MEMORANDUM

TO: **Graduate Studies Committee**

FROM: **Drew Talley, Graduate Studies Committee Chair**

DATE: **December 1, 2021**

RE: **Materials for Graduate Studies Committee Meeting 12/07/21**

Agenda

1) Program Proposal
    a. Environmental and Ocean Sciences (pp. 2-8)

2) Course Proposals
    a. EOSC 530 – Human Impacts on the Coastal Environment with Lab (pp. 9-17) NEW
    b. EOSC 531 – Human Impacts on the Coastal Environment (pp. 18-20)
    c. EOSC 532 – International Law and Politics (pp. 21-23) DEACTIVATE
    d. EOSC 536 – Marine Community Ecology with Lab (pp. 24-33) NEW
    e. EOSC 537 – Marine Community Ecology (pp. 34-39) NEW
    f. EOSC 574 – History of the Earth and Climate with Lab (pp. 40-43)
    g. EOSC 574L – History of the Earth and Climate Laboratory (pp. 44-46) DEACTIVATE
    h. EOSC 575 – History of the Earth and Climate (pp. 47-53) NEW
    i. EOSC 581 – Migration and Immigration Politics (pp. 54-60) NEW

Program Change Request

Date Submitted: 12/01/21 1:55 pm

Viewing: MS-EOSC : Environmental and Ocean Sciences

Last approved: 02/21/20 1:58 pm

Last edit: 12/01/21 5:40 pm

Changes proposed by: kaufmann

Catalog Pages Using this Program	Master of Science in Environmental and Ocean Sciences

Contact Person(s)	Name:	E-mail:	Campus Phone:
	Ron Kaufmann	kaufmann	5904

Effective Catalog	2022-2023
Department	Environmental & Ocean Sciences
College/School	College of Arts & Sciences
Program Level	Graduate (GR)
Program Type	Major
Major Code	EOSC (Environmental & Ocean Sciences)
Degree Code	MS (Master of Science)
Program Name	Environmental and Ocean Sciences

Program Description

In Workflow

1. **MARS Chair**
2. Catalog Editor Setup
3. AS Associate Dean
4. Provost
5. Catalog Editor Final

History

1. Jan 31, 2017 by Ronald Kaufmann (kaufmann)
2. Apr 13, 2017 by Ronald Kaufmann (kaufmann)
3. May 26, 2017 by Ronald Kaufmann (kaufmann)
4. Jun 14, 2017 by Annie O'Brien (aobrien)
5. Jun 19, 2017 by Ronald Kaufmann (kaufmann)
6. Jul 19, 2017 by Annie O'Brien (aobrien)
7. Jul 20, 2017 by Ronald Kaufmann (kaufmann)
8. Apr 6, 2018 by Ronald Kaufmann (kaufmann)
9. Feb 20, 2019 by Ronald Kaufmann (kaufmann)

10. Feb 21, 2020 by Ronald Kaufmann (kaufmann)

Number of Units 30

Program Requirements and Courses

The Environmental and Ocean Sciences MS Program includes two tracks, Environmental Science and Marine Science. The selection of a track should be based on the nature of a student's thesis research.

Requirements for the Degree

Course List

Code	Title	Units
Coursework (minimum 19 units)		
EOSC 500	Core Seminar I	2
EOSC 501	Core Seminar II	2
Graduate Science Courses (12 units), with lab [1]		12
Graduate Elective or Science Course, with lab		3-4
Graduate Science Courses (E = Environmental, M = Marine)		
EOSC 520	Introduction to Remote Sensing (E,M)	4
EOSC 530	**Human Impacts on the Coastal Environment with Lab**	**4**
EOSC 531	Human Impacts on the Coastal Environment (E,M)	3
~~EOSC 532~~	~~Marine Community Ecology (M)~~	~~4~~
EOSC 533	Plankton Ecology (M)	4
EOSC 534	Wetlands Ecology with Lab (M)	4
EOSC 535	Wetlands Ecology (M)	3
EOSC 536	**Marine Community Ecology with Lab (M)**	**4**
EOSC 537	**Marine Community Ecology (M)**	**3**
EOSC 538	Animal Behavioral Ecology with Lab (M)	4
EOSC 539	Animal Behavioral Ecology (M)	3
EOSC 540	Mathematical Modeling in Ecology (M)	4
EOSC 550	Geological Oceanography (E,M)	4
EOSC 551	Biological Oceanography (M)	4
EOSC 552	Environmental and Ocean Geochemistry (E,M)	4
EOSC 573	Climatology (E,M)	4
EOSC 574	History of the Earth and Climate with Lab (E,M)	4
EOSC 575	**History of the Earth and Climate (E,M)**	**3**
EOSC 581	**Natural Resources of Death Valley (E)**	**3**
EOSC 585	Environmental Geology (E)	4
EOSC 587	Surface Water Hydrology (E)	4
EOSC 588	Geomorphology (E)	4
Graduate Electives [2]		
EOSC 514	Introduction to Maps and Spatial Data Analysis	4
EOSC 515	Geographic Information Systems	4

Code	Title	Units
EOSC 561	Invertebrate Zoology	4
EOSC 562	Biology of Fishes	4
EOSC 565	Marine Mammals	3
EOSC 594	Special Topics in Environmental and Ocean Sciences	1-4
POLS 529	Law of the Sea	3
Research/Thesis (minimum 10 units)		
EOSC 596	Research [3]	0.5-9
Graduate Elective or Science course may replace up to 4 units of EOSC 596.		
EOSC 597	Thesis [3]	1
A minimum of 1 unit of EOSC 597 must be applied toward the degree requirements.		

[1] Students in the Marine Science track must take at least two graduate science courses (8 units) with an M designation. Students in the Environmental Science track must take at least two graduate science courses (8 units) with an E designation. Electives could be E or M for students in either track.

[2] A maximum of six undergraduate units taken at the university may be applied to the graduate program, unless a student is enrolled in the combined degree program. Examples include BIOL 301, BIOL 364, BIOL 416, BIOL 477, BIOL 478, POLS 349. This list is not exhaustive; consult the graduate program director. See the current Undergraduate Course Catalog for course descriptions. No course taken to fulfill an undergraduate deficiency may count toward the required units in the graduate program.

[3] Students may take these courses for 0.5 unit only after they have completed all of the program requirements except EOSC 597. Students who are enrolled for 0.5 unit of EOSC 596 or EOSC 597 are considered half-time.

Thesis Committee

A thesis committee of at least three members will be established during the second semester of enrollment. It will consist of at least one full-time USD graduate faculty member and may include members from approved outside institutions. The entire thesis committee will meet with the student semi-annually to assess progress and give advice. Following approval of the thesis proposal by both the thesis chair and the graduate program director and satisfaction of any deficiencies noted at the time of admission to the program, the student will be recommended for candidacy by the thesis committee. Adequate progress will need to be made to maintain candidacy (see candidacy policy, available in the graduate handbook). Additional courses related to the student's area may be required by the committee chair. All students must be enrolled for at least 1 unit to remain active in the program. Students who have completed all program requirements except EOSC 597, including all required courses, may enroll in 0.5 units to remain active in the program.

Recommended Program of Study

First Year		
Semester I		Units
EOSC 500	Core Seminar I	2
Graduate Science Course		4
Graduate Science Course or Elective		3-4

Semester II

EOSC 501	Core Seminar II	2
Graduate Science Course		4
Graduate Science Course or Elective		3-4

Second Year

Semester I

EOSC 596	Research	6-7
EOSC 596 or Graduate Elective		3-4

Semester II

EOSC 597	Thesis	1

Note: Students who will not finish by the end of their second summer should take 9 units in semester I of the second year and 1 unit of EOSC 596 in semester II of the second year. These students should take 0.5-1 unit of EOSC 597 each semester until they finish.

Combined Degree Program (BA/MS)

Undergraduates who are completing a degree in Environmental and Ocean Sciences can apply for admission to the MS program before finishing the BA. Students can apply up to 12 units of course work toward the requirements for both degrees. Applications are accepted during a student's junior or senior year as an undergraduate, following a process similar to the standard application procedure for admission to the Environmental and Ocean Sciences MS Program. Admitted students have undergraduate status until they complete their BA degree requirements, then become graduate students during the subsequent fall semester. Students need to complete a minimum of 18 units while they have graduate student status in order to satisfy the combined degree program requirements.

Below are recommended programs of study for students enrolled in the combined degree program from each of the three pathways in the undergraduate Environmental and Ocean Sciences major. The recommended program of study is given for the student’s junior and senior year as an undergraduate, and for the student’s first year solely in the graduate program. For the first and second years as an undergraduate, see the recommended program of study for the undergraduate program in Environmental and Ocean Sciences.

Combined Degree Program (BS/MS)

Undergraduates who are completing a BS degree in Environmental and Ocean Sciences can apply for admission to the MS program before finishing the BS. Students can apply up to 12 units of course work toward the requirements for both degrees. Applications are accepted during a student's junior or senior year as an undergraduate, following a process similar to the standard application procedure for admission to the Environmental and Ocean Sciences MS Program. Admitted students have undergraduate status until they complete their BS degree requirements, then become graduate students during the subsequent fall semester. Students need to complete a minimum of 18 units while they have graduate student status in order to satisfy the combined degree program requirements.

For students enrolled in the combined degree program, below is a recommended program of study for the student's first year solely in the graduate program. For the undergraduate years, see the recommended programs of study for each pathway in the undergraduate program in Environmental and Ocean Sciences.

