OCG 593 · Spring 2027 · graduate, 3 credits, letter grade

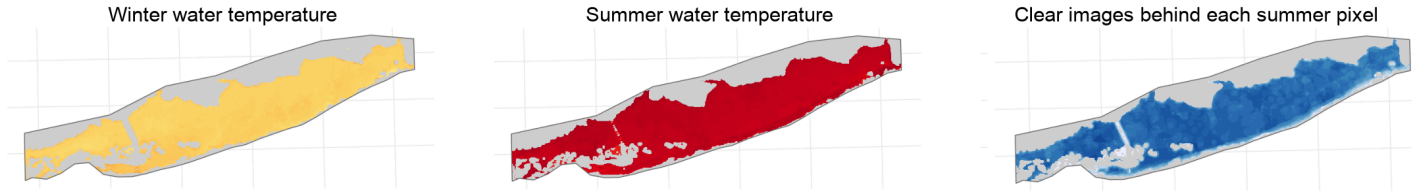
AI Tools for Graduate Research in the Ocean, Environmental and Life Sciences

Use AI on your own research data. **Verify** everything it gives you. **Decide** when it helps and when it does not. **No programming required.**

Mon & Wed
9:00–10:15 am
Watkins Hall, Room 12
Narragansett Bay Campus
3 credits
Jan – May 2027

What that looks like

From 102 satellite images to seasonal maps: Great South Bay, NY, 2023–2025

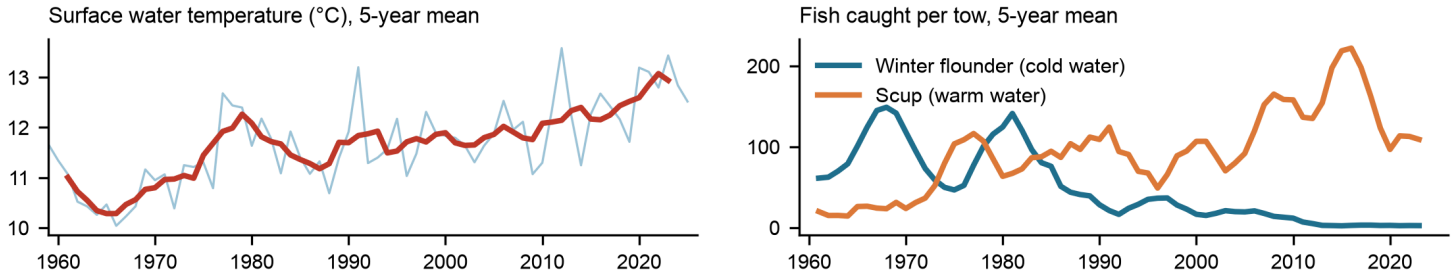


Use
Build a pipeline that pulls three years of satellite images and turns them into seasonal water-temperature maps.

Verify
Check what it kept and what it threw out: 35 cloudy images rejected, and a map of how many images back each pixel.

Decide
See the seasonal patterns at a glance, then choose where and when to sample next.

From 574,614 raw records to a first figure: the GSO Fish Trawl, Narragansett Bay, 1959–2025



Use
Pull six decades of raw spreadsheets into one dataset and a first figure, quickly.

Verify
Catch the problems before they reach the figure: 306 species names, with the same fish spelled more than one way.

Decide
Winter flounder fell as scup rose. A lead worth testing next, not yet a conclusion.

Who it is for: Master's and PhD students in the ocean, environmental and life sciences, thesis or non-thesis, at any stage. Bring your own data, or work with one of the course's ocean and environmental datasets. No AI or coding experience needed. Skeptics welcome.

Skills you will leave with

Work you once handed to a programmer or a GIS specialist, now yours to do and check.

Write better code	Tame messy data	Map and plot data	Tap big public data	Build lab tools
more efficient analyses in R, Python and more	years of spreadsheets, merged and checked	publication-ready, every step explained	satellite and monitoring data, pulled in	small apps that save your lab time

"AI is the accelerator. You stay at the steering wheel."

This course teaches you to use AI to spend less time on routine tasks and more time on the science, while every decision stays yours.

How to enroll

Register for OCG 593 (Special Studies), Spring 2027.

Kris Lewis
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Questions about fit? Just write.

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Week by week

Each week pairs one idea with one thing you build for your own research. By the end you have a project folder under version control, a verification log and an AI-use statement you can put in your thesis or project report.

Week	Topic	Strand	You leave with
1	What large language models are and are not	What it is	A one-page description of their project and data
2	Where AI fails: hallucinations, fabricated citations, agreeable answers, confident errors	What it is	A test of AI on a question in their field where they know the answer
3	Rules that apply: journal, funder and URI policies; disclosure	Integrity	A draft AI-use statement for their thesis or project
4	From chat to Claude Code: project folders, instructions files, permissions	How to use	A working project folder for their research
5	Keeping work reproducible: git and a README as a lab notebook	How to use	Their project under version control
6	Data privacy: what never goes into an AI tool	Integrity	A data-handling plan for their project
7	Cleaning and checking data with Claude Code	How to use	A cleaned dataset with written checks
8	Analysis and figures: reading, testing and explaining code	How to use	One analysis or figure, with a record of how it was checked
9	Literature: search tools, summaries with quote and page, citation checking	What it is	A verified reading list for one chapter or project
10	Science communication: the writing is yours, and AI supports the process (feedback, clarity, checking for your audience)	How to use	A short piece on their research for a public or policy audience, with any AI help disclosed
11	Working with large datasets: code that pulls public data (satellite, monitoring, surveys) into a pipeline	How to use	A pipeline that pulls and updates a dataset for their research
12	Building small tools for the lab: repeatable tasks and simple apps	How to use	One tool that saves their lab time
13	Environmental justice: the energy, water and human costs of AI, and who has access	Integrity	Peer review of a classmate's project folder
14	Showcase	All	A demo of one workflow, its verification log and an AI-use statement

What you need

- Some data: your thesis or project data, a lab dataset, or one of the course's ocean and environmental datasets.
- A laptop. Students work in Claude Pro and Claude Code, through their lab's account or the instructor's (to be confirmed before the first session); free tools cover anyone without access.

What this course is not

It does not teach how to build AI models. It is about using off-the-shelf AI tools well, and honestly, in your own research. To build models, see PHY 591; this course will not meet at its time.

The costs of AI are environmental and human. This course takes that seriously and weaves environmental justice and ethical use through every week, not just one.

Questions or interested?

Write to Kris Lewis, Graduate School of Oceanography.

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