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Southern Miss Gulf Scholars

Fall 8-21-2023

BSC 345 Southern Miss Gulf Scholars Program Module

Southern Miss Gulf Scholars Program
University of Southern Mississippi

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BSC 345: Marine Biology

Module Title: The Blue Economy in the Gulf of Mexico

Module Length (in hours):

Course: BSC 345 Marine Biology

Subject Area(s):

Harvesting of marine resources, fisheries management, important economic marine species in MS and the GOM, history of the seafood industry, and modern aquaculture technologies.

Description of Module:

Throughout this module students will learn about important marine resources that drive the local seafood economy. On a field trip to the Maritime and Seafood Museum, students will learn about this historical seafood industry and industry practices. Student will also tour the USM Thad Cochran Marine Aquaculture Center to learn about modern aquaculture technologies and take an excursion at sea to observe the off-bottom aquaculture site next to Deer Island.

Module Learning Outcomes(s):

- GSP LO1: Develop knowledge of the Gulf of Mexico and its coastal zone in order to identify potential leverage points for creating a more livable, equitable, resilient, and joyful Gulf Region.
- GSP LO3: Integrate perspectives and approaches from the humanities, engineering, social and natural sciences to develop interdisciplinary responses to complex socio-environmental challenges
- LO 5: Data-driven researcher and response to major Gulf challenges.

Introductory Lesson	Course: BSC 345 Marine Biology	Date: SP23
GSP Learning Outcomes 1. Develop knowledge of the Gulf of Mexico and its coastal zone in order to identify potential leverage points for creating a more livable, equitable, resilient, and joyful Gulf Region; 2. Employ the intercultural knowledge, mindset, and skills through active involvement with diverse Gulf communities; 3. Integrate perspectives and approaches from the humanities, engineering, social and natural sciences to develop interdisciplinary responses to complex socio-environmental challenges; 4. Practice civic responsibility and ethical reasoning in problem-solving and research; 5. Conceptualize, develop, research, and implement innovative responses to major Gulf region challenges, grounded in respect for community knowledge and expertise		
Location: <ul style="list-style-type: none"> ○ In class ○ Out-of-class location 	GSP Framework Guidelines <ul style="list-style-type: none"> ◇ Clear learning goals ◇ Framing of inquiry question or problem as interdisciplinary ◇ Relevance of inquiry personally & Professionally ◇ Relevance of inquiry locally & globally ◇ Collaborate ◇ Communicate results, including broader impact ◇ Critical reflection of experience 	Strategies/Activities <ul style="list-style-type: none"> ◇ Readings ◇ Digital Media ◇ Lecture ◇ Visual Mapping ◇ Think/Pair/Share ◇ Modeling or Simulations ◇ Writing/Speaking Exercises ◇ Problem-based learning ◇ Project-based learning ◇ Service Learning ◇ Group Work ◇ Discussion Questions ◇ Photovoice ◇ DEAL Approach to Critical Reflection ◇ Other Assessment for Learning <ul style="list-style-type: none"> ◇ Observations ◇ Conversations ◇ Anecdotal Notes ◇ Work Sample ◇ Class Check-Ins/Quizzes ◇ Checklist ◇ Diagnostics ◇ Other Assessment as Learning <ul style="list-style-type: none"> ◇ Self-assessment ◇ Peer-assessment ◇ Presentation ◇ Visual Mapping ◇ Collaboration ◇ Class Check-Ins/Quizzes ◇ Homework ◇ Other Assessment of Learning <ul style="list-style-type: none"> ◇ Test ◇ Quiz ◇ Presentation ◇ Project Portfolio ◇ Critical Reflection ◇ Journal ◇ Essay ◇ Rubrics ◇ Other
Introduction Watch video on Marine Oyster Aquaculture at the TCMAC Homework prior to class: read textbook chapter on fisheries monitoring and management. (Previous modules cover the biology and ecology background of oysters)		
Action In-class, guided inquiry group work looking at historical oyster landings. Discussion questions prompting speculation for reasons for declining numbers. Brainstorming – recalling the biological needs of oysters, summarizing data needs for management purposes.		
Consolidation Identify socio-environmental issues affecting local fisheries species. Discuss on who is impacted by the health of the oyster fishery.		
Reflection and Next Steps Write a brief essay summarizing the biotic and abiotic needs of a healthy oyster population, and ways that humans are affecting their survival in coastal Mississippi		
Activities that worked	Topics to be Revisited	