Recommended Program of Study - Marine Ecology Pathway

Junior Year		
Semester I		Units
EOSC 300	Environmental Issues	3
EOSC 301	Research Applications in Environmental and Ocean Sciences	4
BIOL 300	Genetics	3
EOSC 496, 498, or 499	Research Internship Independent Study	1
CC or Electives		3-6
Semester II		
Pathway electives*		7-8
EOSC 496, 498, or 499	Research Internship Independent Study	1
CC or Electives		6-9
Senior Year		
Semester I		
Pathway elective*		3-4
Upper-division BIOL course		3-4
EOSC 495	Senior Seminar	1
CC or Electives		6-9
Semester II		
Pathway electives*		7-8
Upper-division BIOL course		3-4
CC or Electives		3-6

Recommended Program of Study - Environmental Science Pathway

Junior Year		
Semester I		Units
EOSC 300	Environmental Issues	3
EOSC 301	Research Applications in Environmental and Ocean Sciences	4
EOSC 496, 498,	Research	1

or 499	Internship Independent Study	
CC or Electives		4-9
Semester II		
EOSC 314 *	Introduction to Maps and Spatial Data Analysis	4
Pathway elective*		3-4
EOSC 496, 498,	Research	1
or 499	Internship Independent Study	
CC or Electives		6-9
Senior Year		
Semester I		
Pathway elective*		3-4
EOSC 495	Senior Seminar	1
CC or Electives		8-12
Semester II		
Pathway electives*		7-8
CC or Electives		9-12

Recommended Program of Study - Environmental Studies Pathway

Junior Year		
Semester I		Units
EOSC 300	Environmental Issues	3
EOSC 301	Research Applications in Environmental and Ocean Sciences	4
EOSC 496, 498,	Research	1
or 499	Internship Independent Study	
CC or Electives		4-9
Semester II		
EOSC 314 *	Introduction to Maps and Spatial Data Analysis	4
PHIL 338	Environmental Ethics	3
or 344	Environmental Justice	
EOSC 496, 498,	Research	1
or 499	Internship Independent Study	
CC or Electives		6-9
Senior Year		
Semester I		
EOSC 305	Environmental Assessment Practices	3
Pathway elective*		3-4
EOSC 495	Senior Seminar	1

CC or Electives	6-9
Semester II	
Pathway electives*	6-7
CC or Electives	6-9

*For students enrolled in the BA/MS combined degree program, these courses can apply to both the BA and MS degree requirements (up to 12 units), if chosen appropriately.

Recommended Program of Study - Graduate

First Year		
Semester I		Units
EOSC 500	Core Seminar I	2
Graduate Science Course or Elective		3-4
EOSC 596	Research	3-4
Semester II		
EOSC 501	Core Seminar II	2
EOSC 596	Research	2-3
EOSC 596 or Elective		3-4
EOSC 597	Thesis	1

Note: Students who will not finish by the end of their first year in the MS program should take 8 units in semester II of the first graduate year and 0.5-1 unit of EOSC 597 each semester until they finish.

Enter the vote of the Department on this program:

Yes: **11** ~~9~~ No: 0 Abstain: **1** ~~0~~

Justification for request

Updating the program to add new graduate-numbered courses.

Supporting Documents

Reviewer Comments

Key: 109

Course Change Request

New Course Proposal

Date Submitted: 12/01/21 2:39 pm

Viewing: EOSC 530 : Human Impacts on the Coastal Environment with Lab

Last edit: 12/01/21 5:37 pm

Changes proposed by: kaufmann

In Workflow

1. EOS Chair
2. AS Associate Dean
3. Provost
4. Registrar
5. Banner

Programs referencing this course	MS-EOSC: Environmental and Ocean Sciences

Contact Person(s)	Name:	E-mail:	Campus Phone:
	Ron Kaufmann	kaufmann	5904

Effective Term	Fall 2022				
Subject Code	EOSC	Course Level	Graduate	Course Number	530
Department	Environmental & Ocean Sciences (EOS)				
College	College of Arts & Sciences				
Title of Course	Human Imp. Coastal Env. w/Lab				
Catalog Title	Human Impacts on the Coastal Environment with Lab				
Credit Hours	4				
Weekly Contact Hours	Lecture: 3	Lab: 4	Other: 0		

Catalog Course Description

Coastal environments are under increasing pressure from growing human populations. Development, climate change, pollution and exploitation of marine resources have resulted in declining environmental quality in nearshore areas. In this class, we will (1) examine structure and function of coastal systems, (2) how human activities and development have impacted these environments, and (3) when applicable discuss potential remedies to environmental degradation. Laboratory projects will have both field and laboratory components and will examine the impacts of coastal pollution in San Diego. Students may not receive credit for taking EOSC 530 and EOSC 430 or EOSC 431 or EOSC 531.

Primary Grading Mode	Standard Grading System- Final
Other Grading Mode(s)	Pass/Fail Grading System
Method(s) of delivery	Lecture/Lab

Faculty Course Workload: Other

Please specify: 6 units

Is this course cross-listed?

No

Prerequisites?

Does this course have concurrent Prerequisites? Yes

Please list them in the box below.

Are there 1 or more Co-Requisites?

No

Is this course a topics course?

No

Is this course repeatable for credit?

No

Does this meet any of the following Undergraduate Core Curriculum Requirements?

Course attributes

This Course Change/Course Proposal will be sent to the Dept Chairs for the Majors/Minors/Concentrations selected below:
This Course can apply to the following Majors/Minors/Concentrations:

Majors/Minors/Concentrations:
Environmental & Ocean Sciences - EOSC

Department Restrictions:

Major Restrictions:

Class Restrictions:

Level Restrictions: Include

Level Codes: GR

Degree Restrictions:

Program Restrictions:

Campus Restrictions:

College Restrictions:

Student Attribute Restrictions:

Enter the vote of the Department on this course:

Yes: 11 No: 0 Abstain: 1

Rationale: Creating EOSC 530 as a graduate number for EOSC 430 (Human Impacts on the Coastal Environment with Lab).

Supporting documents: EOSC 431 Human Impacts on the Coastal Environment Syllabus.pdf

Impact

Discuss the likely effects on both department curriculum and curricula of other departments/units

Provides an additional option for students in the EOSC MS program.

Will this change have any staffing/budgetary impact?

Will this change impact student enrollment numbers?

Course Reviewer Comments

Key: 3905

EOSC 431: Human Impacts on the Coastal Environment **Fall 2019**

Coastal environments are under increasing pressure from growing human populations. Development, climate change, pollution and exploitation of marine resources have resulted in declining environmental quality in nearshore areas. In this class, we will (1) examine structure and function of coastal systems, (2) how human activities and development have impacted these environments, and (3) when applicable discuss potential remedies to environmental degradation.

Class schedule: MWF 1:25-2:20 Serra Hall 102

Instructor: Dr. Steven Searcy
Email: ssearcy@sandiego.edu
Phone: 619-260-2793
Office Hours (ST 274): M W F 10:15-12:15

And by appointment: *I am always available to meet with you, please e-mail or call me to schedule a time if you cannot make it to my office hours*

Textbooks: Given that I draw on information from several textbooks in class, you are not required to purchase any books. However, you will be responsible for keeping up with assigned readings.

1. Abel, D.C. and R.L. McConnell. 2010. Environmental Oceanography. Jones and Bartlett Publishers, Sudbury, MA, USA.
2. Beiras, R. 2018. Marine Pollution: Sources, Fate and Effects in Coastal Ecosystems. Elsevier, Cambridge, MA, USA.
3. Crowe, T.P. and C.L.J. Frid, editors. 2015. Marine Ecosystems. Human impacts on biodiversity, functioning and services. Cambridge University Press, Cambridge, U.K.
4. Rick, T.C. and J.M. Erlandson, editors. 2008. Human Impacts on Ancient Marine Ecosystems. University of California Press, Berkeley, California, USA.
5. Weis, J.S. 2015. Marine Pollution: What everyone needs to know. Oxford University Press, New York. USA.

Additional material will be posted on Blackboard or handed out in class.

Course Learning Outcomes

The general goal of this course is to increase your understanding of the interactions between humans and the ocean. You will learn:

- about how you influence the ocean, and the ocean influences you
- fundamental concepts of marine science and how to make connections between subjects using critical thinking; topics examined in depth will include:
    - marine pollution
    - ocean-climate interactions
    - living marine resources
    - non-living marine resources
    - conservation
- to become better environmental stewards

Program Learning Outcomes

- Fundamental principles in environmental studies, including (a) principles of natural sciences (ecology, earth sciences), social sciences (policy, economics, sociology) and the humanities (history, ethics); (b) the interconnectedness of the natural sciences, the social sciences and the humanities in an environmental context; and (c) how human activities affect these connections.
- The scientific method, including formulation of hypotheses, the use of varied approaches (experimental and observational) for testing hypotheses, appropriate interpretation of data encountered in class, lab, or the scientific literature.
- Conduct literature reviews to obtain information, including accessing all forms of literature to investigate topics, critiquing sources and organizing information in a meaningful way.
- Synthesize a cogent argument in language appropriate to the field of study, including written and oral communication skills, and presentation of results using graphs and equations, when appropriate

<u>Grading</u>

Lecture:	
Midterm Exam	100 points
Final Exam	100 points
Presentation(s)	75 points
Participation	25 points
	300 points

Your final grade will be the total number of points you have earned on the exams and presentations divided by the total possible. To figure out your current grade at any point in the semester, add up the points you have earned and divide by the total number of points possible. I will not automatically round up the final grade, as you can see from the grading scale.

Tentative Grading Scale (depending on class performance):

	A = 100-93%	A- = 92.99-90%
B+ = 89.99-87%	B = 86.99-83%	B- = 82.99-80%
C+ = 79.99-77%	C = 76.99-73%	C- = 72.99-70%
D+ = 69.99-67%	D = 66.99-63%	D- = 62.99-60%
	F < 59.99%	

There will be no make-up exams in this class without my prior approval. Make-up exams will only be administered for legitimate reasons, which do **NOT** include travel plans. If there is an emergency, contact me as soon as possible to make other arrangements.

I use a variety of teaching techniques including lectures and activities within the lecture, student led presentations, and discussions of the literature. I expect all students to be active participants in class. Assignments are designed to provide you with the opportunity to develop your writing and observational skills, oral presentations, and thinking skills. These include:

Paper Presentations

During the semester, you will give three ~10 minute presentations to the class (using PowerPoint, dry-erase board, etc.) on a paper from the primary literature that that relates to class material being discussed that week. I will ask you to submit your PowerPoint presentation to share with the class. Furthermore, as part of your participation grade, you will be required to comment, ask questions on the presentations given by your peers. Attendance is mandatory at all presentations- you will be deducted 3 points for every presentation that you miss.

Academic Integrity

The University is an academic institution, an instrument of learning. As such, the University is predicated on the principles of scholastic honesty. It is an academic community all of whose members are expected to abide by ethical standards both in their conduct and in their exercise of responsibility towards other members of the community.

