Texas A&M University
Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Geography

2. Course prefix and number: GEOG 205

3. Texas Common Course Number: Click here to enter text.

4. Complete course title: Environmental Change

5. Semester credit hours: 4

6. This request is for consideration in the following Foundational Component Area:
   - ☐ Communication
   - ☐ Mathematics
   - ☑ Life and Physical Sciences
   - ☐ Language, Philosophy and Culture
   - ☐ Creative Arts
   - ☐ American History
   - ☐ Government/Political Science
   - ☐ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   - ☐ Yes
   - ☑ No

8. How frequently will the class be offered? Fall and Spring Semesters

9. Number of class sections per semester: 1

10. Number of students per semester: Up to 100 students per semester


   This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by:
   - [Dr. Chris Houser]
   - [January 10, 2013]

14. Department Head
   - [January 14, 2013]
   - [1:17:13]

15. College Dean/Designee
   - [Received JAN 24 2013]

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University  
**Core Curriculum**  
*Initial Request for a Course Addition to the Fall 2014 Core Curriculum*

**Foundational Component Area: Life and Physical Sciences**

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

The objective of this course is to explore our dynamic biophysical environment and to consider how it has and will continue to change. Through the use of place-based case studies, students are introduced to the biophysical environment using a systems approach that describes the feedbacks between the atmosphere, hydrosphere, lithosphere and biosphere at a range of scales. Specifically, students are introduced to fundamental concepts and a general conceptual model of environmental change through the lectures, and are required to use the scientific method to analyze and interpret sample data of environmental change at a range of spatial and temporal scales and collected using a variety of methods. The analyses completed in the laboratory exercises will allow the students to make predictions about the nature and extent of future environmental change in the future, and to assess the importance of human-natural coupling affecting that change.

**Core Objectives**

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

**Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):**

The design of this course introduces students to the scientific method through problem-based laboratory assignments that require students complete a literature review, develop hypotheses for real-life scenarios based on that literature review, and complete an analysis of sample data to test those hypotheses. The lectures provide students with the fundamental concepts in physical geography and introduce a conceptual framework to understand how and why the environment changes at a range of spatial and temporal scales. In-class activities and tests reinforce problem solving, analysis techniques and the development of testable hypotheses.

**Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):**

To understand and explain how the environment changes requires that students are able to interpret and synthesize existing literature with a focus on refereed journal articles. Specifically, students are required to: 1) compose a literature review that effectively summarizes the literature, 2) develop testable hypotheses based on their understanding of the literature, 3) test those hypotheses using sample data, and 4) communicate their interpretation of the sample data. Testing the hypotheses requires that students are able to communicate the results of their analysis through effective graphical representation of time and spatial series. Students are also provided an opportunity to develop communication skills through the in-class activities and essay-based questions on exams.

**Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):**
Texas A&M University

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Initial Request for a Course Addition to the Fall 2014 Core Curriculum

The majority of this class requires students be able to interpret and analyze temporal and spatial data of environmental change at a range of scales and using a variety of measurement techniques. In this respect, the students are required to relate conceptual models (presented through the lectures), with empirical facts from the literature and the results of their own analyses of sample datasets.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Students are encouraged to openly discuss and debate causes and projections of past and future environmental change based on empirical data and conceptual models of change introduced in the lectures with a specific focus on past and current climate change. In-class activities and a limited number of online laboratory assignments (via moderated discussion boards) also require students to collaborate in the interpretation of quantitative and qualitative data of past environmental change, which requires them to communicate with one another and develop a common statement about why and how the environment has and will continue to change.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
LABORATORY: Virtual laboratory assignments with online support by a teaching assistant and peers through moderated discussion boards. Each laboratory will require students to complete a literature review based on a selection of readings provided by the instructor, and analyze and synthesis data from a variety of sources to quantify a change in some aspect of the environment. Results of this analysis will allow the students to describe and explain the environmental change recorded in their data.

OBJECTIVES: The objective of this course is to explore our dynamic biophysical environment and to consider how it has and will continue to change. Through the use of place-based case studies, students are introduced to the biophysical environment using a systems approach that describes the feedbacks between the atmosphere, hydrosphere, lithosphere and biosphere at a range of scales. Specifically, students are introduced to fundamental concepts and a general conceptual model of environmental change through the lectures, and are required to use the scientific method to analyze and interpret sample data of environmental change at a range of spatial and temporal scales and collected using a variety of methods. The analyses completed in the laboratory exercises will allow the students to make predictions about the nature and extent of future environmental change in the future, and to assess the importance of human-natural coupling affecting that change.

LEARNING OUTCOMES: At the end of the course, students are expected to:
1. Identify and describe the important attributes, elements and connections within the physical environment from a systems perspective
2. Describe the dynamic nature of the environment at a range of spatial and temporal scales, and identify how change results from adjustments between the different components
3. Discuss and apply methods and technology to measuring environmental change, and recognize the limitations to these methods in predicting change
4. Describe how environmental change of the past and present has and continues to affect society and the feedbacks therein

COURSE EVALUATION SCHEME:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 3</td>
<td>20%</td>
</tr>
</tbody>
</table>

The three exams will be based on the material covered in the lectures and readings, although the tests will emphasize the material covered in the lectures. While the tests are non-cumulative the material is based on similar concepts and builds towards a unified model of environmental change.
### REQUIRED TEXT:
The Earth System, 3rd Ed., 2010; Kump, Kasting, and Crane; Prentice Hall.

