



EDS 411B: MEDS Capstone Course
(4 units, Spring 2025)

Course Listing: <https://bren.ucsb.edu/courses/eds-411b>

Class

Wednesday 1 - 4, BH 3022A.

Instructor

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TA

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Best way to contact me: e-mail / Slack

Website

<https://meds-eds-411.github.io/eds-411-website/>

Course Description

The EDS 411B Capstone course is designed to support students in successfully completing their Capstone projects for the Master of Environmental Data Science (MEDS) while strengthening their technical, communication, and professional skills. Through a combination of lessons, activities, supervised and unsupervised project work, and peer review, students will refine their ability to structure data science






projects, write detailed documentation, and deliver informative and engaging public presentations. The course culminates in the submission of the Technical Documentation, code repositories, and project data archival, along with a public presentation of their project, all of which are MEDS academic deliverables required to obtain the master's degree.

Eligibility

This course is only open to MEDS students who have completed EDS 411A, the first of the two-quarter capstone sequence.

Learning goals

By the end of the course, students will be able to:

-  **Develop thorough technical documentation:** Write detailed and well-structured documentation that explains the implementation, performance, results, and limitations of a data science project.
-  **Build reproducible data science project archives:** Use GitHub effectively to manage and document code repositories, create clear READMEs, and archive project data with proper metadata following FAIR principles.
-  **Communicate technical work effectively:** Present a project's motivation, methods, and results clearly to both technical and general audiences through written reports and presentations.
-  **Demonstrate strong teamwork skills:** Collaborate effectively by managing tasks, communicating openly, professionally and in a timely manner, giving and receiving feedback, and resolving conflicts constructively.
-  **Incorporate feedback and adapt:** Receive, assess, and integrate constructive feedback into their work, demonstrating continuous improvement and adaptability.

Code of conduct

We expect all course participants (including instructors, guests, and students) to be committed to actively creating, modeling, and maintaining an inclusive climate and supportive learning environment for all. We expect everyone to treat every member of our learning community with respect. Harassment of any kind will not be tolerated. Everyone is expected to read and adhere to the [Bren School Code of Conduct](#) and the [UCSB Code of Conduct](#).

Student expectations

The following are the course expectations for YOU, a student in this class.

In-class group work on Capstone projects

EDS 411B meets for 3 hr/wk. The expected total project contribution of each group is 30 - 40 hr/wk (~10-12 hr/group member). **Most of your work on the MEDS Capstone projects, both individually and as a team, should take place outside of the EDS 411B meeting times.** This course exists to provide opportunities for co-learning and sharing between groups, and designated time for learning and practicing skills that are important across all projects. Additional work and progress on Capstone projects should be expected based on weekly discussions with the faculty advisor or clients.

TA engagement

The course TA is here to support you and your team by:

- offering technical guidance for project implementation
- helping troubleshoot targeted code issues
- answering focused questions, especially after you've made a thorough effort to find solutions
- pointing you to useful resources
- brainstorming with you to explore potential solutions and ideas
- providing feedback on figures and presentations

Capstone projects are student-driven, and one of the main goals is to empower each team to take ownership of its work. The TA is a valuable resource, but you are the leaders of your project. **Embrace the opportunity to develop your independence and problem-solving skills, and seek TA support strategically.**





One of the main goals for the capstone project is to empower each team to take ownership of its work and cultivate independent learning and problem-solving skills. **Don't look for answers that would simply give away the solution and seek TA assistance only as needed!** Students are the leaders in their capstone projects and have the ultimate responsibility for implementing them.

Attendance

In-person attendance is vital for a successful capstone course. Your presence allows you to engage in hands-on activities while minimizing distractions, ask questions in real-time, and form connections with your peers and instructor. These experiences are designed to help you grow professionally! **Regular attendance also**

mirrors professional expectations in many workplaces and is crucial for fostering relationships that can become valuable professional references.

