Course Number: ESCI 53xx, CMSS 63xx
Credit Hours: 3 (3:0)
Semester: Fall
Year: 2008

Instructor: James Gibeaut

Course Title: Living with Coastal Hazards

1. Course Description (Approximately 25 words)
   Study of how coastal processes, such as hurricanes, sea-level rise, and erosion, intersect with human activities to create hazardous conditions and how society responds to these conditions, presented through discussion, case studies, and field trips.

2. Attach course outline or syllabus and a statement of course goals or objectives.
   (Syllabus attached; course objectives included on syllabus)

3. What group or groups of students is the course designed for?
   Graduate students in the M.S. - Environmental Science Program including those in the Marine Policy and Human Dimensions Track; also doctoral students in the Coastal and Marine System Science Program.

4. What is your best estimate of potential enrollment? What is the estimate based on?
   10 students, based on interest in past courses on related topics.

5. What degree and/or teacher certification requirements will this course fulfill?
   M.S. in Environmental Science; M.S. in Environmental Science - Marine Policy and Human Dimensions Track; Ph.D. in Coastal and Marine System Science.

6. Are present library and other university resources adequate to support this course?
   Yes.

7. Comments:
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Department Action: Approve _________
Reject _________ Date: _________

More information requested: _____________________

COMMENTS:
MEETING TIMES:

FACULTY AND STAFF COMMUNICATIONS:
Dr. James Gibeaut, HRI 215A, 825-2060, james.gibeaut@tamucc.edu

OBJECTIVE: Provide students with an understanding of how natural processes and human activities combine in coastal zones to create hazardous settings, and to give students an appreciation of the complexities in devising strategies for mitigating or adapting to those hazards. Upon successful completion of this course students will be able to do the following:

1. Describe and explain the processes involved in coastal hazards in context of their spatial and temporal impacts. Processes include storms, flooding, tsunamis, erosion, land subsidence, sea-level rise, and climate change.
2. Assess the impacts of coastal hazards on the natural and built environment.
3. Analyze management strategies for mitigating and adapting to coastal hazards.
4. Synthesize data and information from diverse sources to devise approaches for addressing coastal hazards.

DESCRIPTION: Coastal zones are under increasing pressures from population growth and economic development related to multiple uses such as recreation, fishing, and oil and gas production. At the same time, coastal areas are exposed to natural processes that can have serious impacts on public safety, economic development, and the environment. This course will study the nature and causes of severe storms, tsunamis, erosion, sea-level rise, land subsidence, and climate change. We will consider each of these phenomena in terms of their variability in space and time and their impacts on the natural and built environment. In turn, we will study how human activities affect the severity of impact. The course will also focus on how society copes with risks through coastal management policies and programs such as the National Flood Insurance Program, environmental restoration projects, and post disaster assistance. This course is designed to give students an understanding of hazards created when natural coastal processes intersect with human interests as well as an appreciation of the societal complexities in mitigating or adapting to the impacts.

FORMAT: The course will be taught in a lecture, discussion and case-study format. One full-day field trip will be required. Individual or group studies will be assigned that deal with existing coastal hazard issues. These studies will result in a term paper and class presentation. By the end of the course, the student should be able to evaluate the causes and impacts of coastal hazards and offer policy changes on how to improve (in their view) a hazardous situation. Suggested and required reading will be regularly assigned.
BREAKDOWN OF COURSE GRADING: Your final grade will be based on the following point distribution:

a. Mid-Term Exam          (100 points)
b. Final           (100 points)
c. Case Study – Term Paper (100 points)
d. Presentation                 (30 points)

DEMONSTRATION OF PROFICIENCY: A perfect score in this course would be to earn all 330 points available: There is a Mid-Term Exam worth 100 points and a Final Exam worth 100 points. The final exam will cover the material from the second half of the course. Presentations will be 15 minutes in length, and all group participants are expected to have a role.

GENERAL INFORMATION: All students are expected to conform to college-level standards of ethics, academic integrity, grammar and spelling. In particular, by enrolling in this class for academic credit, you agree to be bound by the Regulations and Procedures published in the TAMU-CC STUDENT HANDBOOK. Group interactions, investigations, and studying are encouraged; HOWEVER, duplicate work, in which more than one student claims credit for essentially the same material, will be treated as cheating and will receive a grade of zero. Except in cases of documented emergency or where prior arrangements have been made with the instructor, **there is no provision for making up late work and/or missed exams.** You are strongly urged to obtain the telephone numbers of several fellow students so that you can obtain notes and announcements in the event you miss a class and/or fail to stay current with announcements. Exams will be in class.