Cheating and plagiarism are not acceptable and violations will result in ***zero points*** on that assignment or exam and may result in automatic ***class failure*** (i.e., an "F" in the class). You may also be reported to the Office of Student Affairs for disciplinary action, which may result in probation, suspension, or expulsion. Cheating includes, but is not limited to, copying another's exam answers or assignment, giving other students information about the content or answers to an exam or assignment, looking at materials containing relevant information during an exam, and working with others to complete assignments. Plagiarism refers to intentionally passing off of another's ideas, words, or work as one's own.

You are responsible for reading and adhering to the USD Academic Integrity Policy.

Any questions about what constitute acceptable procedures for sharing of data, exchange of ideas, citation of sources, or any other academic integrity issues should be addressed to me, or check out the USD Academic Integrity guidelines (link on Blackboard). Better safe than sorry!

Disabilities

Please let me know within the first week of class if you have any special needs.

Tentative Lecture Schedule (MWF 1:25-2:20, SH 102)

Week 1	W	Sept 4	Introduction & Overview
	F	Sept 6	Assessing Human Impacts & Discussion of Halpern et al. 2008
Week 2	M	Sept 9	Historical Ecology & Ancient Human Impacts on Marine Ecosystems
	W	Sept 11	Historical Ecology & Ancient Human Impacts on Marine Ecosystems
	F	Sept 13	Marine Debris and Plastics
Week 3	M	Sept 16	Marine Debris and Plastics
	W	Sept 18	Nutrient Cycles
	F	Sept 20	*Student Presentations (1)*
		Sept 21	SATURDAY-COASTAL CLEANUP (9:00 a.m. – Noon)
Week 4	M	Sept 23	County Wide Microplastics Survey
	W	Sept 25	Sewage
	F	Sept 27	Eutrophication and Dead Zones
Week 5	M	Sept 30	HAB's
	W	Oct 2	Heavy Metals, Pesticides
	F	Oct 4	POPs
Week 6	M	Oct 7	*Student Presentations (2)*
	W	Oct 9	Noise Pollution
	F	Oct 11	Light Pollution
Week 7	M	Oct 14	*Student Presentations (3)*
	W	Oct 16	**MIDTERM EXAM**
	F	Oct 18	FALL HOLIDAY
Week 8	M	Oct 21	Invasive Species
	W	Oct 23	Invasive species
	F	Oct 25	*Student Presentations (4)*
Week 9	M	Oct 28	Extraction (oil)
	W	Oct 30	Mining
	F	Nov 1	Oil rigs as artificial reefs PROs & CONs (*article discussion*)
Week 10	M	Nov 4	Ocean Climate Interactions (SST)
	W	Nov 6	Ocean Acidification
	F	Nov 8	*Student Presentations (5)*
Week 11	M	Nov 11	Fisheries
	W	Nov 13	Fisheries
	F	Nov 15	Aquaculture
Week 12	M	Nov 18	*Student Presentations (6)*
	W	Nov 20	Sandy Beaches / Unsustainable coastal development (Artificial structures)
	F	Nov 22	Sandy Beaches / Impact of sea level rise
Week 13	M	Nov 25	*Student Presentations (7)*
	W	Nov 27	THANKSGIVING
	F	Nov 29	THANKSGIVING
Week 14	M	Dec 2	Coral Reefs & Human Impacts
	W	Dec 4	Mangroves & Human Impacts
	F	Dec 6	*Student Presentations (8)*
Week 15	M	Dec 9	Kelp beds & Human Impacts
	W	Dec 11	*Student Presentations (9)*
	F	Dec 13	TBD

Finals	M	Dec 16	No class
	W	Dec 18	No class
	F	Dec 20	**FINAL EXAM (2:00-4:00 p.m.)**

Course Change Request

Date Submitted: 12/01/21 2:34 pm

Viewing: EOSC 531 : Human Impacts on the Coastal Environment

Last approved: 04/27/17 2:59 am

Last edit: 12/01/21 5:38 pm

Changes proposed by: kaufmann

In Workflow

1. **EOS Chair**
2. AS Associate Dean
3. Provost
4. Registrar
5. Banner

History

1. Apr 27, 2017 by Ronald Kaufmann (kaufmann)

Catalog Pages referencing this course	Environmental & Ocean Sciences (EOSC) Master of Science in Environmental and Ocean Sciences
Programs referencing this	MS-EOSC: Environmental and Ocean Sciences

Contact Person(s)	Name:	E-mail:	Campus Phone:
	Ron Kaufmann	kaufmann	5904

Effective Term	Fall 2022
Subject Code	EOSC
Course Number	531
Department	Environmental & Ocean Sciences (EOS)
College	College of Arts & Sciences
Title of Course	Human Impacts Coastal Environ
Catalog Title	Human Impacts on the Coastal Environment
Credit Hours	**3** ~~4~~
Weekly Contact Hours	Lecture: 3 Lab: **0** ~~4~~ Other: 0
Catalog Course Description	**Coastal environments are under increasing pressure from growing human populations. Development, climate change, pollution and exploitation of marine resources have resulted in declining environmental quality in nearshore areas. In this class, we will (1) examine the structure and function of coastal systems, (2) how human activities and development have impacted these environments, and (3) when applicable discuss potential remedies to environmental degradation. Students may not receive credit for taking EOSC 531 and EOSC 430 or EOSC 431 or EOSC 530.** ~~An interdisciplinary study of physical, chemical, and biological processes in the oceans with an emphasis on coastal environments.Topics include coastal oceanography, nutrient distribution and geochemical cycles, primary productivity, food webs and fisheries, and benthic habitats.This course examines the interactions between abiotic forces in the oceans and the organisms that live in a variety of habitats.Environmental issues will be connected to major scientific themes.Three hours of lecture and one laboratory per week.~~
Primary Grading Mode	Standard Grading System- Final

Method(s) of delivery	~~Lecture/Lab~~ **Lecture**
Faculty Course Workload	~~Other~~ **Same as course credit**

Is this course cross-listed?

No

Prerequisites?

Does this course have concurrent Prerequisites?	No

Are there 1 or more Co-Requisites?

No

Is this course a topics course?

No

Is this course repeatable for credit?

No

Does this meet any of the following Undergraduate Core Curriculum Requirements?

Course attributes

This Course Change/Course Proposal will be sent to the Dept Chairs for the Majors/Minors/Concentrations selected below:
This Course can apply to the following Majors/Minors/Concentrations:

Department Restrictions:	
Major Restrictions:	
Class Restrictions:	
Level Restrictions:	Include

Level Codes:	GR

Degree Restrictions:	
Program Restrictions:	
Campus Restrictions:	
College Restrictions:	
Student Attribute Restrictions:	

Enter the vote of the Department on this course:

Yes: **11** ~~8~~ No: 0 Abstain: 1

Rationale: Updating course record to align with revised undergraduate course EOSC 431.

Supporting documents: ~~Graduate Course Renumbering 2017-02-15.pdf~~

Impact

Discuss the likely effects on both department curriculum and curricula of other departments/units

None

Will this change have any staffing/budgetary impact?

Will this change impact student enrollment numbers?

Course Reviewer Comments

Key: 2836

Course Change Request

A deactivated record cannot be edited.

Course Deactivation Proposal

Date Submitted: 12/01/21 5:35 pm

Viewing: EOSC 532 : Marine Community Ecology

Last approved: 04/28/17 3:02 am

Last edit: 12/01/21 5:35 pm

Changes proposed by: kaufmann

In Workflow

1. **EOS Chair**
2. AS Associate Dean
3. Provost
4. Registrar
5. Banner

History

1. Apr 28, 2017 by Ronald Kaufmann (kaufmann)

Catalog Pages referencing this course	Environmental & Ocean Sciences (EOSC) Marine Science (MARS) Master of Science in Environmental and Ocean Sciences
Other Courses referencing this	As A Banner Equivalent: MARS 513 : Oceanography IV: Marine Community Ecology

Contact Person(s)	Name:	E-mail:	Campus Phone:
	Ron Kaufmann	kaufmann	5904

Effective Term	Summer 2022				
Subject Code	EOSC	Course Number	532		
Department	Environmental & Ocean Sciences (EOS)				
College	College of Arts & Sciences				
Title of Course	Marine Community Ecology				
Catalog Title	Marine Community Ecology				
Credit Hours	4				
Weekly Contact Hours	Lecture: 3		Lab: 4	Other:	0
Catalog Course Description	This course is intended to introduce students to the fundamentals of marine community ecology, provide students with field experiences so that they may become familiar with various ecological sampling designs and methods, and expose students to the diversity of coastal marine environments in the San Diego area. Students will read and discuss classic marine ecology papers, and conduct marine ecological studies in field and laboratory settings. Students will also be required to participate in a semester-long research project. Three hours of lecture and one laboratory per week. Spring semester.				
Primary Grading Mode	Standard Grading System- Final				
Method(s) of delivery	Lab Lecture				

Faculty Course Workload: Other

Please specify: 6

Is this course cross-listed?

No

Prerequisites?

Does this course have concurrent Prerequisites? No

Are there 1 or more Co-Requisites?

No

Is this course a topics course?

No

Is this course repeatable for credit?

No

Does this meet any of the following Undergraduate Core Curriculum Requirements?

Course attributes

This Course Change/Course Proposal will be sent to the Dept Chairs for the Majors/Minors/Concentrations selected below:
This Course can apply to the following Majors/Minors/Concentrations:

Department Restrictions:

Major Restrictions:

Class Restrictions:

Level Restrictions: Include

Level Codes: GR

Degree Restrictions:

Program Restrictions:

Campus Restrictions:

College Restrictions:

Student Attribute Restrictions:

Enter the vote of the Department on this course:

Yes: **11** ~~8~~ No: 0 Abstain: 1

Rationale:

Supporting documents: Graduate Course Renumbering 2017 02 15.pdf

Impact

Discuss the likely effects on both department curriculum and curricula of other departments/units

Will this change have any staffing/budgetary impact?

Will this change impact student enrollment numbers?

