

Submit originals (including syllabus) and one copy and electronic copy to the **Faculty Senate Office**.
See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/> for a complete description of the rules governing curriculum & course changes.

CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL

Attach a syllabus, except if dropping a course.

NOV 24 2015

Dean's Office

College of Natural Science & Mathematics

SUBMITTED BY:

Department	Geoscience	College/School	CNSM
Prepared by	Chris Maio	Phone	474-5651
Email Contact	cvmaio@alaska.edu	Faculty Contact	Chris Maio

1. COURSE IDENTIFICATION: As the course now exists.

Dept	Geoscience	Course #	330	No. of Credits	3
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COURSE TITLE **The Dynamic Alaskan Coastline**

2. ACTION DESIRED: ☒ Check the changes to be made to the existing course.

Change Course	<input checked="" type="checkbox"/>	If Change, indicate below what is changing.	Drop Course	<input type="checkbox"/>
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NUMBER	<input checked="" type="checkbox"/>	TITLE		DESCRIPTION	<input checked="" type="checkbox"/>
PREREQUISITES*	<input checked="" type="checkbox"/>			FREQUENCY OF OFFERING	<input checked="" type="checkbox"/>

*Prerequisites will be required before a student is allowed to enroll in the course.

CREDITS (including credit distribution)			3	COURSE CLASSIFICATION		3+0
ADD A STACKED LEVEL (400/600) Include syllabi.	460/660	Dept.	GEOG/GEOS	Course #	GEOG 460, GEOG 660, GEOS 460, GEOS 660	

How will the two course levels differ from each other?
How will each be taught at the appropriate level?:

Students enrolled for graduate credit will be graded on different criteria than those enrolled for undergraduate credit. These criteria are shown on page 4 of the syllabus and explained on page 5. Specifically, graduate students will develop and present a scientific poster on their individual research project, present a 1 hour Field Trip Topic, lead two Reading Discussions, serve as a research assistant for two 2 hour lab or field activities, and complete a more comprehensive exam including 2 additional essay questions. Other differences between grad and undergrad sections include no extra credit option for grads and a lower grade percent provided for Attendance and Participation.

Additionally, I expect students who are enrolled for graduate credit to display a high degree of integration and creativity in the classroom, on field trips, as well as when answering examination questions and writing their research papers.

Stacked course applications are reviewed by the (Undergraduate) Curricular Review Committee and by the Graduate Academic and Advising Committee. Creating two different syllabi—undergraduate and graduate versions—will help emphasize the different qualities of what are supposed to be two different courses. The committees will determine: 1) whether the two versions are sufficiently different (i.e. is there undergraduate and graduate level content being offered); 2) are undergraduates being overtaxed?; 3) are graduate students being undertaxed? In this context, the committees are looking out for the interests of the students taking the course. Typically, if either committee has qualms, they both do. More info online – see URL at top of this page.

ADD NEW CROSS-LISTING	<input checked="" type="checkbox"/>	Dept. & No.	GEOG 460, GEOG 660, GEOS 460, GEOS 660	Requires approval of both departments and deans involved. Add lines at end of form for additional signatures.
STOP EXISTING CROSS-LISTING	<input type="checkbox"/>	Dept. & No.		Requires notification of other department(s) and mutual agreement. Attach copy of email or memo.
OTHER (specify)				

3. COURSE FORMAT

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council and the appropriate Faculty Senate curriculum committee. Furthermore, any core course compressed to less than six weeks must be approved by the Core Review Committee.

COURSE FORMAT: (check all that apply)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input checked="" type="checkbox"/> 6 weeks to full semester
OTHER FORMAT (specify all that apply)						
Mode of delivery (specify lecture, field trips, labs, etc.)	Lecture, discussion, and field trips.					

4. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria found in Chapter 12 of the curriculum manual. If justification is needed, attach separate sheet.)

H = Humanities ☐ S = Social Sciences ☐

Will this course be used to fulfill a requirement for the baccalaureate core?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
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IF YES*, check which core requirements it could be used to fulfill:

O = Oral Intensive, *Format 6 also submitted <input type="checkbox"/>	W = Writing Intensive, *Format 7 submitted <input type="checkbox"/>	X = Baccalaureate Core <input type="checkbox"/>
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4.A Is course content related to northern, arctic or circumpolar studies? If yes, a "snowflake" symbol will be added in the printed Catalog, and flagged in Banner.

YES ☒ NO ☐

5. COURSE REPEATABILITY:

Is this course repeatable for credit?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
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Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

How many times may the course be repeated for credit?	TIMES
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If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?	CREDITS
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6. COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking, clearly showing the changes you want made. (Underline new wording ~~strike through old wording~~ and use complete catalog format including dept., number, title, credits and cross-listed and stacked.)