Similar to missing a day at work, if you miss a class you are expected to:

-  **Inform your team promptly:** Most of the in-class time will be used for co-working, so your teammates will be the most affected by your absence.
-  **Be proactive:** Notify the instructor before it happens or within a day and provide a brief explanation. Documentation is not required for missing a class, but honesty and professionalism is expected in all communication.
-  **Catch up:** Work with the instructor to review any missed material.
-  **Stay home when you are sick!** If you are feeling unwell, prioritize your health. Stay home and rest or work remotely. ***If you miss an in-class activity due to sickness, it will not count as a non-completed.***

Students can ask their teammates or another student to “Zoom them in” so they can participate in in-class activities. Other accommodations will need to be carefully considered for equity. Students with disabilities should work with the [Disabled Students Program \(DSP\)](#) to determine appropriate accommodations.

Attendance does not count towards your grade (participation in in-class activities does), but it will be tracked and absences without communication will be addressed. If you anticipate missing two or more classes, contact the instructor, the Director of Student Affairs *and* the MEDS Program Coordinator to discuss possible next steps. UCSB courses are taught in person, so absences of two classes or more may require a [Leave of Absence](#), regardless of the impact on your grade.

Course communication

Course communication will be mainly through Slack workspace and the website. For anything that we might need to keep track of (attendance notifications or draft submissions, for example) we'll use email.

Access and accommodations

Please submit requests for accommodations often and early. If you have any kind of disability, whether apparent or non-apparent, learning, emotional, physical, or cognitive you may be eligible to use formal accessibility services on campus. ***To arrange class-related accommodations, please contact the [Disabled Students Program \(DSP\)](#).*** DSP will initiate communication about accommodations with

faculty. By making a plan through DSP, appropriate accommodations can be implemented without disclosing your specific condition or diagnosis to course instructors.

Weekly activities

The **highlighted text represents activities, assignments, or final submissions that are part of the course assessment:**

- 🏠 In-class activities are highlighted in green
- 📝 Drafts that will receive feedback for revisions are highlighted in blue
- 💭 Personal reflections are highlighted in purple
- 🎓 Final submissions are highlighted in yellow

The non-highlighted activities will not be checked and are a subset of what students are expected to do to advance their capstone projects. ***It is the responsibility of students to identify, plan, and complete all activities needed to successfully advance their projects!***

Week Monday start date	In-class Activities	Assignments & Outside-class Activities
Week 1 March 31	<ul style="list-style-type: none"> - Overview: Spring quarter and Technical Documentation (TD) - Independent group work - Team reflection 	<ul style="list-style-type: none"> - Work on project implementation - Work on TD - Due by next class: Draft of TD outline (discuss with advisor), summary, and timeline
Week 2 April 7	<ul style="list-style-type: none"> - Peer feedback: TD outline, summary, and timeline - Independent group work - Team reflection 	<ul style="list-style-type: none"> - Work on project implementation - Work on TD and incorporate feedback - Due by next class: Draft of TD
Week 3 April 14	<ul style="list-style-type: none"> - Peer feedback: TD draft - Independent group work - Team reflection 	<ul style="list-style-type: none"> - Work on project implementation - Work on TD and incorporate feedback - Due on week 3 Friday: Technical documentation draft due to advisor and instructor
Week 4 April 21	<ul style="list-style-type: none"> - Workshop: Shiny App testing - Sam Csik - Overview: Project repository - Independent group work 	<p><i>Feedback from advisors is due at the end of the week</i></p> <ul style="list-style-type: none"> - Work on project implementation