Justification for request	This course has been replaced by EOSC 536. The last term it should be active is 202206.
Course Reviewer Comments	

Key: 2835

Course Change Request

New Course Proposal

Date Submitted: 12/01/21 2:27 pm

Viewing: EOSC 536 : Marine Community Ecology with Lab

Last edit: 12/01/21 5:38 pm

Changes proposed by: kaufmann

In Workflow

1. **EOS Chair**
2. AS Associate Dean
3. Provost
4. Registrar
5. Banner

Programs referencing this course	MS-EOSC: Environmental and Ocean Sciences
Other Courses referencing this	In The Catalog Description:

Contact Person(s)	Name:	E-mail:	Campus Phone:
	Ron Kaufmann	kaufmann	5904

Effective Term	Fall 2022				
Subject Code	EOSC	Course Level	Graduate	Course Number	536
Department	Environmental & Ocean Sciences (EOS)				
College	College of Arts & Sciences				
Title of Course	Marine Commun. Ecol. with Lab				
Catalog Title	Marine Community Ecology with Lab				

Credit Hours	4				
Weekly Contact Hours	Lecture:	3	Lab: 4	Other:	0

Catalog Course Description

This course is intended to introduce students to the fundamentals of marine community ecology. We will explore the abiotic and biotic factors that structure marine communities, and compare the processes and interactions between marine organisms and their environments in various ecosystems. In lab, students become familiar with various ecological sampling methods and experimental design, and are exposed to the diversity of coastal marine environments in the San Diego area. Students may not receive credit for taking EOSC 536 and EOSC 436 or EOSC 437 or EOSC 537.

Primary Grading Mode	Standard Grading System- Final
Other Grading Mode(s)	Pass/Fail Grading System
Method(s) of delivery	Lecture/Lab

Faculty Course Workload: Other

Please specify: 6

Is this course cross-listed?

No

Prerequisites?

Does this course have concurrent Prerequisites? No

Are there 1 or more Co-Requisites?

No

Is this course a topics course?

No

Is this course repeatable for credit?

No

Does this meet any of the following Undergraduate Core Curriculum Requirements?

Course attributes

This Course Change/Course Proposal will be sent to the Dept Chairs for the Majors/Minors/Concentrations selected below:
This Course can apply to the following Majors/Minors/Concentrations:

Majors/Minors/Concentrations:
Environmental & Ocean Sciences - EOSC

Department Restrictions:

Major Restrictions:

Class Restrictions:

Level Restrictions: Include

Level Codes: GR

Degree Restrictions:

Program Restrictions:

Campus Restrictions:

College Restrictions:

Student Attribute Restrictions:

Enter the vote of the Department on this course:

Yes: 11 No: 0 Abstain: 1

Rationale: Creating EOSC 536 as a graduate number for EOSC 436 (Marine Community Ecology with Lab).

Supporting documents: EOSC 536 Marine Community Ecology with Lab syllabus.pdf

Impact

Discuss the likely effects on both department curriculum and curricula of other departments/units

Provides an additional option for students in the EOSC MS program.

Will this change have any staffing/budgetary impact?

Will this change impact student enrollment numbers?

Course Reviewer Comments

Key: 3900

Instructor:	Dr. Nathalie Reyns Email: nreyns@sandiego.edu Phone: 619-260-**4096** Office Hours (ST 277): MF 10:30-12:00; Th 10:00-12:00 And by appointment: ***I am always available to meet with you, please e-mail or call me to schedule a time if you cannot make it to my office hours***	
Class schedule:	MWF 12:20-1:15	ST 261
Lab:	W 1:25-5:25	ST 174
Required readings:	Electronic files (pdf) of research papers will be provided on the course website (Blackboard)	
Suggested Resource:	Bertness, M.D., Bruno, J.F., Silliman, B. R., and J. J. Stachowicz. 2014. Marine Community Ecology and Conservation. Sinauer Associates, Inc.	

Course Description

This course is intended to introduce you to the fundamentals of marine community ecology, provide you with field experiences so that you become familiar with various ecological sampling designs and methods, and expose you to the diversity of coastal marine environments in the San Diego area.

Learning Outcomes

After you complete this course, you should be able to:

- Identify local marine organisms and be acquainted with their natural history
- Understand the basic ecological processes that determine the structure and dynamics of marine communities
- Look for, identify and describe patterns in nature
- Develop testable hypotheses for the causes of observed patterns
- Use experimental and observational tools and methods to conduct marine ecological research

Course Structure
The structure of the course reflects these goals, and I expect you to be an active participant in lectures and lab and field studies- because doing something is the best way to learn it. There is no text book for this class, but you are expected to read assigned papers from the scientific literature, and select chapters from the book referenced above.

In lectures you will learn the fundamental concepts and paradigms in marine ecology by reading classic papers. In addition, you will lead a class discussion on a recent scientific paper that relates to the topic we are discussing in class. Participation in these exercises is important because one way to learn to do good science is to evaluate the work of others. Thus, the success of this course requires that you attend class, come prepared and actively participate in class discussions. I will generally present material using PowerPoint, and files will be available to you (**see our class website on Blackboard**); however, my notes may only be general outlines of what we discus in class.

In lab, expect to be doing marine ecology. I have tried to balance the schedule with field activities, laboratory and computer exercises. Regardless of what we are doing each week, however, please come prepared to work hard. When we go in the field, you should be prepared to get wet, cold, or muddy depending on what we are doing. Bring suitable footwear (e.g. old sneakers, dive or surf booties, etc.) and clothing (e.g. layers, and old clothing, or wetsuits if you really want to stay warm). If it rains, we will still go out in the field. You may also want to bring water, snacks and sunscreen. The tides are better during the first part of the semester, so we will be starting off in the field right away.

Grading*:* **You must pass both the lecture and lab to pass this course!**

Lecture (MARS 432/532)

Exams: 2 midterms @ 100 pts each	200
Final: **Wednesday May 22: 2-4pm**, cumulative	150
Participation and paper discussion preparation	50
Total lecture points:	**400**

Lab (MARS 432)

Notebook **(due Friday May 10)**	85
notes (25 pts)	
field patterns (2 @ 15 pts)	
natural history papers/presentations (2 @ 15 pts)	
Homework	160
Research project report **(due Monday May 13)**	40
Total lab points:	**= 285**
Total MARS 432 class points	**= 685**

Lab (MARS 532)

Notebook **(due Friday May 10)**	85
notes (25 pts)	
field patterns (2 @ 15 pts)	
natural history papers/presentations (2 @ 15 pts)	
Homework	200
Research project report **(due Monday May 13)**	60
Total lab points	**= 345**
	Total MARS 532 class points = 745

****A note about fieldtrips****: In the event that you chose to drive yourself to a fieldtrip, you must arrive on time to the field site. Points will be deducted from your lab grade if you are late. It is expected however, that even if you drive your own car, you meet at USD before to help prepare and after field trips to help cleanup field gear.

Grades:

Your final grade will be the total number of points you have earned on the exams and assignments divided by the total possible. To figure out your current grade at any point in the semester, add up the points you have earned and divide by the total number of points possible. I will not automatically round up the final grade, as you can see from the grading scale.

Tentative Grading Scale (depending on class performance):

	A = 100-93%	A- = 92.99-90%
B+ = 89.99-87%	B = 86.99-83%	B- = 82.99-80%
C+ = 79.99-77%	C = 76.99-73%	C- = 72.99-70%
D+ = 69.99-67%	D = 66.99-63%	D- = 62.99-60%
	F < 59.99%	

Policies

There will be no make-up exams in this class without my prior approval. Make-up exams will only be administered for legitimate reasons, which do NOT include travel plans. If there is an emergency, contact me as soon as possible to make other arrangements.

Cheating and Plagiarism will result in ***zero points*** on that assignment or exam and may result in automatic ***class failure*** (i.e., an "F" in the class). You may also be reported to the Office of Student Affairs for disciplinary action, which may result in probation, suspension, or expulsion. Cheating includes, but is not limited to, copying another's exam answers or assignment, giving other students information about the content or answers to an exam or assignment and looking at materials containing relevant information during an exam. Plagiarism is *"intentionally or knowingly representing the words, ideas, or works of another as one's own in any academic exercise"*. **Don't do it**. If you wish to quote or paraphrase others' work, the appropriate author should be given credit. To learn more about plagiarism, visit http://www.indiana.edu/~istd/. Remember to give full credit to authors that you cite in your research reports. You are responsible

for reading and adhering to the USD Academic Integrity Policy; please ask questions if you have any doubts!

Late assignments lose 10% per day, i.e., the most you can receive for an assignment that is one day late is 90% of its point value, 2 days late 80%, etc. It is always better to approach me *before* a paper or assignment is due if you think you need more time, rather than waiting until after a missed deadline.

Punctuality: Expect to start on time.

Disabilities: Please let me know within the first week of class if you have any special needs, or medical conditions that might impact your ability to participate in field activities.