Example of a complete description:

PS F450 Comparative ~~Aboriginal~~ Indigenous Rights and Policies (s)

3 Credits

Offered As Demand Warrants

~~Case study~~ Comparative approach in ~~assessing Aboriginal~~ to analyzing Indigenous rights and policies in different nation-state systems. ~~Seven Aboriginal situations~~ Multiple countries and specific policy developments examined for factors promoting or limiting self-determination. Prerequisites: Upper division standing or permission of instructor. (Cross-listed with ANS F450.) (3+0)

GEOS F330 GEOS/GEOG F460/F660 The Dynamic Alaskan Coastline

3 Credits

Offered ~~Fall~~ Spring Even-numbered years

~~Mountains, rivers, glaciers, fjords, estuaries, deltas, tidal zones, sediments, nutrients, elements, habitats, fish.~~ Alaska's diverse coastal system provides abundant ecosystem services and globally important resources. ~~This class will provide~~ course provides an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic, and ~~We will delve~~ delves into the driving geological, ~~geochemical, and~~ oceanographic, and climate processes ~~occurring along~~ shaping Alaska's past and present coastline, and linkages to various marine ecosystems. Through a semester long research project students will learn how to measure and map coastal changes associated with natural and human perturbations. ~~Students will learn the fundamental physical and geochemical processes in the coastal zone using various locations in Alaska as examples.~~ Field trip required. ~~An overnight field trip is required and will serve as an active learning opportunity to integrate course knowledge with hands-on field work.~~ Special fees apply. Prerequisites: Junior standing; ~~MSL F111X~~ GEOS F111X or ~~GEOS F101~~ GEOS F101X; NRM 338 or equivalent GIS coursework; PHYS F103X or ~~CHEM F105X.~~ PHYS F211X. Cross-listed with GEOS F460. Stacked with GEOS F660; GEOS F660. (3+0).

7. COMPLETE CATALOG DESCRIPTION AS IT SHOULD APPEAR AFTER ALL CHANGES ARE MADE:

GEOS F460 The Dynamic Alaskan Coastline

3 Credits Offered Spring Even-numbered years

Alaska's diverse coastal system provides abundant ecosystem services and globally important resources. This course provides an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic, and delves into the driving geological, oceanographic, and climate processes shaping Alaska's past and present coastline. Through a semester long research project students will learn how to measure and map coastal changes associated with natural and human perturbations. An overnight field trip is required and will serve as an active learning opportunity to integrate course knowledge with hands-on field work. Special fees apply. Prerequisites: Junior standing; GEOG F111X or GEOS F101X; NRM 338 or equivalent GIS coursework; PHYS F103X or CHEM F105X. Cross-listed with GEOG F460. Stacked with GEOS F660; GEOG F660. (3+0).

GEOG F460 The Dynamic Alaskan Coastline

3 Credits Offered Spring Even-numbered years

Alaska's diverse coastal system provides abundant ecosystem services and globally important resources. This course provides an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic, and delves into the driving geological, oceanographic, and climate processes shaping Alaska's past and present coastline. Through a semester long research project students will learn how to measure and map coastal changes associated with natural and human perturbations. An overnight field trip is required and will serve as an active learning opportunity to integrate course knowledge with hands-on field work. Special fees apply. Prerequisites: Junior standing; GEOG F111X or GEOS F101X; NRM 338 or equivalent GIS coursework; PHYS F103X or CHEM F105X. Cross-listed with GEOS F460. Stacked with GEOS F660; GEOG F660. (3+0).

GEOS F660 The Dynamic Alaskan Coastline

3 Credits Offered Spring Even-numbered years

Alaska's diverse coastal system provides abundant ecosystem services and globally important resources. This course provides an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic, and delves into the driving geological, oceanographic, and climate processes shaping Alaska's past and present coastline. Through a semester long research project students will learn how to measure and map coastal changes associated with natural and human perturbations. An overnight field trip is required and will serve as an active learning opportunity to integrate course knowledge with hands-on field work. Special fees apply. Prerequisites: Graduate standing or permission of instructor. Cross-listed with GEOG F660. Stacked with GEOS F460; GEOG F460. (3+0).

GEOG F660 The Dynamic Alaskan Coastline

3 Credits Offered Spring Even-numbered years

Alaska's diverse coastal system provides abundant ecosystem services and globally important resources. This course provides an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic, and delves into the driving geological, oceanographic, and climate processes shaping Alaska's past and present coastline. Through a semester long research project students will learn how to measure and map coastal changes associated with natural and human perturbations. An overnight field trip is required and will serve as an active learning opportunity to integrate course knowledge with hands-on field work. Special fees apply. Prerequisites: Graduate standing or permission of instructor. Cross-listed with GEOS F660. Stacked with GEOS F460; GEOG F460. (3+0).

