

**SIO 296 Marine GIS  
Winter 2022**

---

Instructor:  
Heidi Batchelor  
[hbatchelor@ucsd.edu](mailto:hbatchelor@ucsd.edu)

Office hours as below.  
Chat Tuesday 5-6pm  
Zoom Friday 8 am  
Other hours by appointment

---

TA  
Canyon Breyer [cbreyer@ucsd.edu](mailto:cbreyer@ucsd.edu) Office hours will be posted on canvas

---

**Course Syllabus**

Marine GIS is offered for 2-4 units. CMBC MAS students should check with their advisors on acceptable units and grading.

**Course Description:**

We will cover the most commonly used marine spatial data with an emphasis on merging physical, biological, and anthropogenic data for decision support. In this introductory course, students will learn the fundamentals of geographic information systems (GIS), including coordinate systems, editing marine geographic and tabular data, spatial data analysis, database creation, online GIS, and map creation. This course will use the GIS software ArcGIS by ESRI. No prerequisites are required, but students should be very comfortable with Windows.

**Goals and Objectives:**

Upon completion of the course, students will be familiar with using the different components of ArcGIS, including ArcGIS Online, Catalog, Map, and Toolbox for a variety of Marine applications. The student will be able to display, analyze, and store marine spatial data using GIS. Students will learn to create publication-quality maps and communicate results visually for both scientist and non-scientist viewers. They will also learn to create spatial databases and to perform a large number of spatial analysis techniques relevant to Marine Ecology and Planning.

At the end of the quarter, students will independently complete a project of their choice including effective marine spatial data display, creating a spatial database, and performing spatial data analysis.

## Course Structure

### **Student/Course Requirements:**

#### Lab Assignments:

Assignments are due at the beginning of class on the following Tuesday. These assignments are intended to reinforce the relationship between the student's area of interest and class work and will also allow students to develop an expertise using ArcGIS software.

All assignments should be completed on or before the due date. Late lab assignment work will be accepted up to one week late, with a penalty of a 25% reduction in the assignment grade. No late work will be accepted after the last class meeting. *Please upload the homework assignments on canvas as a pdf or word doc (no links or google drive!) before the start of class on the due date. Either a pdf or word document is acceptable.*

Exams: One online final exam is part of the course. Exam will be open note and must be completed by the date specified for credit.

#### Discussions:

Discussion board posts will be assigned throughout the course. These will be student responses to a posted set of questions. No late discussion posts will be accepted.

#### Individual project:

Each student will complete a GIS project on a topic of their choice. The project must include marine spatial data. Components are described in detail on the course website, including publication quality maps, a marine geodatabase, and spatial data analysis. We will work together throughout the quarter on the individual projects. The project is appropriate for part of a Capstone, Thesis, conference poster or presentation, or peer-reviewed publication.

### **Course Materials:**

#### Main Course Text Book (Used is fine, physical or ebook):

GIS Tutorial for ArcGis Pro 2.8

by Gorr and Kurland

ISBN / ASIN: 9781589486805

eISBN 9781589486812

Computer: You must have access to internet, and to a computer, such as a laptop, with a screen, keyboard and mouse. (Track pad, usb, or wireless mouse are all fine.) UCSD has a laptop loan program for anyone needing a laptop. Look under "Technology Lending..." at <https://vcsa.ucsd.edu/news/covid-19/#Access-to-Computers,-Discounted>

Software: We will use ESRI ArcGISPro 2.6 or newer (2.8 preferred) with the equivalent of full extensions in our course. The software doesn't run on Mac or Linux, unless using a virtual or dual-boot windows operating system. Using a UCSD virtual lab computer (cloudlab) with the software already installed is perfectly adequate for our course. Computer lab space in ERC 117, when open, is available as well.