	<ul style="list-style-type: none"> - Team reflection 	<ul style="list-style-type: none"> - Update GitHub organization and repositories - Due by next class: Personal reflection I - Due by next class: Organized GitHub organization and repositories
Week 5 April 28	<ul style="list-style-type: none"> - Peer feedback: GitHub project organization & repositories - Independent group work - Team reflection 	<ul style="list-style-type: none"> - Work on project implementation - Work on TD and incorporate feedback - Update GitHub organization and repositories - Due on Friday: final project title due to Capstone Coordinator
Week 6 May 5	<ul style="list-style-type: none"> - Overview: Final presentations - Jamie Montgomery - Hands-on: MEDS final presentations screening - Independent group work - Team reflection 	<ul style="list-style-type: none"> - Discuss with the advisor and client which data (if any) should be archived. - Prepare abstract and acknowledgements - Prepare mock public presentation - Due on week 7 Monday: Complete draft of TD and project repository due to advisor and instructor - Due by next class: Practice presentation I
Week 7 May 12	<ul style="list-style-type: none"> - Overview: Optional Capstone Team Blog Post (Optional activity) - Practice presentations & peer feedback I 	<ul style="list-style-type: none"> - Prepare data archival and contact Library Research Data Services if needed - Prepare mock public presentation - Due on week 7 Friday: Abstract and acknowledgements due to Capstone Coordinator - Due by next class: Personal reflection II - Due by next class: Practice presentation II
Week 8 May 19	<ul style="list-style-type: none"> - Practice presentations & peer feedback II 	<p><i>Feedback from advisors is due on week 8 Monday.</i></p> <ul style="list-style-type: none"> - Work on project implementation - Update TD and GitHub organization and repositories - Prepare mock public presentation - Due on week 8 Friday: Editable file of closed captioning script due to Capstone Coordinator - Due on week 8 Friday: Submit data to repository and submit DOI - Due by next class: Practice presentation III
Week 9 May 26	<ul style="list-style-type: none"> - Practice presentations & peer feedback III (at Bren 1414 2-5 pm) - Public Final Presentations on Friday 	<ul style="list-style-type: none"> - Start wrapping up project implementation - Polish mock public presentation

		<ul style="list-style-type: none"> - Last updates to TD and GitHub organization and repositories - Possibly, further data curation (DOI won't change)
Week 10 June 2	<ul style="list-style-type: none"> - Hands-on: GitHub releases and SCP demo - Overview: MEDS capstones wrap up - Team reflection 	<ul style="list-style-type: none"> - Due on week 10 Monday: Submit TD signature page - Wrap up project implementation and thank client - Possibly, further data curation (DOI won't change) - Due on week 10 Friday: <ul style="list-style-type: none"> - Technical Documentation - GitHub organization and repositories - Self/Peer evaluations - Advisor evaluation
Finals Week June 9	No activities	No assignments or deliverables

It is unlikely, but weekly topics can be subject to change.

Assessment

EDS 411 is a practicum-style course that prioritizes work and progress on MEDS Capstone projects and the associated MEDS academic deliverables needed for students to obtain their degree (Technical Documentation, Public Presentations, code repositories, and the project data archival) while cultivating professional skills and creating a supportive community of practice. To this end, the following assessments will take place:

In-class activities

These will take place during class and are marked as complete/incomplete.

The programmed in-class activities are:

- 7 team reflections
- 1 peer feedback for Technical Documentation outline, summary, and timeline
- 1 peer feedback for Technical Documentation draft
- 1 peer feedback for Github organization and repos
- 1 team reflection on viewing the final presentation recordings
- 3 practice presentations

All in-class activities require active engagement of students with their classmates during class time!

TOTAL: 14

Drafts

Students will submit several drafts for their final academic deliverables due at the end of the quarter. There are no points or letter grades associated with the drafts, instead these will be checked for timely submission, will receive feedback from peers, their project advisor, or the instructor on their work, and assess how feedback was integrated into later drafts. The drafts are:

- 2 Technical Documentation drafts for in-class peer revisions
- 2 Technical Documentation drafts for revisions by advisor and instructor
- 1 GitHub organization and repositories draft for in-class peer revisions
- 1 GitHub organization and repositories for revision by advisor and instructor
- 3 Practice presentations

TOTAL: 9

Personal Reflections

A key goal of the course is to encourage student reflection to cultivate their professional, technical, communication, and teamwork skills. To achieve this there will be:

- 2 Personal reflections on skill development

TOTAL: 2

These reflections will only be checked for timely submission, effort, and completion, with feedback and follow-up from the instructor provided as needed.