8. GRADING SYSTEM: Specify only one.

LETTER:

X

PASS/FAIL:

☐

9. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

No Impact.

10. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No

☒

Yes

☐

All readings provided by instructor.

11. IMPACTS ON PROGRAMS/DEPTS:

What programs/departments will be affected by this proposed action?

Include information on the Programs/Departments contacted (e.g., email, memo)

The cross-listing and stacking of this course have been done through collaboration between the Geography and Geoscience programs within the Geosciences Department. The course will serve majors and graduate students in all of the Geosciences programs.

12. POSITIVE AND NEGATIVE IMPACTS

Please specify **positive and negative** impacts on other courses, programs and departments resulting from the proposed action.

This action will make this course more accessible to undergraduate and graduate students. It will also broaden the course offerings in Geosciences programs.

13. JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. If you ask for a change in # of credits, explain why; are you increasing the amount of material covered in the class? If you drop a prerequisite, is it because the material is covered elsewhere? If course is changing to stacked (400/600), explain higher level of effort and performance required on part of students earning graduate credit. Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the course is not compromised as a result.

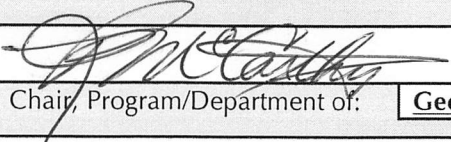
The justification for changing GEOS 330 to a 400 level class is that the course content and expectations will be at a more advanced level and require a considerably higher workload from students. Individual research projects will include the collection, interpretation, and presentation of scientific data requiring an advanced understanding of the scientific method and the use of complex computer software. The course will also provide advanced training in research methodologies including GIS, kinematic real-time GPS, and digital landscape analysis. These represent advanced topics that will require students to have the necessary background in science and writing to complete tasks at a professional level.

Cross-listing the course between Geography and Geoscience will afford students the ability to select courses within their program and increase enrollment by drawing in students from both programs.

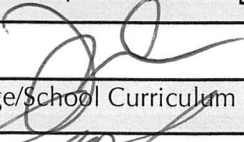
Stacking the course with a graduate component is necessary to provide students with highly relevant topics at advanced graduate levels. Currently at UAF there are no graduate level course covering coastal systems and their response to natural and human driven perturbations. The course material will therefore fill a gap in the graduate curriculum at UAF and enhance the ability of students to gain professional training using state-of-the-art technologies and methods. Additionally, a graduate course covering Alaska's coastlines will provide academic instruction that will require critical thinking and a complete understanding of the dynamic interactions occurring along coastal margins.

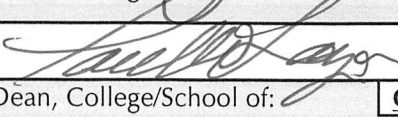
The course description and prerequisites are being changed to reflect the updated course content and the expertise of new faculty in the Geosciences Department.

APPROVALS: (Forms with missing signatures will be returned. Additional signature blocks may be added as necessary.)

	Date	11-24-15.
Signature, Chair, Program/Department of: <u>Geosciences</u>		

	Date	
Signature, Chair, Program/Department of: <u>Geography</u>		

	Date	11-24-15
Signature, Chair, College/School Curriculum Council for: <u>CNSM</u>		

	Date	11/24/15
Signature, Dean, College/School of: <u>CNSM</u>		

Offerings above the level of approved programs must be approved in advance by the Provost (e.g., non-graduate level program offering of a 600-level course):

	Date	
Signature of Provost (if applicable)		

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE.

	Date	
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Signature, Chair

Faculty Senate Review Committee: ___Curriculum Review ___GAAC

___Core Review ___SADAC

Note: If removing a cross-listing, you may attach copy of email or memo to indicate mutual agreement of this action by the affected department(s).

If degree programs are affected, a Format 5 program change form must also be submitted.

GEOS460 – THE DYNAMIC ALASKAN COASTLINE (3 credits)

TENTATIVE SYLLABUS ***Spring 2017***

INSTRUCTOR	Chris Maio, Assistant Professor
OFFICE	Reichardt 368
OFFICE HOURS	Monday 1:00 pm – 2:00 pm Wednesday 12:00 pm – 1:00 pm And by appointment
CONTACT	907-474-5651 cvmaio@alaska.edu
LECTURES	Reichardt 204 Thursdays Class Time: 2:00 pm -5:00 pm

REQUIRED FIELD TRIP

The field trip is a mandatory component of the course and will take place from Thursday, April 8th to Sunday, April 10th. The trip is tentatively being planned for Homer via air transportation. The trip will include outdoor research and learning activities in the Kachemak Bay area. A \$200 course fee and travel expenses apply.