READINGS: All readings will be made available by the instructor at the beginning of class.

IMPORTANT DATES FOR THE FALL SEMESTER OF 2008:
COLLEGE OF SCIENCE AND TECHNOLOGY

PROPOSAL FOR NEW COURSE/ELECTIVE

PLEASE RETURN THIS FORM TO THE DEAN’S OFFICE BY:

Course Number: __CMSS 6590________________ Instructor: _Dr. Thomas Shirley__________

Credit Hours: ___3.0__________ Semester: ___Spring____ Year: __2008___________

Course Title: _Marine Biodiversity and Conservation Biology__________________________

1. Course Description (Approximately 25 words).
2. Attach course outline or syllabus and a statement of course goals or objectives.

3. What group or groups of students is the course designed for? The course will be directed towards CMSS doctoral students, but graduate students in Biology and Environmental Science are also a likely audience.

4. What is your best estimate of potential enrollment? What is the estimate based on?
I estimate 10-15 students will enroll, based on discussions with students and faculty.

5. What degree and/or teacher certification requirements will this course fulfill?
The course will be an elective for the CMSS doctoral program and for M.S. students in Environmental Sciences and Life Sciences.

6. Are present library and other university resources adequate to support this course?
Yes.

7. Comments: Some assignments and course lectures will be quantitative in nature. Students will be required to write a manuscript in journal format and make a class presentation of their topic. The course will have a mid-term and final exam, and a letter grade will be assigned based upon exam grades, the course project and presentation, and class participation.

Department Action: Approve ___________________
Reject ____________ Date: ____________________

More information requested: __________________

COMMENTS:
INSTRUCTOR:
Thomas Shirley
Office: HRI 314a
Phone: 361-825-2030
E-mail: Thomas.Shirley@tamucc.edu
Office hours: T R 2:00-3:45 PM, or by appointment

CLASS MEETING:
TR 5:00-6:15PM (Preferred)
Classroom: TBA

TEXTBOOKS:
Class Textbook, Required:

Press.
ISBN 1-55963-662-9

Secondary Class References (not required, available from instructor):


I. COURSE DESCRIPTION
Biodiversity, from genetic diversity of individual populations to ecosystem
diversity, will be addressed, with focus on the marine realm. Methods for
assessing and quantifying diversity will be included. Threats to biodiversity,
including resource extraction, invasive species, habitat alteration, global warming
and ocean acidification, will be covered, as will techniques for recovering and
restoring damaged ecosystems. Marine ecosystem management will be
discussed, including marine protected areas, and state, federal and international
fisheries and resource management issues. Advanced courses in Ecology or
Marine Biology would benefit students.
II. COURSE AUDIENCE
PhD Students in the Coastal and Marine Science System Science program are the primary audience for this course. Secondary audience includes graduate students (M.S.) in Environmental Science, Biological Sciences or other graduate degrees. Resource managers employed by agencies may find the course useful.

III. LEARNING OBJECTIVES
At the conclusion of this course the student should:
1. Understand the concepts of biological diversity, including spatial and temporal components, genetic and population diversity, and habitat diversity;
2. Understand species richness, species surrogates, evenness and dominance, assemblages vs. communities, guilds, inverse J-curves and other biodiversity concepts
3. Be able to apply and interpret commonly used metrics of diversity;
4. Be familiar with sampling methodologies and their influence upon diversity measures;
5. Know the threats to marine biodiversity, including resource extraction, habitat destruction, over fishing, nutrient enrichment, pollution, global warming and ocean acidification;
6. Understand the concepts and problems of species-based management and ecosystem management of marine fisheries;
7. Understand marine reserve function and design, and issues with marine protected areas
8. Have a working knowledge of the interaction of global management issues.

IV. COURSE TOPICS
Species-abundance distribution, inverse-J or log-normal curves, alpha and beta diversity, diversity indices, dominance, evenness, rarefaction, species surrogates, functional diversity, genetic variability, sampling methods, Allee effect, marine reserves and protected areas, metapopulations, ecosystem based management, high seas fishing, bottom trawling, international and global fishing councils and issues, habitat destruction, bioinvasions and human-mediated vectors, epizootics, nutrient enrichment, global warming, ocean acidification

V. INSTRUCTIONAL METHODS AND ACTIVITIES
Traditional lectures via board demonstrations and power point presentations, classroom discussions, student projects, and student presentations