Final Submissions

To graduate from the MEDS program, students will need to submit the following documents:

- 1 Final Public Presentation
- 1 Final Technical Documentation submission
- 1 Final GitHub organization and repositories submission
- 1 Final Submission of data archiving DOI
- 1 Final Peer/self evaluation at end of the quarter
- 1 Final Advisor evaluation

TOTAL: 6

Since all these submissions build on work and revisions done throughout the quarter, these will only be checked for timely submission.

Timeliness







Drafts, personal reflections, and final submissions (17 assignments) will be assessed for timely completion. ***An assignment is considered late if it is submitted after the stated deadline, regardless of prior communication (except in cases of extenuating circumstances).***

Communication

Regular, professional communication is key to advancing any project. If a student or Capstone group will miss a deadline or an in-class activity, they are expected to **communicate no later than one working day after the due date or class (except for extenuating circumstances). Communication beyond that time frame will be considered late.**

Grades

To earn a specific grade, a student must meet *all* requirements in a given row of the following table. The grades are assigned to individual students, so different people in the same team may have different grades. There are no +/- grades or Pass/No Pass options for this class.

Grade	 In-class activities (14)	Assignments				 Late or no communication about late/missed assignments or in-class activities
		 Drafts (9)	 Personal reflections on professional, technical, communication, or teamwork skills (2)	 Final submissions (6)	 Late assignments	
A	Completed at least 12	Completed all drafts AND feedback from peers, advisors, and instructors was carefully considered and integrated into revisions in a timely manner.	Completed both AND demonstrated self-reflection, identifying challenges or areas for improvement, and taking proactive efforts to improve skills	6	0 or 1	0 or 1
B	Completed at least 10	Completed all drafts and some feedback was integrated, BUT <i>repeated</i> follow-up was needed to address missing or incomplete revisions.		6	2	2
C	Completed 9 or less	At least one draft was not completed OR feedback was disregarded, and revisions showed no effort to improve based on input.	One reflection was not completed OR both reflections show minimal self-awareness or effort to improve skills	6	3+	3+

If you miss an in-class activity due to sickness, it will not count as an not completed. However, you should work with the instructor to see if there are ways to catch up or complete it.

You will notice that ***submitting assignments on time and communicating professionally are highly valued in this course.*** That is because:

1) in any professional setting, staying on top of deadlines and communicating proactively is essential for a project to run smoothly, 411B is a space for you to develop these habits,

2) the MEDS capstone project runs on a fast-paced timeline, and timely submissions keep everything on track for you, other students, the instructor, advisors, the Capstone Coordinator, and other Bren staff, and

3) except for the personal reflections, all other assignments are submitted on behalf of a Capstone group, so there's built-in redundancy for keeping track of deadlines.

For personal reflections and integrating feedback on drafts, students will receive early feedback from the instructor, providing opportunity to improve their work. ***The instructor will also consult with a student's Capstone advisor to complement their assessment on the student's work and growth.***

To earn an A, simply do the following (don't overthink it!):

- Make good-faith efforts on all assignments and submit them on time. If you can't meet a deadline, proactively communicate with the instructor.
- Carefully consider and integrate feedback on all your work.
- Don't miss more than one class. If you must miss one or have a special circumstance, reach out to the instructor within a day.
- Show a genuine effort to improve your professional, public speaking, teamwork, communication, or technical skills.
- Be an active, positive member of our MEDS Capstone community!

Most students already do all of this! If you don't, consider it a chance to grow as an environmental data science professional. ***Take pride in your work, learn from your experiences, and keep striving for improvement.*** What you do now will help shape your future career, and I (Carmen, your instructor) am excited to see everything you accomplish!