TEXT

There is no required text. All readings will be provided via Blackboard.

PREREQUISITES

Junior standing; GEOG F111 or GEOS F101; NRM 338 or equivalent GIS coursework

COURSE DESCRIPTION

This class will provide an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic. Alaska's diverse coastal system provides abundant ecosystem services and globally important resources. Through a semester long research project students will learn how to measure and map coastal changes associated with natural and human perturbations. We will delve into the driving geological, oceanographic, and climate processes shaping Alaska's coast. An overnight field trip is required and will serve as an active learning opportunity to integrate course knowledge with hands on field work. Special fees apply.

COURSE GOALS

The goals of this course are to develop a comprehensive understanding of the fundamental processes shaping Alaska's coastline over multiple spatial and temporal scales. With a foundation of coastal knowledge and skills students will be able to carry out coastal change research and critically assess the implications of climate driven change.

TEACHING METHODS

This is a combined field methods, lecture, and discussion course that requires students to attend all classes, the field trip, and keep up with assigned readings. There will be guest lecturers over the course of the semester who will provide expert training on research methods. All students will develop a research project associated with coastal change mapping and analysis. The field trip will serve as a capstone learning experience integrating course concepts with real-world examples and applications.

LEARNING OUTCOMES

- Students will gain practice in the scientific method via the development and implementation of a research project.
- Students will learn how to read, discuss, and present scientific literature.
- Students will learn and develop critical thinking skills associated with Alaskan coastal processes over multiple spatial and temporal scales.
- Students will learn and experience using ArcGIS software and the USGS Digital Shoreline Analysis System.
- Students will learn and experience methods of shoreline monitoring including the use of Real-time kinematic GPS, Trimble Business Center software, and time lapse photography.
- Students will learn and experience the acquisition of ground penetrating radar in coastal settings.

COURSE POLICIES

EXPECTATIONS

Students are expected to come to class prepared and on time. This includes reading the assigned material, having completed all assignments that are due and prepared to discuss the course material. There is also an expectation that students will act with professionalism and be respectful to other students, the instructor, and guests. A failure to meet these expectations will result in a lowering of the final course grade and dismissal from the class in which the expectations were not met.

PARTICIPATION AND PROFESSIONALISM

In class, participation and professionalism will be worth a total of 15% of the final grade. If there is an emergency or other important obligation which prevents a student from attending class they are expected to email the instructor prior to the absence. If students do not email prior to the absence, points will be deducted from the participation grade and other related course work.

STUDENT CONDUCT

UAF students are subject to the Student Code of Conduct. The principles of the student code are designed to encourage communication, foster academic integrity and defend freedoms of inquiry, discussion and expression across the university community. For a complete description of the University's Code of Conduct please go to http://www.uaf.edu/catalog/catalog_14-15/pdf/04_Academics.pdf and see Academics and Regulations.

STUDENT SUPPORT SERVICES

STUDENTS WITH DISABILITIES

UAF is committed to equal opportunity for students with disabilities. Students with disabilities are encouraged to contact the coordinator of Disability Services (Mary Matthews) at the Center for Health & Counseling (x7043). If you need classroom accommodations or other support, please make an appointment with Mary K. Matthews at the Office of Disability Services at (uaf-disabilityservices@alaska.edu), to enlist the appropriate support. I will collaborate to provide accommodations to assist students in meeting course goals.

WRITING SUPPORT

Students are encouraged to make use of the Writing Center (8th floor, Gruening Building) where you can take a draft of any writing and be helped with editing. <http://www.uaf.edu/english/writing-center/>

VETERAN SUPPORT

It is an honor to have veterans attending UAF and every accommodation will be made to support their success. Please let me know if there is anything that can be done to facilitate your transition or continuation of an academic career.

Walter Crary is the Veterans Service Officer at the Veterans Resource Center, 111 Eielson Building. 474-2475.
Email: wecrary@alaska.edu

Fairbanks Vet Center 456-4238. VA Community Based Outpatient Clinic at Ft. Wainwright is 361-6370.