Inquiry	Course: Marine Biology	Date: SP 23
<p>GSP Learning Outcomes 1. Develop knowledge of the Gulf of Mexico and its coastal zone in order to identify potential leverage points for creating a more livable, equitable, resilient, and joyful Gulf Region; 2. Employ the intercultural knowledge, mindset, and skills through active involvement with diverse Gulf communities; 3. Integrate perspectives and approaches from the humanities, engineering, social and natural sciences to develop interdisciplinary responses to complex socio-environmental challenges; 4. Practice civic responsibility and ethical reasoning in problem-solving and research; 5. Conceptualize, develop, research, and implement innovative responses to major Gulf region challenges, grounded in respect for community knowledge and expertise</p>		
<p>Location:</p> <ul style="list-style-type: none"> ○ In class ○ Out-of-class location <p>_____</p> <p>Biloxi seafood museum, TCMAC, trip on shrimp boat to the Deer Island site of off-bottom aquaculture.</p>	<p>GSP Framework Guidelines</p> <ul style="list-style-type: none"> ◇ Clear learning goals ◇ Framing of inquiry question or problem as interdisciplinary ◇ Relevance of inquiry personally & Professionally ◇ Relevance of inquiry locally & globally ◇ Collaborate ◇ Communicate results, including broader impact ◇ Critical reflection of experience 	<p>Strategies/Activities</p> <ul style="list-style-type: none"> ◇ Readings ◇ Digital Media ◇ Lecture ◇ Visual Mapping ◇ Think/Pair/Share ◇ Modeling or Simulations ◇ Writing/Speaking Exercises ◇ Problem-based learning ◇ Project-based learning ◇ Service Learning ◇ Group Work ◇ Discussion Questions ◇ Photovoice ◇ DEAL Approach to Critical Reflection ◇ Other
<p>Introduction In-class prior to the trip, and via reading content in Canvas, students will be introduced to the field trip goals.</p>		<p>Assessment for Learning</p> <ul style="list-style-type: none"> ◇ Observations ◇ Conversations ◇ Anecdotal Notes ◇ Work Sample ◇ Class Check-Ins/Quizzes ◇ Checklist ◇ Diagnostics ◇ Other
<p>Action A field trip that involves a tour of the museum, where students to learn about the local history of the fisheries and observe traditional fishing equipment. Then a trip on the shrimp boats to the sites of the off-bottom oyster aquaculture outside of deer island. Additionally, a tour of the marine aquaculture center where they learn about the techniques employed by USM researchers to provide the seed stock for the off-bottom aquaculture sites and learn about the ways that USM is addressing this socio-environmental need.</p>		<p>Assessment as Learning</p> <ul style="list-style-type: none"> ◇ Self-assessment ◇ Peer-assessment ◇ Presentation ◇ Visual Mapping ◇ Collaboration ◇ Class Check-Ins/Quizzes ◇ Homework ◇ Other
<p>Consolidation Students will share what they learned from the experience, identifying concepts that we previously learned from lecture or new concepts that we haven't discussed yet.</p>		<p>Assessment of Learning</p> <ul style="list-style-type: none"> ◇ Test ◇ Quiz ◇ Presentation ◇ Project Portfolio ◇ Critical Reflection ◇ Journal ◇ Essay ◇ Rubrics ◇ Other
<p>Reflection and Next Steps DEAL writing prompt about the experience. Prepare poster presentation to share</p>		
Activities that worked	Topics to be Revisited	