Software access can be obtained:

1. Free student licenses available through UCSD which can be installed on your own windows machine. See <https://ucsd.libguides.com/gis/arcgisaccount> for how to access the software – you will sign in with SSO and then download from ArcGIS Online. We will cover this in class.
2. Computer lab ERC 117 has 30 machines with software installed
3. UCSD has a virtual service which will work on any operating system, including mac and linux. You will go through the cloudlabs system, which will be available for our course after the first week or class, see canvas announcements for date. (You won't need access until then for our course.)  
You will log in at [cloudlabs.ucsd.edu](http://cloudlabs.ucsd.edu)

**Grading System:**

Individual Project:	400 points
Discussion Posts:	100 points
Lab exercises:	300 points
Final Exam:	200 points
Web map project component:	100 points

Grades are based on percent earned for you required components depending on units

Grading scale:

A+	96-100
A	93-95
A-	90-92
B+	86-89
B	83-85
B-	80-82
C+	76-79
C:	73-75
C-	70-72
D	60-69

F: below 60

All students will receive feedback on all assignments completed, regardless of registered units.

Required minimum components:

	2 units	3 units	4 units	
Individual project	X	X	X	
Lab exercises 1-4	X	X	X	
Lab exercises 5-8		X	X	
Discussion posts			X	
Final exam		X	X	
Project – web map			X	

### **Online Course Information:**

SIO 296 will be taught as a partially online course, which is different pedagogically than a traditional in-person course. All materials will be available asynchronously. This means that students are not required to log in at specific times to obtain course materials. This also means that most course activities will be designed for you to complete without necessarily being online at the same times as your instructor and classmates. We are optimistic that in-person instruction will resume, we will meet in person in ERC 117 for class.

Online learning weeks: Lessons will be presented live on Tuesdays at 12 pm Pacific through zoom. Links to the zoom meeting will be available on Canvas no later than 15 minutes before the start of the lesson. All are invited to attend live, The presentations will be recorded and be made available on canvas within 24 hours. Zoom sessions will be recorded. Students have the option to turn off their cameras, use initials or a pseudonym instead of full names, or view the recordings rather than join live for privacy considerations.

Software and lab demonstrations will be presented live weekly immediately after the class meeting, generally 1 pm Pacific on Tuesday, scheduled as needed and announced on canvas in advance. Links to the zoom meeting will be available on Canvas no later than 15 minutes before the start of the lesson. All are invited to attend live, the presentations will be recorded and be made available on canvas within 24 hours.

In-person learning weeks: Lessons will be presented live on Tuesdays at 12 pm Pacific in ERC 117. Lesson slides will be provided in canvas. The presentations will be not be recorded, however all information for exams and for lab exercises will be available online.

This program uses video and audio recording or other personal information for the purpose of facilitating the course/class/meeting. If you have privacy concerns and do not wish to appear in the recording of the class session, do not turn on your video. If you prefer to use a pseudonym instead of your name, please let the instructor know what name you will be using before class so that they will know who you are during the session. You may use the Zoom private chat feature to comment or ask questions. UC San Diego does not allow vendors to use this information for other purposes. Recordings will be deleted when no longer necessary. However, if cheating is suspected, the recording may become part of the student's administrative disciplinary record.

### **What to expect from the instructor**

I will respond to emails within 48 hours, and grade all assignments within a week of the due date. I am here to help you learn, and will do everything I can to help. Online, live, interactions are available to you weekly through class zoom meetings and online office hours.

### **Student responsibilities**

Each week there will be a Module to follow on Canvas – this will give you all of the information for lessons, demonstrations, discussions, lab assignments, and anything else you will need to know for the course.

1. Participate in the course. You should go through the lessons weekly.
2. Complete the lab assignments – each one will build on the skills from the previous assignments, and we minimize repetition. Many people need to go through the work more than one time to fully understand the topics.
3. Let us know if you need help, are falling behind, have questions, or need extra time. We can't help you unless we know there is a problem! There are many opportunities for assistance – office hours are available and there is an area on Canvas to post questions for help with the lab assignments.