STUDENT EVALUATION

ASSIGNMENT	POINTS	% GRADE
<i>RESEARCH PROJECT</i>		30%
Research Proposal	60	
Data acquisition/analysis/visualization	60	
Report	100	
Presentation	80	
<i>FIELD TRIP</i>		20%
Assignment	100	
Attendance & Participation	100	
<i>EXAMS</i>		20%
Midterm	100	
Final	100	
<i>READING DISCUSSION</i>		15%
Participant 8 each	100	
Discussion Assistant 1 each	50	
<i>ATTENDANCE & PARTICIPATION</i>		15%
Attendance	50	
Participation	100	
<i>EXTRA CREDIT – CURRENT EVENT</i>		3%

Grading Scale

Grade	%	Grade	%
A+	97-100	C+	77-79
A	93-96	C	74-76
A-	90-92	C-	70-73
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
		F	<60

ADDITIONAL ASSIGNMENT INFORMATION

- 1) **Research Project:** The research project will focus on applying available datasets to visualize and quantify coastal change through time. For example, GIS could be used to determine the rate of shoreline change at a particular coastal site in Alaska. The topic will be based on student interests, ongoing research, or, upon request, assigned by the instructor as part of broader research projects currently being carried out. Projects that document research methods are also acceptable.
- 2) **Field Trips:** The field trip will serve as a capstone experience to integrate course knowledge and research techniques. We will fly from Fairbanks to Homer where we will stay in dormitory housing for 3 nights. Using Homer as our base, we will travel to a variety of locations and learn and experience the area through the guidance of local experts. The highlight of the trip will be a trip across Kachemak Bay to learn about intertidal ecosystems, geology, and ancient archeological sites. There will be pre-trip readings and a post-trip written assignment.
- 3) **Exams:** The exams will include multiple choice, matching, T/F, short answer, and essay questions. The final exam will be primarily drawn from material covered during the second half of the course but will also require students to integrate earlier concepts. A review session will be held prior to each exam.
- 4) **Reading Discussions:** A series of articles provided by the instructor on Blackboard will serve as the reading material for this course. Participating in 8 reading discussions is required. Additionally, each student will assist a graduate student in presenting 1 article and leading a group discussion. Students not leading the discussions will demonstrate they have read the materials through their participation. Attendance will be taken prior to each discussion.
- 5) **Attendance and Participation:** Attendance will be taken at the start of each class. For each unexcused absence 1 point will be deducted from the final grade. The participation grade will be based on 10 in-class notecard discussions. Students will work in groups of 2-3 discussing and commenting on an assigned topic and then sharing their work with the class. Each card submitted will be worth 1 point toward the participation grade. There is no make-up for missed participation points.
- 6) **Extra-Credit Current Event:** To receive points a student must clip/print a newspaper/magazine article of a current event that relates Alaska's coastline. Mount the article on a larger piece of paper and next to it paste a one paragraph summary of the event. The student will then briefly (3-4 minutes) present the current event at the beginning of class. Printed digital formats will also be accepted if all components are included. Each submission will be worth 15 points with a limit of two per student.

TENTATIVE SCHEDULE

CLASS	THEME	ACTIVITY	READING	ASSIGN. DUE
Class 1 1/14	<ul style="list-style-type: none"> • Introduction & Course Expectations • Intro to Coastal Geomorphology • Tools of the trade 	<ul style="list-style-type: none"> • Lab visit: Tools of the Trade 	Syllabus	TBA
Class 2 1/21	<ul style="list-style-type: none"> • Barrier Beach Systems • Marine Transgression and Regression • Tidal Processes 	<ul style="list-style-type: none"> • Sand Box • Reading Discussion 1 	Reading 1	TBA
Class 3 1/28	<ul style="list-style-type: none"> • Extreme Storm Events • Paleo-Proxy records of coastal change 	<ul style="list-style-type: none"> • Reading Discussion 2 • Lab: Sediment Core Analysis 	Reading 2	TBA
Class 4 2/4	<ul style="list-style-type: none"> • GIS Methods for Shoreline Change Analysis • Geospatial Data Acquisition • DSAS Application 	<ul style="list-style-type: none"> • Computer Lab: DSAS • Reading Discussion 3 	Reading 3	
2/11	NO CLASS	NO CLASS	NO CLASS	NO CLASS
Class 5 2/18	<ul style="list-style-type: none"> • Southwestern Alaska Coastal Processes • YK Delta • Migratory birds and fish 	<ul style="list-style-type: none"> • Flume table • Reading Discussion 4 	Reading 4	TBA
Class 6 2/25	<ul style="list-style-type: none"> • Arctic Coastal Processes • Permafrost coastlines Guest Speaker -	<ul style="list-style-type: none"> • Research Project • Reading Discussion 5 	Reading 5	TBA
Class 7 3/3	<ul style="list-style-type: none"> • Tectonic Coastlines of Southcentral Alaska • Glacial modifications • Coastal Archeology 	<ul style="list-style-type: none"> • TBA • Reading Discussion 6 	Reading 6	TBA
Class 8 3/10	MIDTERM EXAM <ul style="list-style-type: none"> • Kachemak Bay Ecosystems • Fish and Invertebrates 	<ul style="list-style-type: none"> • Reading Discussion 7 • TBA 	Reading 7	
Class 9 3/24	<ul style="list-style-type: none"> • Techniques for Coastal Monitoring • Beach Profiles • Trimble RTK-GPS Guest Speaker – Rich Buzard	<ul style="list-style-type: none"> • Shoreline Profiles with RTK GPS • Stake and camera measurements 	TBA	TBA
Class 10 3/31	<ul style="list-style-type: none"> • Trimble RTK-GPS – Data collection • Trimble Business Center data processing 	<ul style="list-style-type: none"> • Computer Lab • Reading Discussion 8 	Reading 8	TBA
WEEK	THEME	ACTIVITY	READING	ASSIGN. DUE
Class 11 4/7	FIELD TRIP <ul style="list-style-type: none"> • Fairbanks to Homer 	<ul style="list-style-type: none"> • Sand Box • Reading 		FIELD TRIP