Week	Date	Day	Activity	Topic	Discussion	Tides
1	28-Jan	M	Lecture	Introduction		
	30-Jan	W	Lecture	Review of taxonomy		
		W	**Lab 1**	**Fieldtrip: rocky intertidal**		Low at 12:45 pm,-0.09
	1-Feb	F	Lecture	Physical context of marine communities	Ch 2	
2	4-Feb	M	Lecture	Statistics/Design of ecological experiments		
	6-Feb	W	Lecture	Statistics/Design of ecological experiments		
		W	**Lab 2**	**Sampling exercise in lab**		Low at 4:22 pm, -0.5
	8-Feb	F	Lecture	Population ecology	student	
3	11-Feb	M	Lecture	Population ecology		
	13-Feb	W	Lecture	Foundation species and species interactions	Ch 3	
		W	**Lab 3**	**Natural history presentations** **Statistics**		**(poor)**
	15-Feb	F	Lecture	Foundation species and species interactions	student	
4	18-Feb	M	Lecture	Species interactions		
	20-Feb	W	Lecture	Species interactions		
			Lab 4	**Fieldtrip: Cabrillo National Monument**		Low at 4 pm; -1.5
	22-Feb	F	Lecture	Biodiversity and ecosystem function	Ch 6 student	
5	25-Feb	M	Lecture	Biodiversity and ecosystem function		
	27-Feb	W	Lecture	Biogeography	Ch 7	
			Lab 5	**Functional response exercise**		**(poor)**
	1-Mar	F	Lecture	**Midterm # 1**		
6	4-Mar	M	Lecture	**SPRING BREAK**		
	6-Mar	W	Lecture	**SPRING BREAK**		
			Lab			
	8-Mar	F	Lecture	**SPRING BREAK**		

Week	Date	Day	Activity	Topic	Discussion	Tides
7	11-Mar	M	Lecture	No Class		
	13-Mar	W	Lecture	Larval behavior	Ch 4	
			Lab 6	**Larval behavior lab**		**(poor)**
	15-Mar	F	Lecture	Larval dispersal	student	
8	18-Mar	M	Lecture	Larval ecology		
	20-Mar	W	Lecture	Rocky Intertidal ecology	Ch 9	
			Lab 7	**Fieldtrip: snail/barnacle study**		Low at 3:52 pm; -1.2
	22-Mar	F	Lecture	Rocky Intertidal ecology	student	
9	25-Mar	M	Lecture	Rocky Intertidal ecology		
	27-Mar	W	Lecture	Rocky Intertidal ecology		
			Lab 8	**Snail/barnacle lab processing**		**(poor)**
	29-Mar	F	Lecture	Rocky Intertidal ecology	student	
10	1-Apr	M	Lecture	Salt marsh communities	Ch 11	
	3-Apr	W	Lecture	Salt marsh communities		
			Lab 9	**Competition lab**		Low at 3:18 pm; -0.3
	5-Apr	F	Lecture	Salt marsh communities	student	
11	8-Apr	M	Lecture	Mission Bay		
	10-Apr	W	Lecture	**Fieldtrip: Mission Bay fishes**		**(poor)**
			Lab 10	**Fieldtrip: Mission Bay fishes**		
	12-Apr	F	Lecture	**Midterm #2**		
12	15-Apr	M	Lecture	Seagrass communities	Ch 12	
	17-Apr	W	Lecture	Seagrass communities	student	
			Lab 11	**Fieldtrip: Kendall Frost**		Low at 2:42 pm; -0.6
	19-Apr	F	Lecture	**EASTER BREAK**		

Week	Date	Day	Activity	Topic	Discussion	Tides
13	22-Apr	M	Lecture	**EASTER BREAK**		
	24-Apr	W	Lecture	Seagrass communities		
			Lab 12	**Mussels experiment set-up**		**(poor)**
	26-Apr	F	Lecture	Sandy beach communities	student	
14	29-Apr	M	Lecture	Kelp forest communities	Ch 14	
	1-May	W	Lecture	Kelp forest communities		
			Lab 13	**Mussels**		Low at 2:05 pm; 0.4
	3-May	F	Lecture	Ecosystem services	Ch 18 student	
15	6-May	M	Lecture	Ecosystem services		
	8-May	W	Lecture	Climate change and marine communities	Ch 19	
			Lab 14	**Mussels**		**(poor)**
	10-May	F	Lecture	Climate change and marine communities	student	
16	13-May	M	Lecture	Conservation and management	Ch 23	
	15-May	W	Lecture	Conservation and management	student	
	22 May	**W**	**Final Exam: 2:00-4:00 pm**			

Course Change Request

New Course Proposal

Date Submitted: 12/01/21 2:27 pm

Viewing: EOSC 537 : Marine Community Ecology

Last edit: 12/01/21 5:39 pm

Changes proposed by: kaufmann

In Workflow

1. **EOS Chair**
2. AS Associate Dean
3. Provost
4. Registrar
5. Banner

Programs referencing this course	MS-EOSC: Environmental and Ocean Sciences
Other Courses referencing this	In The Catalog Description:

Contact Person(s)	Name:	E-mail:	Campus Phone:
	Ron Kaufmann	kaufmann	5904

Effective Term	Fall 2022				
Subject Code	EOSC	Course Level	Graduate	Course Number	537
Department	Environmental & Ocean Sciences (EOS)				
College	College of Arts & Sciences				
Title of Course	Marine Community Ecology				
Catalog Title	Marine Community Ecology				

Credit Hours	3				
Weekly Contact Hours	Lecture:	3	Lab:	0	Other: 0

Catalog Course Description	This course is intended to introduce students to the fundamentals of marine community ecology. We will explore the abiotic and biotic factors that structure marine communities, and compare the processes and interactions between marine organisms and their environments in various ecosystems. Students may not receive credit for taking EOSC 537 and EOSC 436 or EOSC 437 or EOSC 536.
Primary Grading Mode	Standard Grading System- Final
Method(s) of delivery	Lecture/Lab
Faculty Course Workload	Same as course credit

Is this course cross-listed?

No

Prerequisites?

Does this course have concurrent Prerequisites? No

Are there 1 or more Co-Requisites?

No

Is this course a topics course?

No

Is this course repeatable for credit?

No

Does this meet any of the following Undergraduate Core Curriculum Requirements?

Course attributes

This Course Change/Course Proposal will be sent to the Dept Chairs for the Majors/Minors/Concentrations selected below:
This Course can apply to the following Majors/Minors/Concentrations:

Majors/Minors/Concentrations:
Environmental & Ocean Sciences - EOSC

Department Restrictions:

Major Restrictions:

Class Restrictions:

Level Restrictions: Include

Level Codes: GR

Degree Restrictions:

Program Restrictions:

Campus Restrictions:

College Restrictions:

Student Attribute Restrictions:

Enter the vote of the Department on this course:

Yes: 11 No: 0 Abstain: 1

Rationale: Creating EOSC 537 as a graduate number for EOSC 437 (Marine Community Ecology).

Supporting documents: EOSC 437 Marine Community Ecology Syllabus.pdf

Impact

Discuss the likely effects on both department curriculum and curricula of other departments/units

Provides an additional option for students in the EOSC MS program.

Will this change have any staffing/budgetary impact?

Will this change impact student enrollment numbers?

Course Reviewer Comments

Key: 3901

Instructor:	Dr. Nathalie Reyns Email: nreyns@sandiego.edu Phone: 619-260-**4096** Office Hours (ST 277): And by appointment: ***I am always available to meet with you, please e-mail or call me to schedule a time if you cannot make it to my office hours***
Class schedule:	
Required readings:	Electronic files (pdf) of research papers will be provided on the course website (Blackboard)
Suggested Resource:	Bertness, M.D., Bruno, J.F., Silliman, B. R., and J. J. Stachowicz. 2014. Marine Community Ecology and Conservation. Sinauer Associates, Inc.

Course Description
This course is intended to introduce you to the fundamentals of marine community ecology. We will explore the abiotic and biotic factors that structure marine communities, and compare the processes and interactions between marine organisms and their environments in various ecosystems.

Learning Outcomes
After you complete this course, you should be able to:

- Understand the basic ecological processes that determine the structure and dynamics of marine communities
- Develop testable hypotheses for the causes of ecological patterns
- Lead a critical discussion of a peer-reviewed research paper from the recent marine ecological literature, that includes an analysis of how the paper relates to ecological principles learned in class
- Understand marine ecological sampling approaches and associated limitations

Course Structure
The structure of the course reflects these goals, and I expect you to be an active participant in lectures - because doing something is the best way to learn it. There is no text book for this class, but you are expected to read assigned papers from the scientific literature, and select chapters from the book referenced above.

You will learn the fundamental concepts and paradigms in marine ecology by reading classic papers. In addition, you will lead a class discussion on a recent scientific paper that relates to the topic we are discussing in class. Participation in these exercises is

important because one way to learn to do good science is to evaluate the work of others. Thus, the success of this course requires that you attend class, come prepared and actively participate in class discussions. I will generally present material using PowerPoint, and files will be available to you (**see our class website on Blackboard**); however, my notes may only be general outlines of what we discus in class.

Grading*:*

Exams: 2 midterms @ 100 pts each	200
Final: cumulative	150
Participation and paper discussion preparation	50
Paper Discussion Lead and critical evaluation	50
Total points:	**450**

Grades:

Your final grade will be the total number of points you have earned on the exams and assignments divided by the total possible. To figure out your current grade at any point in the semester, add up the points you have earned and divide by the total number of points possible. I will not automatically round up the final grade, as you can see from the grading scale.

Tentative Grading Scale (depending on class performance):

	A = 100-93%	A- = 92.99-90%
B+ = 89.99-87%	B = 86.99-83%	B- = 82.99-80%
C+ = 79.99-77%	C = 76.99-73%	C- = 72.99-70%
D+ = 69.99-67%	D = 66.99-63%	D- = 62.99-60%
	F < 59.99%	

Policies

There will be no make-up exams in this class without my prior approval. Make-up exams will only be administered for legitimate reasons, which do NOT include travel plans. If there is an emergency, contact me as soon as possible to make other arrangements.

Cheating and Plagiarism will result in ***zero points*** on that assignment or exam and may result in automatic ***class failure*** (i.e., an "F" in the class). You may also be reported to the Office of Student Affairs for disciplinary action, which may result in probation, suspension, or expulsion. Cheating includes, but is not limited to, copying another's exam answers or assignment, giving other students information about the content or answers to an exam or assignment and looking at materials containing relevant information during an exam. Plagiarism is *"intentionally or knowingly representing the words, ideas, or works of another as one's own in any academic exercise"*. **Don't do it**. If you wish to quote or paraphrase others' work, the appropriate author should be given credit. To learn more about plagiarism, visit http://www.indiana.edu/~istd/. Remember to give full credit to authors that you cite in your research reports. You are responsible for reading and adhering to the USD Academic Integrity Policy; please ask questions if you have any doubts!

Late assignments lose 10% per day, i.e., the most you can receive for an assignment that is one day late is 90% of its point value, 2 days late 80%, etc. It is always better to approach me *before* a paper or assignment is due if you think you need more time, rather than waiting until after a missed deadline.

Punctuality: Expect to start on time.

Disabilities: Please let me know within the first week of class if you have any special needs, or medical conditions that might impact your ability to participate in field activities.