# **Welcome to SIO 296!**

### **Instructor's Diversity Statement**

All students are welcome in our course. The nature of GIS requires incorporating different fields and backgrounds – all backgrounds are welcome in our course.

I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me early in the semester so that I may make appropriate changes to my records. I support the values of UC San Diego to “create a diverse, equitable, and inclusive campus in which students, faculty, and staff can thrive”.

If you feel like your performance in the class is being negatively impacted by your experiences outside of class, please let me or the TA know. We are here to help. If something was said in class by anyone involved with our course that made you feel uncomfortable, please let me know – you can email or talk with me any time. (Anonymous feedback is also an option.)

As a participant in our course, you should also strive to honor the diversity of your classmates. Please submit anonymous feedback if you have any suggestions to improve the quality of the course materials – there is a space on canvas for suggestions. You can also contact me any time to discuss concerns.

## From UCSD

### Student Resources

*UC San Diego (as an institution) and I (as a human being and instructor of this course) are committed to full inclusion in education for all persons. Services and reasonable accommodations are available to students with temporary and permanent disabilities, to students with DACA or undocumented status, to students with health or other personal concerns, and to students with other kinds of support needs. Please feel free to let me know if there are circumstances affecting your ability to participate in class. Some resources that might be of use include:*

#### Basic Needs

*Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in this course, is encouraged to contact:*

[foodpantry@ucsd.edu](mailto:foodpantry@ucsd.edu) | [basicneeds@ucsd.edu](mailto:basicneeds@ucsd.edu) | (858)246-2632

#### CAPS Student Health and Well-Being

*Provides services like confidential counseling and consultations for psychiatric services and mental health programming <https://wellness.ucsd.edu/caps/>*

*Community Centers As part of the [Office of Equity, Diversity, and Inclusion](#) the campus community centers provide programs and resources for students and contribute toward the evolution of a socially just campus <https://students.ucsd.edu/student-life/diversity/>*

*Triton Concern Line Report students of concern at (858) 246-1111*

<https://blink.ucsd.edu/instructors/advising/concern/>

Undocumented Student Services *Programs and services are designed to help students overcome obstacles that arise from their immigration status and support them through personal and academic excellence* <https://uss.ucsd.edu/>

### **Office of Equity, Diversity, and Inclusion**

858.822.3542 | [diversity@ucsd.edu](mailto:diversity@ucsd.edu) | <https://diversity.ucsd.edu/>

### **Student Life: Diversity**

<https://students.ucsd.edu/student-life/diversity/>

### **Policy on University of California Diversity Statement**

<https://regents.universityofcalifornia.edu/governance/policies/4400.html>

### **Accessibility**

*Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD) which is located in University Center 202 behind Center Hall. Students are required to present their AFA letters to Faculty (please make arrangements to contact me privately) and to the OSD Liaison in the department in advance so that accommodations may be arranged.*

Office for Students with Disabilities (OSD) *Documents student disabilities, provides accessibility resources, and reasonable accommodations*

858.534.4382 | [osd@ucsd.edu](mailto:osd@ucsd.edu) | <https://disabilities.ucsd.edu/>

### **UC San Diego Principles of Community**

*The University of California, San Diego is dedicated to learning, teaching, and serving society through education, research, and public service. Our international reputation for excellence is due in large part to the cooperative and entrepreneurial nature of the UC San Diego community. UC San Diego faculty, staff, and students are encouraged to be creative and are rewarded for individual as well as collaborative achievements.*

*To foster the best possible working and learning environment, UC San Diego strives to maintain a climate of fairness, cooperation, and professionalism. These principles of community are vital to the success of the University and the well being of its constituents. UC San Diego faculty, staff, and students are expected to practice these basic principles as individuals and in groups. [Click here for the complete UC San Diego Principles of Community in English and Spanish.](#)*

### **UC San Diego Academic Policies**

#### **Academic Integrity**

*Academic Integrity is expected of everyone at UC San Diego. This means that you must be honest, fair, responsible, respectful, and trustworthy in all of your actions. Lying,*