	<ul style="list-style-type: none"> • Intro to Kachemak Bay Geology • Islands and Oceans 	Discussion 1		
Class 12-13 4/9	FIELD TRIP <ul style="list-style-type: none"> • Intertidal ecosystems • Glacial and tectonic morphology • Early coastal peoples 	<ul style="list-style-type: none"> • Lab: Sediment Core Analysis • Reading Discussion 2 		FIELD TRIP
Class 14-15 4/10	FIELD TRIP <ul style="list-style-type: none"> • Diamond Creek Trail • Bluff Erosion • Cook Inlet • Beluga Lake Sediment Coring 	<ul style="list-style-type: none"> • Computer Lab: DSAS • Reading Discussion 3 		FIELD TRIP
Class 16 4/11	FIELD TRIP <ul style="list-style-type: none"> • Ed Berg • Homer to Fairbanks 			FIELD TRIP
5/2				Research Report Due
5/6	FINAL EXAM			

GEOS 660 – THE DYNAMIC ALASKAN COASTLINE (3 credits)

TENTATIVE SYLLABUS ***Spring 2017***

INSTRUCTOR	Chris Maio, Assistant Professor
OFFICE	Reichardt 368
OFFICE HOURS	Monday 1:00 pm – 2:00 pm Wednesday 12:00 pm – 1:00 pm And by appointment
CONTACT	907-474-5651 cvmaio@alaska.edu
LECTURES	Reichardt 204 Thursdays Class Time: 2:00 pm -5:00 pm

REQUIRED FIELD TRIP

The field trip is a mandatory component of the course and will take place from Thursday, April 8th to Sunday, April 10th. The trip is tentatively being planned for Homer via air transportation. The trip will include outdoor research and learning activities in the Kachemak Bay area. A \$200 course fee and travel expenses apply.

TEXT

There is no required text. All readings will be provided via Blackboard.

PREREQUISITES

Graduate equivalent experience; GIS Coursework

COURSE DESCRIPTION

This class will provide an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic. Alaska's diverse coastal system provides abundant ecosystem services and globally important resources. Through a semester long research project students will learn how to measure and map coastal changes associated with natural and human perturbations and present results at a public research fair. We will delve into the driving geological, oceanographic, and climate processes shaping Alaska's coast. An overnight field trip is required and will serve as an active learning opportunity to integrate course knowledge with hands on field work. Special fees apply.

COURSE GOALS

The goals of this course are to develop an interdisciplinary understanding of the fundamental processes shaping Alaska's coastline over multiple spatial and temporal scales. With a foundation of coastal knowledge and skills students will be able to carry out coastal change assessment and critically assess coastal management decisions.

TEACHING METHODS

This is a combined field methods, lecture, and discussion course that requires students to attend all classes, the field trip, and keep up with assigned readings. There will be guest lecturers over the course of the semester who will provide expert training on research methods. All students will develop a research project associated with coastal change mapping and analysis and results will be presented at the UAF Research Fair. The field trip will serve as a capstone learning experience integrating course concepts with real-world examples and applications. Graduate students will serve as concept leaders and mentors during field exercises, classroom discussions, and the on the field trip.

LEARNING OUTCOMES

- Students will gain experience leading undergraduate discussions and field activities.
- Students will learn how to read, discuss, and present scientific literature.
- Students will learn and develop critical thinking skills associated with the driving forces behind coastal processes and integrate these concepts within an individual research project.
- Students will learn, experience, and teach undergraduates how to use ArcGIS software and the USGS digital shoreline change analysis system.
- Students will learn, experience, and teach undergraduates the methods of shoreline monitoring including the use of Real-time kinematic GPS and Trimble Business Center software.
- Students will learn and experience the coastal applications of ground penetrating radar.
- Students will develop a scientific poster and present it in a public forum.