VI. EVALUATION AND GRADE ASSIGNMENT

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Overall Grade Percentage</th>
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</table>


Journal article reviews & class discussions 10%
Mid-term Exam 30%
Research Manuscript 15%
Peer review 5%
Project Presentation 10%
Final Exam 30%

<table>
<thead>
<tr>
<th>Class Average X</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>X ≥ 90.0%</td>
<td>A - Excellent</td>
</tr>
<tr>
<td>80.0% ≤ X &lt; 89.0%</td>
<td>B – Good</td>
</tr>
<tr>
<td>70.0% ≤ X &lt; 79.0%</td>
<td>C - Satisfactory</td>
</tr>
<tr>
<td>60.0% ≤ X &lt; 69.0%</td>
<td>D - Passing</td>
</tr>
<tr>
<td>X &lt; 60.0%</td>
<td>F - Failing</td>
</tr>
</tbody>
</table>

VII. ATTENDANCE AND OTHER COURSE POLICIES

Students are required to attend all class meetings. Participation is essential to do well in the class. Discussions and student input are considered an integral part of the class. Class exams cannot be retaken other than for an excused absence, limited to medical emergencies, participation in a TAMUCC sanctioned event or other similar circumstances justified in writing and specified in the TAMUCC graduate catalog. Assignments are expected on time unless prior arrangements are made, which will be granted only in exceptional circumstances. Submitting an assignment late without prior arrangement will lead to a substantial, incremental (daily) penalty.

Academic honesty: Please review the University policies on academic integrity and honesty listed in the Graduate Catalog under the Academic Honesty section. This instructor will follow these guidelines if such infraction such as plagiarism or other dishonest conduct occurred as part of this class. These guidelines will be followed for both the evaluation of the gravity of the infraction and the determination of an appropriate penalty. Any student who has been penalized for academic dishonesty has the right to appeal the judgment or the penalty assessed. The Appeals Procedure will be the same as that specified for grade appeals. The grade appeals procedure may be found in the University Rules manual at http://www.tamucc.edu/provost/university_rules/.
SPECIAL NEEDS

The university complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you need disability accommodations in this class, please see the instructor as soon as possible and present the accommodation letter from TAMU-CC Services for Students with Disabilities Office. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.) please contact the Services for Students with Disabilities Office (located in Driftwood 101) at 825-5816. It is important that you contact them in a timely fashion as it may take several days to review requests and prepare accommodations.

VIII. TENTATIVE COURSE PROGRESSION

- Measurement of biological diversity and terminology
- Species abundance models
- Measures of species richness and species surrogates.
- Diversity measures
- Comparative studies of diversity
- Diversity in space and time
- Marine populations
- Threats to marine biological diversity
- Overfishing
- Place-based management
- Metapopulation structure and marine reserves
- Human dimensions, management regimes and legal issues

IX. BIBLIOGRAPHY


ISBN 1-55963-662-9

Course Number:  ESCI  53xx  Instructor: Staff
Credit Hours:  3 (3:0)  Semester: Fall  Year: 2008

Course Title: Ocean Resources

1. Course Description (Approximately 25 words)
Investigation of topics related to the discovery, distribution, and exploitation of marine resources of the ocean with a focus on the Gulf of Mexico, including the impact of resource exploitation on biological systems, and the development of marine policy.

2. Attach course outline or syllabus and a statement of course goals or objectives.
(Syllabus attached; course objectives included on syllabus)

3. What group or groups of students is the course designed for?
Graduate students in the M.S. - Environmental Science program; also graduate students in the M.A.- Interdisciplinary Studies or Masters of Public Administration programs. Also, Coastal and Marine System Science Ph.D. students.

4. What is your best estimate of potential enrollment? What is the estimate based on?
10-15 students, based on interest in past courses on related topics.

5. What degree and/or teacher certification requirements will this course fulfill?
M.S. in Environmental Science; possibly elective for M.P.A.or M.A. in Interdisciplinary Studies

6. Are present library and other university resources adequate to support this course?
Yes.

7. Comments:
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Department Action:  Approve _________
Reject _________  Date: _________

More information requested: _____________________

COMMENTS:
INSTRUCTOR: Staff

CLASS MEETING:

TEXTBOOKS:

Class Textbook, Required:

Secondary Class References (not required):

I. COURSE DESCRIPTION
Investigation of topics related to the discovery, distribution, and exploitation of marine resources of the ocean with a focus on the Gulf of Mexico, including the impact of resource exploitation on biological systems, and the development of marine policy.