*cheating or any other forms of dishonesty will not be tolerated because they undermine learning and the University's ability to certify students' knowledge and abilities. Thus, any attempt to get, or help another get, a grade by cheating, lying or dishonesty will be reported to the Academic Integrity Office and will result sanctions. Sanctions can include an F in this class and suspension or dismissal from the University. So, think carefully before you act by asking yourself:*

*a) is what I'm about to do or submit for credit an honest, fair, respectful, responsible & trustworthy representation of my knowledge and abilities at this time and,*

*b) would my instructor approve of my action?*

*You are ultimately the only person responsible for your behavior. So, if you are unsure, don't ask a friend—ask your instructor, instructional assistant, or the Academic Integrity Office. You can learn more about academic integrity at <http://academicintegrity.ucsd.edu>*

*(Source: Academic Integrity Office, 2018)*

### **Classroom Behavior Policy**

*We treat everyone with respect in our course. Food and drinks, including water, cannot be in the classroom. We will take frequent breaks to allow for everyone's comfort. Please silence electronics. There will be ample time to check email, etc. during breaks and open lab time.*

### **UCSD Student Conduct Code**

[https://students.ucsd.edu/\\_files/student-conduct/ucsandiego-student-conduct-code\\_interim-revisions1-16-18.pdf](https://students.ucsd.edu/_files/student-conduct/ucsandiego-student-conduct-code_interim-revisions1-16-18.pdf)

**Principles of Community** <https://ucsd.edu/about/principles.html>

### **Religious Accommodation**

*It is the policy of the university to make reasonable efforts to accommodate students having bona fide religious conflicts with scheduled examinations by providing alternative times or methods to take such examinations. If a student anticipates that a scheduled examination will occur at a time at which his or her religious beliefs prohibit participation in the examination, the student must submit to the instructor a statement describing the nature of the religious conflict and specifying the days and times of conflict.*

*For final examinations, the statement must be submitted no later than the end of the second week of instruction of the quarter.*

*For all other examinations, the statement must be submitted to the instructor as soon as possible after a particular examination date is scheduled.*

*If a conflict with the student's religious beliefs does exist, the instructor will attempt to provide an alternative, equitable examination that does not create undue hardship for the instructor or for the other students in the class.*

*See: [EPC Policies on Religious Accommodation, Final Exams, Midterm Exams](#)*



## **Nondiscrimination and Harassment**

*The University of California, in accordance with applicable federal and state laws and university policies, does not discriminate on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition, genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (including membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services). The university also prohibits harassment based on these protected categories, including sexual harassment, as well as sexual assault, domestic violence, dating violence, and stalking. The nondiscrimination policy covers admission, access, and treatment in university programs and activities.*

*If students have questions about student-related nondiscrimination policies or concerns about possible discrimination or harassment, they should contact the Office for the Prevention of Harassment & Discrimination (OPHD) at (858) 534-8298, [ophd@ucsd.edu](mailto:ophd@ucsd.edu), or <http://reportbias.ucsd.edu>.*

*Campus policies provide for a prompt and effective response to student complaints. This response may include alternative resolution procedures or formal investigation. Students will be informed about complaint resolution options.*

*A student who chooses not to report may still contact CARE at the Sexual Assault Resource Center for more information, emotional support, individual and group counseling, and/or assistance with obtaining a medical exam. For off-campus support services, a student may contact the Center for Community Solutions. Other confidential resources on campus include Counseling and Psychological Services, Office of the Ombuds, and Student Health Services.*

**CARE at the Sexual Assault Resource Center** 858.534.5793 | [sarc@ucsd.edu](mailto:sarc@ucsd.edu) | <https://care.ucsd.edu>

**Counseling and Psychological Services (CAPS)** 858.534.3755 | <https://caps.ucsd.edu>

See: [Nondiscrimination Policy Statement](#)