Course Change Request

Date Submitted: 12/01/21 2:27 pm

Viewing: EOSC 574 : History of the Earth and Climate with Lab

Last approved: 05/10/17 3:16 am

Last edit: 12/01/21 5:39 pm

Changes proposed by: kaufmann

In Workflow

1. **EOS Chair**
2. AS Associate Dean
3. Provost
4. Registrar
5. Banner

History

1. May 10, 2017 by Ronald Kaufmann (kaufmann)

Catalog Pages referencing this course	Environmental & Ocean Sciences (EOSC) Marine Science (MARS) Master of Science in Environmental and Ocean Sciences
Programs referencing this	MS-EOSC: Environmental and Ocean Sciences

Contact Person(s)	Name:	E-mail:	Campus Phone:
	Ron Kaufmann	kaufmann	5904

Effective Term	Fall 2022
Subject Code	EOSC
Course Number	574
Department	Environmental & Ocean Sciences (EOS)
College	College of Arts & Sciences
Title of Course	History ~~of the~~ Earth & Climate **w/Lab**
Catalog Title	History of the Earth and Climate **with Lab**
Credit Hours	**4** ~~3~~
Weekly Contact Hours	Lecture: 3 Lab: **4** ~~0~~ Other: 0

Catalog Course Description

The objective ~~A survey~~ of **this course is to develop a deeper understanding** ~~the history~~ of the **history of earth's climate** ~~earth~~ system ~~focusing on ocean-atmosphere-ice sheet dynamics~~ and **interactions of different components of the climate system (lithosphere, hydrosphere/cryosphere, atmosphere, anthrosphere).** ~~their interaction on past global climate change.~~ **We will investigate the** ~~Topics include~~ geologic **and historical** record of **natural** ~~past~~ climate **change and evidence** ~~cycles, causal mechanisms~~ of **the mechanisms causing natural** ~~past~~ climate **variability.** ~~change, and the scientific basis of global warming.~~ **Our approach will be to examine how scientist's views and our ideas about climate have changed over the past 150 years. Toward the end of the course, we will apply our knowledge of natural climate cycles in the past to investigate the scientific basis for predictions of future climate change. The laboratory will introduce students to methods and techniques used in historical geology and paleoclimatology focusing on the geological history of southern California. The laboratory may include weekend field trips. Students may not receive credit for taking EOSC 574 and EOSC 474 or EOSC 475 or EOSC 575.** ~~Three hours of lecture per week.~~

Primary Grading Mode: Standard Grading System- Final

Method(s) of delivery: ~~Lecture~~ **Lecture/Lab**

Faculty Course Workload: ~~Same as course credit~~ **Other**

Please specify: **6 units**

Is this course cross-listed?

No

Prerequisites?

Does this course have concurrent Prerequisites? No

Are there 1 or more Co-Requisites?

~~Yes~~ **No**

Is this course a topics course?

No

Is this course repeatable for credit?

No

Does this meet any of the following Undergraduate Core Curriculum Requirements?

Course attributes

This Course Change/Course Proposal will be sent to the Dept Chairs for the Majors/Minors/Concentrations selected below:
This Course can apply to the following Majors/Minors/Concentrations:

Department Restrictions:

Major Restrictions:

Class Restrictions: ~~Exclude~~

Level Restrictions: Include

Level Codes: GR

Degree Restrictions:

Program Restrictions:

Campus Restrictions:

College Restrictions:

Student Attribute Restrictions:

Enter the vote of the Department on this course:

Yes: **11** ~~8~~ No: **0** Abstain: 1

Rationale: Updating course record to align with revised undergraduate course EOSC 474.

Supporting documents: ~~Graduate Course Renumbering 2017 02 15.pdf~~

Impact

Discuss the likely effects on both department curriculum and curricula of other departments/units

None

Will this change have any staffing/budgetary impact?

Will this change impact student enrollment numbers?

Course Reviewer Comments

Key: 2849

Course Change Request

A deactivated record cannot be edited.

Course Deactivation Proposal

Date Submitted: 12/01/21 5:36 pm

Viewing: EOSC 574L : History of the Earth and Climate Laboratory

Last approved: 04/27/17 2:58 am

Last edit: 12/01/21 5:36 pm

Changes proposed by: kaufmann

In Workflow

1. **EOS Chair**
2. AS Associate Dean
3. Provost
4. Registrar
5. Banner

History

1. Apr 27, 2017 by Ronald Kaufmann (kaufmann)

Catalog Pages referencing this course	Environmental & Ocean Sciences (EOSC) Marine Science (MARS) Master of Science in Environmental and Ocean Sciences
Other Courses referencing this	As A Banner Corequisite: EOSC 574 : History of the Earth and Climate with Lab

Contact Person(s)	Name:	E-mail:	Campus Phone:
	Ron Kaufmann	kaufmann	5904

Effective Term	Summer 2022
Subject Code	EOSC
Course Number	574L
Department	Environmental & Ocean Sciences (EOS)
College	College of Arts & Sciences
Title of Course	History of Earth & Climate Lab
Catalog Title	History of the Earth and Climate Laboratory
Credit Hours	1
Weekly Contact Hours	Lecture: 0 Lab: 4 Other: 0
Catalog Course Description	A laboratory course designed to introduce students to methods and techniques used in historical geology and paleoclimatology including: a) identification of depositional environments; b) identification of invertebrate fossils and modes of fossilization; correlation and sequence stratigraphy; d) radiometric dating, and e) isotopic proxies of climate. The laboratory may include field trips. Lab must be taken with concurrent registration in MARS 574
Primary Grading Mode	Standard Grading System- Final
Method(s) of delivery	Lab
Faculty Course Workload	Other Please specify: 3

Is this course cross-listed?

No

Prerequisites?

Does this course have concurrent Prerequisites?

No

Are there 1 or more Co-Requisites?

Yes

With which course?

Code	Title
EOSC 574	History of the Earth and Climate with Lab

Is this course a topics course?

No

Is this course repeatable for credit?

No

Does this meet any of the following Undergraduate Core Curriculum Requirements?

Course attributes

This Course Change/Course Proposal will be sent to the Dept Chairs for the Majors/Minors/Concentrations selected below:
This Course can apply to the following Majors/Minors/Concentrations:

Department Restrictions:

Major Restrictions:

Class Restrictions:

Level Restrictions:

Include

Level Codes: GR

Degree Restrictions:

Program Restrictions:

Campus Restrictions:

College Restrictions:

Student Attribute Restrictions:

Enter the vote of the Department on this course:

Yes: **11** ~~8~~ No: **0** Abstain: 1

Rationale:

Supporting documents: Graduate Course Renumbering 2017 02 15.pdf

Impact

Discuss the likely effects on both department curriculum and curricula of other departments/units

Will this change have any staffing/budgetary impact?

Will this change impact student enrollment numbers?

Justification for request: This course is no longer being taught as a separate lab. The last term it should be active is 202206.

Course Reviewer Comments

Key: 2850

Course Change Request

New Course Proposal

Date Submitted: 12/01/21 2:28 pm

Viewing: EOSC 575 : History of the Earth and Climate

Last edit: 12/01/21 5:39 pm

Changes proposed by: kaufmann

In Workflow

1. **EOS Chair**
2. AS Associate Dean
3. Provost
4. Registrar
5. Banner

Programs referencing this course	MS-EOSC: Environmental and Ocean Sciences
Other Courses referencing this	In The Catalog Description:

Contact Person(s)	Name:	E-mail:	Campus Phone:
	Ron Kaufmann	kaufmann	5904

Effective Term	Fall 2022				
Subject Code	EOSC	Course Level	Graduate	Course Number	575
Department	Environmental & Ocean Sciences (EOS)				
College	College of Arts & Sciences				
Title of Course	History of the Earth & Climate				
Catalog Title	History of the Earth and Climate				
Credit Hours	3				
Weekly Contact Hours	Lecture: 3	Lab: 0	Other: 0		
Catalog Course Description	The objective of this course is to develop a deeper understanding of the history of earth's climate system and interactions of different components of the climate system (lithosphere, hydrosphere/cryosphere, atmosphere, anthrosphere). We will investigate the geologic and historical record of natural climate change and evidence of the mechanisms causing natural climate variability. Our approach will be to examine how scientist's views and our ideas about climate have changed over the past 150 years. Toward the end of the course, we will apply our knowledge of natural climate cycles in the past to investigate the scientific basis for predictions of future climate change. Students may not receive credit for taking EOSC 575 and EOSC 474 or EOSC 475 or EOSC 574.				
Primary Grading Mode	Standard Grading System- Final				
Other Grading Mode(s)	Pass/Fail Grading System				

Method(s) of delivery: Lecture/Lab

Faculty Course Workload: Same as course credit

Is this course cross-listed?

No

Prerequisites?

Does this course have concurrent Prerequisites? No

Are there 1 or more Co-Requisites?

No

Is this course a topics course?

No

Is this course repeatable for credit?

No

Does this meet any of the following Undergraduate Core Curriculum Requirements?

Course attributes

This Course Change/Course Proposal will be sent to the Dept Chairs for the Majors/Minors/Concentrations selected below:
This Course can apply to the following Majors/Minors/Concentrations:

Majors/Minors/Concentrations:
Environmental & Ocean Sciences - EOSC

Department Restrictions:

Major Restrictions:

Class Restrictions:

Level Restrictions: Include

Level Codes: GR

Degree Restrictions:

Program Restrictions:

Campus Restrictions:

College Restrictions:

Student Attribute Restrictions:

Enter the vote of the Department on this course:

Yes: 11 No: 0 Abstain: 1

Rationale: Creating EOSC 575 as a graduate number for EOSC 475 (History of the Earth and Climate).

Supporting documents: EOSC 475 syllabus.docx

Impact

Discuss the likely effects on both department curriculum and curricula of other departments/units

Provides an additional option for students in the EOSC MS program.

Will this change have any staffing/budgetary impact?

Will this change impact student enrollment numbers?

Course Reviewer Comments

Key: 3902

EOSC 475: History of Earth and Climate (lecture only)

Instructor: Sarah Gray, SCST 471 (sgray@sandiego.edu)

COURSE DESCRIPTION:

The objective of this course is to develop a deeper understanding of the history of earth's climate system and interactions of different components of the climate system (lithosphere, hydrosphere/cryosphere, atmosphere, anthrosphere). We will investigate the geologic and historical record of natural climate change and evidence of the mechanisms causing natural climate variability. Our approach will be to examine how scientist's views and our ideas about climate have changed over the past 100 years. Toward the end of the course, we will apply our knowledge of natural climate cycles in the past to investigate the scientific basis for predictions of future climate change. The format of the course will include seminar-style discussions of the assigned readings, lectures, student presentations, videos, and other activities.

