcomes in Type II DM', Hayward RA, et al. NEJM 2015;372:2197-2206.

'This paper describes the findings of long-term follow-up (9.8 years) for the VA Diabetes Trial, which did not show any significant effect on CVD events at 5 years. In this analysis, the intervention group had a reduction in the primary outcome (HR 0.83, 95% CI 0.70 to 0.99), but no effect on CVD mortality or total mortality. This is another in a series of studies showing limited impact of intensive diabetes control on hard outcomes.'

Instructions for Work in Progress Presentations

For your WIP sessions, prepare a short slide presentation approximately 10 minutes in length. Here are some helpful tips for what to include:

Disclosures:

- Are there any conflicts of interest for anyone involved in the project?
 - i.e., Your PI/Mentor has a patent on a drug being used in your project.
- If no conflicts of interest, state this.
- If this is human participants research, [COMIRB](#) protocol number or state if have received COMIRB exemption?
- If animals are involved, a statement about [IACUC](#) approval is required.

Background:

- Why am I personally interested in this topic?
- What is the literature in this topic area?
 - Generally, talk about why this is important.
 - What do we already know?
- What information or safety gaps exist that you are addressing in your project?
- What is the historical context for your project?
- If you are doing an intervention, what interventions have been tried before? What were the results?

Specific details about your project:

- What is the specific question you are trying to answer?
 - What are the specific aims of your project?
 - If your project is hypothesis-driven, what are your hypotheses?
 - Match your hypotheses to your aims.
- Methodology—How are you going to (did you) answer your research question?
 - Give specific details:
 - Who?
 - Population, cell lines, animals, sample size, etc.
 - What?
 - Survey, clinical trial, systematic review, lab technique, art medium
 - Where?
 - How?
 - Mail, in-person, in lab, which primary resources

Accomplishments:

- What have you been able to do thus far?
- What roadblocks have you encountered?
 - What are the lessons learned from this?
 - What have you learned regarding feasibility and limitations of your approach?
 - Consider soliciting audience feedback for future directions.
- If you have results
 - What are the results?
 - What do they mean?
 - How do you interpret them in the context of existing literature?

Future directions:

- Provide a detailed outline of what is left and what needs to be done.
 - Since this is a Work In Progress, what are your next steps?
 - Highlight future research/scholarly activity in this area.
 - Although not required, abstract submission to meetings and attempting publication are encouraged.

Acknowledgements:

- Who do you need to thank for helping you?
 - Mentors, Librarians, Research assistants, Statisticians, Grant Funding or Scholarships

IDPT 8083 Work in Progress Formative Evaluation

| Criteria | Definition | Exceeds Expectations | Meets Expectations | Below Expectations | N/A |
|-------------------------------------|---|-----------------------------|---------------------------|---------------------------|------------|
| Significance | Is the significance of the main question, hypothesis, or issue addressed in the project clear (is it important)? Does the work demonstrate a new or improved approach to a problem? | 3 | 2 | 1 | |
| Methodology | Is the method or approach clearly stated? Is the approach appropriate for the question? Is a hypothesis presented and tested when applicable? | 3 | 2 | 1 | |
| Results | Are data and/or other observations clear and convincing? For quantitative studies, have the results been subjected to statistical analysis? For qualitative studies, is the analysis of sufficient breadth and depth? | 3 | 2 | 1 | N/A |
| Discussion/ Future Plans | Are inferences, conclusions, implications, and any future follow-up plans based on the data/observations discussed appropriately? | 3 | 2 | 1 | N/A |

| | | | | | |
|--|--|----------|----------|----------|--|
| Appeal | Is the Presentation appealing? For example, has the presenter chosen quality visuals, used consistent formatting, highlighted major concepts, and used reader-friendly fonts. | 3 | 2 | 1 | |
| Disclosure | Does the presenter provide a disclosure statement for funding support and/or conflicts of interest? | | 2 | 1 | |
| Presentation/ Understanding | What is the quality of the oral presentation? Is the work presented in a well-organized, concise fashion? Is the student capable of presenting complex ideas or data in an understandable fashion? How well does the presenter understand the subject based on responses to questions? | 3 | 2 | 1 | |
| Overall Presentation | What is your reaction to the quality and effectiveness of the poster presentation overall? | 3 | 2 | 1 | |