COURSE POLICIES

EXPECTATIONS

Students are expected to come to class prepared and on time. This includes reading the assigned material, having completed all assignments that are due and prepared to discuss the course material. Students will serve as class leaders and assist the instructor in mentoring and teaching undergraduate students in book, lab, and field work.

ATTENDANCE AND PARTICIPATION

In class, participation and professionalism will be worth a total of 15% of the final grade. If there is an emergency or other important obligation which prevents a student from attending class they are expected to email the instructor prior to the absence. If students do not email prior to the absence, points will be deducted from the participation grade and other related course work.

STUDENT CONDUCT

UAF students are subject to the Student Code of Conduct. The principles of the student code are designed to encourage communication, foster academic integrity and defend freedoms of inquiry, discussion and expression across the university community. For a complete description of the University's Code of Conduct please go to http://www.uaf.edu/catalog/catalog_14-15/pdf/04_Academics.pdf and see Academics and Regulations.

STUDENT SUPPORT SERVICES

STUDENTS WITH DISABILITIES

UAF is committed to equal opportunity for students with disabilities. Students with disabilities are encouraged to contact the coordinator of Disability Services (Mary Matthews) at the Center for Health & Counseling (x7043). If you need classroom accommodations or other support, please make an appointment with Mary K. Matthews at the Office of Disability Services at (uaf-disabilityservices@alaska.edu), to enlist the appropriate support. I will collaborate to provide accommodations to assist students in meeting course goals.

WRITING SUPPORT

Students are encouraged to make use of the Writing Center (8th floor, Gruening Building) where you can take a draft of any writing and be helped with editing. <http://www.uaf.edu/english/writing-center/>

VETERAN SUPPORT

It is an honor to have veterans attending UAF and every accommodation will be made to support their success. Please let me know if there is anything that can be done to facilitate your transition or continuation of an academic career.

Walter Crary is the Veterans Service Officer at the Veterans Resource Center, 111 Eielson Building. 474-2475.
Email: wecrary@alaska.edu

Fairbanks Vet Center 456-4238. VA Community Based Outpatient Clinic at Ft. Wainwright is 361-6370.

STUDENT EVALUATION

Assignment	Points	Total Percent Course
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RESEARCH PROJECT			30%
Research Proposal		50	
Data acquisition/analysis/visualization		50	
Report		75	
In-class Presentation		50	
Poster and Public Presentation		75	
FIELD TRIP			20%
Assignment		50	
Topic Lead		100	
Attendance & Participation		50	
EXAMS			20%
Midterm		100	
Final		100	
READING DISCUSSION			10%
Participant	8 each	25	
Discussion Lead	2 each	50	
LAB & FIELD ACTIVITY			10%
Research Assistant	2 each	100	
ATTENDANCE & PARTICIPATION			10%
Attendance		50	
Participation		50	

Grading Scale

Grade	%	Grade	%
A+	97-100	C+	77-79
A	93-96	C	74-76
A-	90-92	C-	70-73
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
		F	<60

ADDITIONAL ASSIGNMENT INFORMATION

- 1) **Research Project:** The research project will focus on applying available datasets to visualize and quantify coastal change through time. For example, GIS could be used to determine the rate of shoreline change at a particular coastal site in Alaska. The topic will be based on student interests, ongoing research, or, upon request, assigned by the instructor as part of broader research projects currently being carried out. Projects that document research methods are also acceptable.
- 2) **Research Poster:** Students will produce a scientific poster based on their research project. The poster will be presented at the UAF Research Day.
- 3) **Field Trips:** The field trip will serve as a capstone experience to integrate course knowledge and research techniques. We will fly from Fairbanks to Homer where we will stay in dormitory housing for 3 nights. Using Homer as our base, we will travel to a variety of locations and learn and experience the area through the guidance of local experts. The highlight of the trip will be a trip across Kachemak Bay to learn about intertidal ecosystems, geology, and ancient archeological sites. There will be pre-trip readings and a post-trip written assignment.
- 4) **Field Trip Topic Lead:** Each student will be assigned a topic of instruction based on their interests and expertise. The student will be required to develop a 1 hour lesson or field activity to be presented during the field trip. The instructor will provide guidance and assistance on the lesson plan.
- 5) **Exams:** The exams will include multiple choice, matching, T/F, short answer, and essay questions. The final exam will be cumulative. A review session will be held prior to each exam.
- 6) **Reading Discussions:** A series of articles provided by the instructor on Blackboard will serve as the reading material for this course. Each student will lead two discussions with the assistance of an undergraduate. This will include summarizing the article, presenting the figures, and guiding a group discussion. Students not leading the discussions will demonstrate they have read the materials through their participation. Attendance will be taken prior to each discussion.
- 7) **Lab and Field Activity:** Graduate students will assist the instructor during 2 lab or field activities in areas of their interests and expertise. This will include 2 hours of additional out-of-class time assisting in the preparation of instruments and/or activities.
- 8) **Attendance and Participation:** Attendance is worth 5% of the course grade and will be taken at the start of each class. For each unexcused absence 1 point will be deducted from the final grade. The participation grade worth 5% will be based on 10 in-class notecard discussions. Students will work in groups of 2-3 discussing and commenting on an assigned topic and then sharing their work with the class. Graduate students will be expected to guide these group discussions. Each card submitted will be worth 0.5 points toward the participation grade. There is no make-up for missed participation points.