LEARNING OUTCOMES:

Upon completion of this course, students should have developed or mastered knowledge and comprehension of:

I. **fundamental principles in paleclimatology & climate change**, including
   a. Origin and components of the earth's climate systems
   b. Methods of paleoclimatic reconstruction
   c. Geologic records of natural climate change
   d. Recent and future climate change
   e. History of the development of the orbital theory of the ice ages;

II. **the application of the scientific method**, including formulation of hypotheses, the use of varied approaches (experimental and observational) for testing hypotheses, appropriate interpretation of data encountered in class or the scientific literature;

III. **conducting literature reviews** to obtain information; and

IV. **synthesizing a cogent oral argument** in language of science.

COURSE OUTLINE:

PART 1: INTRODUCTION; ORIGIN AND COMPONENTS OF THE EARTH'S CLIMATE SYSTEMs

1. Origin and early evolution of the earth system
2. Introduction to Earth System Science
   a. Energy balance
   b. Overview of the climate system & processes
   c. Processes of climate change
      i. Time scales, forcings, responses, feedback

PART 2: PALEOCLIMATOLOGY

I. PALEOCLIMATIC RECONSTRUCTION

1. Geological climate archives & measurements

II. GEOLOGIC RECORDS OF NATURAL CLIMATE CHANGE

1. Greenhouse-Ice house climate (last 100 million years)
2. Quaternary glacial/interglacial cycles (last 2 million years)
3. Millennial oscillations of climate
4. The last glacial maximum (last 20 thousand years)
5. The last deglaciation
6. Climate change during the past 1000 years

PART 3: RECENT AND FUTURE CLIMATE CHANGE

1. Climate Change during the 1800's
2. 20th Century Climate
3. Climate models and predictions
4. Impacts & mitigation

Discussions:

PART 4: HISTORY OF DEVELOPMENT OF THE ORBITAL THEORY OF THE ICE AGES

PART 5: STUDENT DISCUSSIONS OF PRIMARY LITERATURE

TEXTBOOKS (Requried)

1) Imbrie, J. and Imbrie, K.P. (1979), Ice Ages: Solving the Mystery, Harvard University Press

2) W.F. Ruddiman (2015) Earth's Climate: Past and Future; W.H. Freeman and Company, 3rd Ed. (or the 2nd edition)

READINGS (Required) Excerpted or linked on Blackboard or on reserve

2) IPCC. Climate Change: The Physical Science Basis, New York, Cambridge University Press. 996 pp.

3) Alley, R. B. (2000) The Two-Mile Time Machine: Ice Cores, Abrupt Climate Change and Our Future, Princeton University Press, Princeton.

4) E. Aguado and J. E. Burt, Understanding Weather and Climate (5th Edition)

ASSIGNMENTS/QUIZES/EXAMS

1. Midterm.
2. Take-home final exam
3. Field-trip handout: Birch Aquarium Museum Climate Exhibit
    a. You will be expected to go to Birch Museum on your own outside of class time
4. Discussion Journal (graded weekly)
    a. For every discussion chapter, write out a brief summary (1/2 page), 2 “points of connection” or interest, 2 questions for discussion.

b. Always bring your discussion journal & a hard copy of the article/book for discussion to the class.
c. No late discussion journals will be accepted.

5. Student-led discussion & presentation (following scheduled deadlines and meetings with Dr. Gray)
    a. 4 weeks before discussion: get approval of discussion paper
    b. 2-3 weeks before discussion: meet with Dr. Gray to discuss paper and outline presentation
    c. 1 week before discussion: practice talk of summary powerpoint presentation & approval of discussion questions/activities; NOTE: you will not be allowed to present unless you have practiced your presentation at least 5 days before the scheduled presentation. Make appointments well in advance.
6. Participation in classroom discussions
7. Two two-page essays a) Imbrie book & b) subset of student discussion topics.

GRADING:

The grades in this class will be based on the following (subject to minor adjustment):

- Take-home open notes/open book final exam (20%)
- Midterm (15%)
- Essays, museum handout & other assignments (10 % of grade)
- Student led discussion, presentation, annotated bibliography, and deadlines (18 % of grade)
- Participation & discussion journal (37%)
    - NOTE: Always bring the book or article and your journal to class. Failure to do so will result in a deduction of your discussion points.
    - No late discussion journals will be accepted. They must be completed on by the beginning of class for the day they are assigned.

Exams and final grade will be determined using the following scale:
100-90% **A to A-**; 89-80% **B+ to B-**; 79-70% **C+ to C-**; 69-60% **D+ to D-**; < 60% **F**

POLICIES:

- **Attitude:** This course is challenging but you will have fun and learn a lot. Good, positive group dynamics is critical the success of all the students.
- **Participation:** This is a seminar class and full participation in discussions is a requirement for the course.
- **Attendance:** This class is a seminar so attendance and full participation are MANDITORY and a strong criterion for grading. If you have to miss class due to illness or emergency, please contact me as soon as possible and prepare to bring in a written documentation of illness or emergency.
- **Bring discussion journal and a hard copy of the discussion article to class.**

- **NO MAKE-UP QUIZES**
- **Be punctual.**
- **Check your email & Blackboard regularly.**
- **Turn cell phones off & keep them put away during class**
- **Have fun**

ACADEMIC INTEGRITY:

You are responsible to have read and fully understand the meaning and expectations of academic integrity. Any suspected violations of academic integrity will be referred to the Dean of Arts and Sciences, may result in a failing grade for the course, and may result in expulsion from this University. No probations or second chances will be given. Please review the Academic Integrity Policy http://www.sandiego.edu/honorcouncil/integrity.php.

SCHEDULE

(Subject to change and adjustment)

DATES	LECTURE TOPIC	DISCUSSION TOPIC	READING A) Ruddiman (2nd Ed.); B) Imbrie & Imbrie; W) Blackboard readings
Week 1	Introduction to the course; the origin & early history of the of earth system	Introductions	Weblinks on the origin of the Earth; A) Ch.1
Week 2	Introduction to the climate system Earth system processes: energy balance, the atmosphere ***(MINI QUIZ: Geologic Time Scale)***	Imbrie & Imbrie (B: preface-31);	A) Ch.1; W) Ruddiman 1st ed, Ch. 2 (on Blackboard); W) Alley (C:131-145)
Week 3	Earth system processes: the hydrosphere, biosphere, and lithosphere; Introduction to climate change	Imbrie & Imbrie (B:33-57);	W) Ruddiman 1st ed, Ch. 2 (on Blackboard)
Week 4	Geological archives of climate: Dating techniques	Imbrie & Imbrie (B: 61-75) A) Ch. 7	A) Ch. 2; W) Cronin p. 34-60
Week 5	Geological archives of climate (cont.): stable isotopes;	Imbrie & Imbrie (B: 77-96);	W) Cronin p. 61-78
Week 6	Greenhouse-Ice house climate	Imbrie & Imbrie (B: 97-122)	A) Ch. 5, 6
Week 7	Quaternary Glacial/Interglacial	Imbrie & Imbrie	A) Ch. 9, 10, 11

	Cycles; **MIDTERM**	(B: 123-140)	
Week 8	Glacial/Interglacial Cycles (cont.)	Imbrie & Imbrie (B: 123-140)	
Week 9	Millennial oscillations of climate	Imbrie & Imbrie (B: 141-159); Student-led discussions	A) Ch. 14;
Week 10	The Last Glacial Maximum & the Last Deglaciation	Imbrie & Imbrie (B: 161-191); Student led discussions	A) Ch. 12 & 13
Week 11	The Holocene and the past 1000 years; ***Imbrie and Imbrie essay due***	Student led discussions	A) Ch. 8
Week 12	Change since the 1800's Causes of global warming;	Student led discussions	A) Ch. 16
Week 13	Climate Models and Predictions;	Student led discussions	A) Chs. 17, 18, W) IPCC
Week 14	***Birch Aquarium Museum Handout due; Take Home Final Exam handed out; Student-led essay due***	Student led discussions	A) Ch. 19; W) IPCC

Course Change Request

New Course Proposal

Date Submitted: 12/01/21 2:28 pm

Viewing: EOSC 581 : Natural Resources of Death Valley

Last edit: 12/01/21 5:40 pm

Changes proposed by: kaufmann

In Workflow

1. **EOS Chair**
2. AS Associate Dean
3. Provost
4. Registrar
5. Banner

Programs referencing this course	MS-EOSC: Environmental and Ocean Sciences

Contact Person(s)	Name:	E-mail:	Campus Phone:
	Ron Kaufmann	kaufmann	5904

Effective Term	Fall 2022				
Subject Code	EOSC	Course Level	Graduate	Course Number	581
Department	Environmental & Ocean Sciences (EOS)				
College	College of Arts & Sciences				
Title of Course	Natural Res. of Death Valley				
Catalog Title	Natural Resources of Death Valley				

Credit Hours	3				
Weekly Contact Hours	Lecture:	2	Lab:	3	Other: 0

Catalog Course Description

One of the hottest locations on Earth, Death Valley is a land of extremes. Extreme heat in the below-sea level basin is contrasted with snow-capped mountains on the surrounding peaks. Vast, dry, swaths of arid, salty landscapes harbor lush oases of hot springs and isolated populations of desert fish. This unique desert landscape was formed by tectonic processes – crustal rifting – and provides the backdrop for two contrasting human interactions with the environment: historic extraction of the natural resources unique to this geologic setting, and its modern-day protective designation as a National Park. How did extraction of metals and borax support settlement in Death Valley? When did the last mine close? How does water, the most fundamental resource required for human survival, influence the landscape and human history of this driest place in the United States? This course explores the interaction between humans and the unique desert environment of Death Valley, CA. We will examine the tectonic processes that produced the modern landscape and climate of Death Valley and how these geologic processes led to the formation of natural resources (metals, borax, gypsum). Surface water and groundwater resources were- and continue to be- an integral component of this desert

ecosystem; groundwater feeds hot springs, evaporating rainwater forms salt crystals, and rain events lead to further desert sculpting and disruption to Park infrastructure. This course builds on fundamental principles covered in EOSC 105/110 with an emphasis on the interaction between humans and their environment. A significant amount of time (approximately 5 days) will be spent visiting Death Valley during Spring break, which is a mandatory field trip requirement for this course.