Communication	Course: Marine Biology	Date: SP23
<p>GSP Learning Outcomes 1. Develop knowledge of the Gulf of Mexico and its coastal zone in order to identify potential leverage points for creating a more livable, equitable, resilient, and joyful Gulf Region; 2. Employ the intercultural knowledge, mindset, and skills through active involvement with diverse Gulf communities; 3. Integrate perspectives and approaches from the humanities, engineering, social and natural sciences to develop interdisciplinary responses to complex socio-environmental challenges; 4. Practice civic responsibility and ethical reasoning in problem-solving and research; 5. Conceptualize, develop, research, and implement innovative responses to major Gulf region challenges, grounded in respect for community knowledge and expertise</p>		
<p>Location:</p> <ul style="list-style-type: none"> ○ In class ○ Out-of-class location 	<p>GSP Framework Guidelines</p> <ul style="list-style-type: none"> ◇ Clear learning goals ◇ Framing of inquiry question or problem as interdisciplinary ◇ Relevance of inquiry personally & professionally ◇ Relevance of inquiry locally & globally ◇ Communicate results, including broader impact ◇ Collaborate ◇ Critical reflection of experience 	<p>Strategies/Activities</p> <ul style="list-style-type: none"> ◇ Readings ◇ Digital Media ◇ Lecture ◇ Visual Mapping ◇ Think/Pair/Share ◇ Modeling or Simulations ◇ Writing/Speaking Exercises ◇ Problem-based learning ◇ Project-based learning ◇ Service Learning ◇ Group Work ◇ Discussion Questions ◇ Photovoice ◇ DEAL Approach to Critical Reflection ◇ Other <p>Assessment for Learning</p> <ul style="list-style-type: none"> ◇ Observations ◇ Conversations ◇ Anecdotal Notes ◇ Work Sample ◇ Class Check-Ins/Quizzes ◇ Checklist ◇ Diagnostics ◇ Other <p>Assessment as Learning</p> <ul style="list-style-type: none"> ◇ Self-assessment ◇ Peer-assessment ◇ Presentation ◇ Visual Mapping ◇ Collaboration ◇ Class Check-Ins/Quizzes ◇ Homework ◇ Other <p>Assessment of Learning</p> <ul style="list-style-type: none"> ◇ Test ◇ Quiz ◇ Presentation ◇ Project Portfolio ◇ Critical Reflection ◇ Journal ◇ Essay ◇ Rubrics ◇ Other
<p>Introduction Students should have spent some time reflecting on their observations, field experiences, and reading assignments to identify the connection between a healthy oyster population and the socio-environmental health of the fishery and community of fishers.</p>		
<p>Action In a group, students will design a research poster or presentation where they describe their ecological and social understanding of oysters. They should connect this with a broader question, such as resilience to the changing climate, or analyzing data on how the fishery is important to a greater region beyond south Mississippi.</p>		
<p>Consolidation After hearing the other groups presentations or having a poster symposium, the class should identify the most important problems and solutions that need to be shared with the fishers, managers, and public.</p>		
<p>Reflection and Next Steps Research Paper: Analyze the socio-environmental problem that you learned from the field trip and our course module. Reflective Essay: The student will summarize the knowledge had prior to the module, what they learned from the course material, what they learned from the field trip, and what they learned from the research project.</p>		
Activities that worked	Topics to be Revisited	

Research Paper Prompt:

Analyze the socio-environmental problem that you learned from our field trip and course module. Identify problems and solutions that should be shared amongst various stakeholders.

BSC 345 RESEARCH PAPER RUBRIC

General Guidelines	Points Possible	Points Earned	Comments
<i>Word count (2000 words, excluding references)</i>	5		
<i>Theme: the paper provides an accurate description of the topic with useful examples and demonstrates critical thinking.</i>	5		
Correct use of in-text citations in CSE format	5		
5 peer-reviewed journals newer than 5 years old referenced in CSE format on a References page	5		
Peer Review: Submitted Draft 1 on time, completed peer review on time and provided constructive feedback; <i>clearly incorporated peer-review suggestions and improved from draft 1</i>	10		
Format and professionalism, free of spelling and grammar errors (Including binomial nomenclature). Logical structure of introduction, body paragraphs, and conclusion.	10		
Content Guidelines			
Title: Title indicates (clearly & succinctly) what the paper is about.	3		
Introduction: Clearly and briefly describes the purpose, importance, and plan of the paper. The remaining paper follows this plan.	7		
Body Organization: Clear description of why this topic is important for marine science; explains the environmental impact; summarizes research articles in a meaningful way that supports the objective of the paper.	20		

Conclusion: Main points are summarized, wider implications are identified, conclusions relate to the importance.	10		
Total Points	80		

Additional Guidelines

Purpose:

1. Writing assignments will require that you locate, read, and synthesize information from primary literature in the discipline of marine biology. This may be something you have never done before, but you should become familiar with primary literature in general as well as reading information within specific disciplines. As professionals, this is one way we continue to educate ourselves outside of the classroom.
2. You must be familiar with scientific writing and be able to use this communication tool effectively by the time you graduate so that you will be proficient in your intended careers.

Audience:

Although I am the one that will grade your paper, you should approach this with the knowledge that your primary audience is similarly educated peers in this class since you will be presenting your topic to the class.

Tone:

The tone of scientific writing is formal, and this paper should conform to that. This means that the creative license afforded you in other types of writing (literature classes, etc.) is not allowed. Very rarely are personal references allowed in this type of writing.

Formatting:

Your paper should be typed and double spaced with one-inch margins on all sides. Please use size 12pt font, in either Times New Roman, Arial, Calibri or Tahoma. This paper should be a minimum of 2000 words, excluding headings, footers, or the literature cited page.