Capstone Project Blog Post - Optional Activity

In Week 7, the course includes a short presentation on ***adapting final Capstone presentations into blog posts for personal websites. This is an optional activity that does not contribute to grades or assessments*** but offers teams an opportunity to coordinate to showcase their Capstone project and experience. The course will offer this coordinated timeline for students who want to participate in giving and receiving feedback to others writing their Capstone blog posts:

- **Weeks 7 & 8:** Teams adapt their public presentation into a co-authored Quarto blog post.
- **Monday week 9 (May 26):** Teams submit their blog post to receive peer and instructor feedback
- **Wednesday week 10 (June 4):** Peer and instructor feedback due.

Students are not required to submit a final version of their blog post to the instructor, but integrating the feedback is greatly encouraged.

Teams have found that their Capstone blog post becomes a valuable portfolio piece. You're encouraged to keep refining it even after the Capstone ends. It's a **great way to showcase your skills and project experience to future employers and collaborators!**

Student Resources

There are many on-campus resources for helping students navigate different challenges and grow community. ***I (Carmen, your instructor) am always available to discuss your individual needs and help guide you towards a campus resource that may be best suited to your situation.*** A number of those resources are listed, below:

Basic Needs Resources & Food Insecurity

UCSB has a dedicated team for helping students navigate and find help meeting basic needs. Explore the [Basic Needs Resources](#) web page for more information on their many resources, including information on the [CalFresh Program](#) and [The Associated Students food bank](#).

Counseling and Psychological Services (CAPS)

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce your ability to participate in daily activities. CAPS is available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus. They can be reached by phone at 805.893.4411, or online at <http://caps.sa.ucsb.edu>. The CAPS building is the pink building next to the Humanities and Social Science building (HSSB)

Resource Center for Sexual and Gender Diversity (RCSGD)

Located in the Student Resource Building (SRB), RCSGD offers a host of services for LGBTQ+ students, including a library and many events throughout the year. Learn more at: <https://rcsgd.sa.ucsb.edu/>

Undocumented Student Services (USS) Program

The USS Program and associated [Dream Scholars Resource Team](#) (DSRT) offer workshops, help students find scholarships and financial support, and work to provide a community for undocumented students. Learn more at: <https://uss.sa.ucsb.edu/>

Campus Learning Assistance Services (CLAS)

CLAS helps students grow academically by offering workshops, walk-in and pre-scheduled tutoring, and writing help both for native and non-native (ESL) English as a second language speakers. Over 50% of students will stop by CLAS at one time or another. <http://clas.sa.ucsb.edu>

Student Resource Building (SRB)

The SRB houses many campus resources offices, including the African Diasporic Cultural resource Center, the American Indian Resource Center, the Asian Resource Center, the Middle Eastern Resource Center, the Non-Traditional and Re-Entry Student Resource Center.

<http://www.sa.ucsb.edu/student-resource-building/home>

Multicultural Center (MCC)

The MCC, located in UCEN, hosts a wide variety of cultural events and educational programming throughout the year, including film showings, lectures, musical performances, and more: <http://mcc.sa.ucsb.edu/>

Campus Advocacy, Resources, & Education (CARE)

CARE offers 24/7 confidential support and advocacy in situations of sexual assault, dating and domestic violence, and stalking. Located in the SRB, they can be reached at 805.893.4613 or <http://wgse.sa.ucsb.edu/care/home>

Financial Crisis Response Team

If you are experiencing issues of housing insecurity contact the Financial Crisis Response Team at financialcrisis@sa.ucsb.edu to begin application for assistance.

Health and Wellness

Student well-being is integral to academic success, student development, and life satisfaction. On this website, students will find links to a range of services related to

well-being such as: assistance with basic needs (food, housing, finances); counseling and physical health resources, daily wellness centers and programs; social connection, and personal safety. <https://wellbeing.ucsb.edu/>