Primary Grading Mode: Standard Grading System- Final

Method(s) of delivery: Lecture/Lab

Faculty Course Workload: Other

Please specify: 4 units

Is this course cross-listed?

No

Prerequisites?

Does this course have concurrent Prerequisites? No

Are there 1 or more Co-Requisites?

No

Is this course a topics course?

No

Is this course repeatable for credit?

No

Does this meet any of the following Undergraduate Core Curriculum Requirements?

Course attributes

This Course Change/Course Proposal will be sent to the Dept Chairs for the Majors/Minors/Concentrations selected below:
This Course can apply to the following Majors/Minors/Concentrations:

Majors/Minors/Concentrations:
Environmental & Ocean Sciences - EOSC

Department Restrictions:

Major Restrictions:

Class Restrictions:

Level Restrictions: Include

Level Codes: GR

Degree Restrictions:

Program Restrictions:

Campus Restrictions:

College Restrictions:

Student Attribute Restrictions:

Enter the vote of the Department on this course:

Yes: 11 No: 0 Abstain: 1

Rationale: Creating EOSC 581 as a graduate number for EOSC 481 (Natural Resources of Death Valley).

Supporting documents: EOSC 481 Natural Resources of Death Valley Syllabus.pdf

Impact

Discuss the likely effects on both department curriculum and curricula of other departments/units

Provides an additional option for students in the EOSC MS program.

Will this change have any staffing/budgetary impact?

Will this change impact student enrollment numbers?

Course Reviewer Comments

Key: 3903

EOSC 481:
NATURAL RESOURCES OF DEATH VALLEY

How could rocks and sand and silence make us afraid and yet be so wonderful?
— Edna Brush Perkins, 'The White Heart of Mojave'

One of the hottest locations on Earth, Death Valley is a land of extremes. Extreme heat in the below-sea level basin is contrasted with snow-capped mountains on the surrounding peaks. Vast, dry, swaths of arid, salty landscapes harbor lush oases of hot springs and isolated populations of desert fish. This unique desert landscape was formed by tectonic processes – crustal rifting – and provides the backdrop for two contrasting human interactions with the environment: historic extraction of the natural resources unique to this geologic setting, and its modern-day protective designation as a National Park. How did extraction of metals and borax support settlement in Death Valley? When did the last mine close? How does water, the most fundamental resource required for human survival, influence the landscape and human history of this driest place in the United States?

This course explores the interaction between humans and the unique desert environment of Death Valley, CA. We will examine the tectonic processes that produced the modern landscape and climate of Death Valley and how these geologic processes led to the formation of natural resources (metals, borax, gypsum). Surface water and groundwater resources were- and continue to be- an integral component of this desert ecosystem; groundwater feeds hot springs, evaporating rainwater forms salt crystals, and rain events lead to further desert sculpting and disruption to Park infrastructure. This course builds on fundamental principles covered in EOSC 105/110 with an emphasis on the interaction between humans and their environment. A significant amount of time (approximately 5 days) will be spent visiting Death Valley during Spring break, which is a mandatory field trip requirement for this course.

Pre-requisites:

- **EOSC 300 or EOSC 303 (can be taken concurrently) or permission of instructor.**

INSTRUCTOR DETAILS

Dr Beth O'Shea
ST 273; phone: 619-260-4243
email: bethoshea@sandiego.edu
Office hours: MW 12:10 - 1:30 pm and F 12:10 - 2 pm; and by appointment.

COURSE INFORMATION

When and where?

This is a 3-unit lab course. Class will meet for regular weekly lectures and the field trip to Death Valley will form the lab component of the course. The field trip will occur in Spring break and is a required component of this course. Transportation and accommodation will be provided by the EOSC department.

Who should take this course?

EOSC majors and minors who have an interest in earth resources but who also identify the benefit of field trips to enhance their observational skills. This course will satisfy an upper division science with lab elective for the

Environmental Science and Environmental Studies pathways, the EOS minor, and an open elective for the Environmental Studies and Policy minor. This course will help to prepare students for working in environmental consulting, land use planning, sustainability, environmental economics, policy, and any career where a keen sense of observation and the ability to make connections between multiple disciplines (e.g., natural resources, human survival, history) is valued. In some years this course may be linked with a course from another department on campus therefore satisfying the Advanced Integration component of the Core Curriculum.

What will I learn in this course?
Since the field trip is a major component of this course you will develop a set of observational field skills that require a sense of spatial and temporal scale. In addition, we will build upon basic geologic principles that you learned at an introductory level in the lower division EOSC 105/110 courses and expand our geologic knowledge.

Therefore, it is expected, that upon completion of this course, you will acquire knowledge and skills of the following fundamental principles in the EOSC major:

- Identify important earth resources (e.g., water and mineral resources) and assess the impact of human activity on the use, quality, limitations, and availability of these resources in the California region and beyond;
- Understand the connection between earth resources and tectonic processes;
- Explain the influence of water availability on land use and historical settlements;
- Synthesize your knowledge of earth resources with field observations in Death Valley and use this new understanding to evaluate the influence of earth resources on other human settlements or previous land uses;
- Understand the geology of groundwater occurrence, groundwater flow, and groundwater development and management;
- Evaluate the links between geology and society, and critically evaluate the role of humans in the future of our planet.

What should I bring to our weekly class meetings?
A notepad or exercise book appropriate for in-class and field use, pen/pencil, eraser, ruler, a few colored pencils. Any assigned readings.

Required field trip
This course includes a mandatory 5 day/4 night field trip to Death Valley, CA. Why is this field trip important? The ability to make observations of unknown conditions and patterns is a valuable skill. This trip doesn't just focus on the geology of Death Valley, it focuses on YOU making observations to infer the geology of Death Valley. Trust me, you'll learn a lot about geology and natural resources, but you'll also learn a lot about your abilities. It should be quite satisfying. Plus, we'll have a bonza time!

Tentative dates are Sat March 23 – Wed March 27, so don't make spring break travel plans. As compensation for your time spent in the field, I have reduced the number of class meetings after spring break.

The EOSC department will provide transportation and accommodation. We may camp at some locations so you will need your own tent and sleeping bags but we will provide cooking equipment and some food (breakfasts, lunch). At Furnace Creek there is a general store that serves hot meals so a small amount of personal cash is advised. There will be more information on the Death Valley logistics to follow.

ASSESSMENT AND GRADING

Attendance at the field trip is required to pass the course.

You will receive one course grade weighted as outlined below:

Assessment Tool	% of course grade
Class Assignments and/or Quizzes	25
Field Trip Project	25
Class and Field Trip Participation	5
Research Project	25
Final exam	20

Here are some specifics about each assessment tool:

- **Class Assignments and/or Quizzes** – will be handed out sporadically during semester, as we complete various sections of the course. They may include both class and assigned reading content. We will decide upon due dates when a class exercise is assigned.
- **Field Trip Project** – will synthesize your field observations and allow you to use these skills to evaluate a specific question or topic posed. More information to come.
- **Class and Field Trip Participation** – to function successfully in field settings requires a positive attitude, teamwork, individual reflection, expression of ideas and opinions. You are expected to attend all classes. If you have more than one unexcused absence points may be deducted from your grade. Some examples of excellent participation include, preparing for class by completing the assigned readings, contributing to discussions or asking/answering questions based on assigned readings, being enthusiastic and optimistic in challenging field situations, or having the confidence to suggest ideas that may not be correct but the ability to learn positively from your mistakes, visiting my office hours, and exhibiting a positive and courteous attitude to your instructor and your peers.
- **Research Project** – will allow you to explore a topic that has stimulated your interest based on material we have covered in class. I will give ideas and guidance during individual meetings. You will present your research to the group at the end of semester. In years when this course is offered as a linked Advanced Integration course this research project will form your Core Advanced Integration Project.
- **Final exam** – is cumulative and covers absolutely everything, yay!!

Grades will be determined using the following scale:
100-90% **A to A**-; 89-80% **B+ to B-**; 79-70% **C+ to C**-; 69-55% **D+ to D**-; < 55% **F**

EOSC 3xx Environmental Resources of Death Valley

COURSE OUTLINE

Readings refer to your text, Sharp and Glazner (1997) *Geology Underfoot in Death Valley and Owens Valley.* This schedule is subject to change.

Class	Topic	Focus	Reading	Date
1	Introduction	Syllabus; overview of Death Valley and surrounds	Syllabus Ch. 3 Continental Rifts (Parks and Plates text)	Wed 01/30
2	Water	Water underground The largest water source in Death Valley	Keller 12.3 Groundwater pgs 348- 352	Wed 02/06
3	Water	Desert fish, nuclear risks and a big explosion!	Ch. 15	Wed 02/13
4	Water	When it rains, it RAINS! The lesson of Gower Gulch	Ch. 6 and 11	Wed 02/20
5	Water	When it doesn't rain… Evaporites, the legacy left behind	Ch. 2, 4 and 5	Wed 02/27
6	Mining in DV	White rocks, green rocks, and brown rocks How did the towns of DV get started?	Supplementary	Wed 03/06
7	Desert Land Use	Is it a good idea to bury stuff here? The case of Yucca Mountain	Supplementary	Wed 03/13
8	Field Trip Logistics	How to survive in the desert	Supplementary	Wed 03/20
9	Field Sites	The Tecopa mining legacy	Supplementary	Sun 03/24 AM
10		Ancient Lake Tecopa and its hot springs	Ch. 2	Sun 03/24 PM
11		Insights into DVs tumultuous past	Ch. 3	Mon 03/25 AM
12		A diversionary tale, a bath tub, and more	Ch. 12	Mon 03/25 PM
13		A big explosion	Ch. 15	Tues 03/26 AM
14		An oasis in the desert	Ch. 14	Tues 03/26 PM
		A story of desiccation	Ch. 18	Wed 03/27 AM
15	Research Project	Research project individual meetings		Wed's in April
16		Research project presentations		Wed 05/08

Reading assignments will be posted on Blackboard.

Final Exam: Wed May 22, 5-7 pm