II. COURSE AUDIENCE
M.S. students in the Environmental Science program are the primary audience for this course, in particular those enrolled in the Marine Policy and Human Dimensions Track. Secondary audience includes graduate students (Masters) in Mathematics, Aquaculture, and Biology, and (Doctoral) in Coastal and Marine System Science.

III. LEARNING OUTCOMES
At the conclusion of this course the student should be able to:
1. Identify and categorize various ocean resources that support human well being.
2. Analyze principles for the distribution of marine resources.
3. Employ the methods for exploration and exploitation of marine resources.
4. Evaluate the need for and effectiveness of policies that govern exploitation of ocean resources.
5. Evaluate the effects of exploitation impacts on marine biological, chemical, geological, and physical systems of the sea.
6. Synthesize the current issues related to ocean resources in the Gulf of Mexico.

IV. COURSE TOPICS
Exploration of the sea in search of marine resources including minerals, hydrocarbons, living resources, potential power generating resources, and other resources. Distribution of ocean resources. Exploration and methods for extraction of marine resources. Consequences of resource exploitation on abiotic and biotic systems in the sea. Ocean
policies and regulations as they relate to human consumption and use of ocean resources in the past, present, and future.

V. INSTRUCTIONAL METHODS AND ACTIVITIES

Traditional lectures via board demonstrations and power point presentations, classroom discussions, and student projects.

Student projects are required that will entail a presentation of a critical analysis of a paper from the primary literature.

VI. EVALUATION AND GRADE ASSIGNMENT

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Overall Grade Percentage</th>
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<tbody>
<tr>
<td>Homework, Journal Article Reviews &amp; class topic</td>
<td>20%</td>
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<tr>
<td>presentations</td>
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<tr>
<td>Mid-term Exam</td>
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<tr>
<td>Project Report/Poster/Presentation</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Total:</td>
<td>100%</td>
</tr>
</tbody>
</table>

Class Average X                       Grade
X ≥ 90.0%                             A - Excellent
89.9% ≤ X < 80.0%                     B – Good
79.9% ≤ X < 70.0%                     C - Satisfactory
69.9% ≤ X < 60.0%                     D - Passing
X < 60.0%                             F - Failing

VII. ATTENDANCE AND OTHER COURSE POLICIES

Students are required to attend all class meetings. Participation is essential to do well in the class. Discussions and student input are considered an important part of the class. Class exams cannot be retaken other than for an excused absence. Excused absences are limited to medical emergencies that can be certified in writing by a physician, participation in a TAMUCC sanctioned event or other similar circumstances justified in writing and specified in the TAMUCC graduate catalog for the ongoing academic year. Assignments are expected on time unless prior arrangements are made. Such prior arrangements will be granted only in exceptional circumstances as well. Submitting an assignment late without prior arrangement may lead to a grade of 0 and at least to a substantial penalty.

Academic honesty: Please review the University policies on academic integrity and honesty listed in the Graduate Catalog under the Academic Honesty section. This instructor will follow these guidelines if such infraction such as plagiarism or other dishonest conduct occurred as part of this class. These guidelines will be followed for both the evaluation of the gravity of the infraction and the determination of an appropriate penalty. Any student who has been penalized for
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IX. TENTATIVE COURSE PROGRESSION

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to ocean exploration and resources</td>
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<tr>
<td>2</td>
<td>Voyages of discovery, Challenger Expedition, Modern exploration</td>
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<td>3</td>
<td>Minerals</td>
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<td>4</td>
<td>Hydrocarbons</td>
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<td>5</td>
<td>Tidal and wind energy</td>
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<td>6</td>
<td>Fisheries – finfish</td>
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<td>7</td>
<td>Fisheries – shellfish</td>
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<tr>
<td>8</td>
<td>Fisheries – other plants and invertebrates</td>
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<td>9</td>
<td>Fisheries – impacts, and future sustainability</td>
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<td>10</td>
<td>Whaling</td>
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<tr>
<td>11</td>
<td>Pharmaceutical products from the sea</td>
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<td>12</td>
<td>Recreation and maritime activities</td>
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<td>13</td>
<td>Resource policies</td>
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<td>14</td>
<td>Resource regulation and management</td>
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<tr>
<td>15</td>
<td>Conservation and sustainability for the future</td>
</tr>
</tbody>
</table>

X. BIBLIOGRAPHY


The Offshore Imperative: Shell Oil's Search for Petroleum in Postwar America (Kenneth E. Montague Series in Oil and Business History), by Tyler Priest, 2007.