TENTATIVE SCHEDULE

CLASS	THEME	ACTIVITY	READING	ASSIGN. DUE
Class 1 1/14	<ul style="list-style-type: none"> • Introduction & Course Expectations • Intro to Coastal Geomorphology • Tools of the trade 	<ul style="list-style-type: none"> • Lab visit: Tools of the Trade 	Syllabus	TBA
Class 2 1/21	<ul style="list-style-type: none"> • Barrier Beach Systems • Marine Transgression and Regression • Tidal Processes 	<ul style="list-style-type: none"> • Sand Box • Reading Discussion 1 	Reading 1	TBA
Class 3 1/28	<ul style="list-style-type: none"> • Extreme Storm Events • Paleo-Proxy records of coastal change 	<ul style="list-style-type: none"> • Reading Discussion 2 • Lab: Sediment Core Analysis 	Reading 2	TBA
Class 4 2/4	<ul style="list-style-type: none"> • GIS Methods for Shoreline Change Analysis • Geospatial Data Acquisition • DSAS Application 	<ul style="list-style-type: none"> • Computer Lab: DSAS • Reading Discussion 3 	Reading 3	TBA
2/11	NO CLASS	NO CLASS	NO CLASS	NO CLASS
Class 5 2/18	<ul style="list-style-type: none"> • Southwestern Alaska Coastal Processes • YK Delta • Migratory birds and fish 	<ul style="list-style-type: none"> • Flume table • Reading Discussion 4 	Reading 4	TBA
Class 6 2/25	<ul style="list-style-type: none"> • Arctic Coastal Processes • Permafrost coastlines Guest Speaker -	<ul style="list-style-type: none"> • Research Project • Reading Discussion 5 	Reading 5	TBA
Class 7 3/3	<ul style="list-style-type: none"> • Tectonic Coastlines of Southcentral Alaska • Glacial modifications • Coastal Archeology 	<ul style="list-style-type: none"> • TBA • Reading Discussion 6 	Reading 6	TBA
Class 8 3/10	MIDTERM EXAM <ul style="list-style-type: none"> • Kachemak Bay Ecosystems • Fish and Invertebrates 	<ul style="list-style-type: none"> • Reading Discussion 7 • TBA 	Reading 7	TBA
Class 9 3/24	<ul style="list-style-type: none"> • Techniques for Coastal Monitoring • Beach Profiles • Trimble RTK-GPS Guest Speaker – Rich Buzard	<ul style="list-style-type: none"> • Shoreline Profiles with RTK GPS • Stake and camera measurements 	TBA	TBA
Class 10 3/31	<ul style="list-style-type: none"> • Trimble RTK–GPS – Data collection • Trimble Business Center data processing 	<ul style="list-style-type: none"> • Computer Lab • Reading Discussion 8 	Reading 8	TBA
WEEK	THEME	ACTIVITY	READING	ASSIGN. DUE
Class 11 4/7	FIELD TRIP <ul style="list-style-type: none"> • Fairbanks to Homer 	<ul style="list-style-type: none"> • Sand Box • Reading 		FIELD TRIP

	<ul style="list-style-type: none"> • Intro to Kachemak Bay Geology • Islands and Oceans 	Discussion 1		
Class 12-13 4/9	FIELD TRIP <ul style="list-style-type: none"> • Intertidal ecosystems • Glacial and tectonic morphology • Early coastal peoples 	<ul style="list-style-type: none"> • Lab: Sediment Core Analysis • Reading Discussion 2 		FIELD TRIP
Class 14-15 4/10	FIELD TRIP <ul style="list-style-type: none"> • Diamond Creek Trail • Bluff Erosion • Cook Inlet • Beluga Lake Sediment Coring 	<ul style="list-style-type: none"> • Computer Lab: DSAS • Reading Discussion 3 		FIELD TRIP
Class 16 4/11	FIELD TRIP <ul style="list-style-type: none"> • Ed Berg • Homer to Fairbanks 			FIELD TRIP
5/2				Research Report Due
5/6	FINAL EXAM			