### GRADING SCHEME:
- **A**: Excellent, ≥90%
- **B**: Good, 80-89%
- **C**: Satisfactory, 70-79%
- **D**: Passing, 60-69%
- **F**: Failing, ≤59%

### SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Reading Folder</th>
<th>Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>08/27</td>
<td>Definition of Change</td>
<td>Our Changing Earth</td>
<td></td>
</tr>
<tr>
<td>09/03</td>
<td>Definition of Change Cont’d</td>
<td>From Global winds to turbulence</td>
<td>Quantifying Change</td>
</tr>
<tr>
<td>09/10</td>
<td>Winds of Change</td>
<td></td>
<td>Meteorological Records</td>
</tr>
<tr>
<td>09/17</td>
<td>Water, Water Everywhere</td>
<td>A lack of Rain</td>
<td>Streamflow Records</td>
</tr>
<tr>
<td>09/24</td>
<td>Storms and Hurricanes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Here and Now: Decades and Centuries</strong></td>
<td></td>
<td><strong>Exam 1</strong>&lt;br&gt;<strong>September 27</strong></td>
</tr>
<tr>
<td>10/01</td>
<td>Short Term Climate Variability</td>
<td>Our Variable Climate</td>
<td>Drought in Texas</td>
</tr>
<tr>
<td>10/08</td>
<td>Short Term Climate Variability Cont’d</td>
<td></td>
<td>Trees as Climate Records</td>
</tr>
<tr>
<td>10/15</td>
<td>Under a Mile of Ice</td>
<td>Glacial History of North America</td>
<td>The Climate Past</td>
</tr>
<tr>
<td>10/22</td>
<td>Under a Mile of Ice Cont’d</td>
<td></td>
<td>Sea Level Curves</td>
</tr>
<tr>
<td>10/29</td>
<td>Ancient Climates</td>
<td>Very old earth</td>
<td>Defining Change</td>
</tr>
<tr>
<td>11/05</td>
<td>First Earth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11/12</td>
<td>Carbon Cycle</td>
<td>Mountain Building and Erosion</td>
<td>Landscape Change</td>
</tr>
<tr>
<td>11/19</td>
<td>Carbon Cycle Cont’d</td>
<td>Carbon Cycle</td>
<td><strong>Thanksgiving</strong>&lt;br&gt;<strong>November 22</strong></td>
</tr>
<tr>
<td>11/26</td>
<td>Coupled Human and Natural Systems</td>
<td></td>
<td>Coastal Change</td>
</tr>
<tr>
<td></td>
<td><strong>Putting it All Together</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Exam 3</strong>&lt;br&gt;<strong>December 7 from 12:30-2:30 am in HECC 203</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ONLINE COURSE INFORMATION:
http://elearning.tamu.edu
CORE OBJECTIVES

Critical Thinking: The design of this course introduces students to the scientific method through problem-based students to scientific inquiry through problem-based laboratory assignments that require students complete a literature review, develop hypotheses for an real-life scenario based on that literature review and complete an analysis of sample data to test those hypotheses. The lectures provide students with the fundamental concepts in physical geography and introduce a conceptual framework to understand how and why the environment changes at a range of spatial and temporal scales. In-class activities and tests reinforce problem solving, analysis techniques and the development of testable hypotheses.

Communication: To understand and explain how the environment changes requires that students are able to interpret and synthesize existing literature with a focus on refereed journal articles. Specifically, students are required to: 1) compose a literature review that effectively summarizes the literature, 2) develop testable hypotheses based on their understanding of the literature, 3) test those hypotheses using sample data, and 4) communicate their interpretation of the sample data. Testing the hypotheses requires that students are able to communicate the results of their analysis through effective graphic of time and spatial series. Students are also provided an opportunity to develop communication skills through the in-class activities and essay-based questions on exams.

Empirical and Quantitative Skills: The majority of this class requires students be able to interpret and analyze temporal and spatial data of environmental change at a range of scales and using a variety of measurement techniques. In this respect, the students are required to relate conceptual models (presented through the lectures), with empirical facts from the literature and the results of their own analyses of sample datasets.

Teamwork: Students are encouraged to openly discuss and debate causes and projections of past and future environmental change based on empirical data and conceptual models of change introduced in the lectures with a specific focus on past and current climate change. In-class activities and a limited number of online laboratory assignments (via discussion boards) also require students to collaborate in the interpretation of quantitative and qualitative data of past environmental change, which requires them to communicate with one another and develop a common statement about why and how the environment has and will continue to change.

COURSE AND UNIVERSITY POLICIES:

CLASS ATTENDANCE: The University views class attendance as the responsibility of the student. Students will be assigned a time when they are required to attend the online laboratories, which will also be attended by the professor and teaching assistant. While attendance is not part of your assessment, your performance is directly related to your attendance- the more classes you miss the lower your grade tends to be. Students who miss class are responsible for getting the notes from a classmate. For more information on University Excused Absences please http://student-rules.tamu.edu.
Students seeking an excused absence on an exam day must notify the professor or the Department of Geography by the end of the next working day following the absence, as described in Texas A&M University Student Rules. For an absence considered excused by the university (http://student-rules.tamu.edu/rule7.htm), the student will be required to make-up the missed exam. At the instructor's discretion, the make-up exam might be in a different format (i.e., essay instead of multiple choice) than the original exam.

**EMAIL:** All Texas A&M students should use their official TAMU email accounts when emailing the instructor or the teaching assistant. I may send out class announcements via the neo email system and it is your responsibility to check your account regularly.

**THE AMERICANS WITH DISABILITIES ACT (ADA)** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

**COPYRIGHT AND PLAGIARISM POLICY:** All materials used in this class are copyrighted. These materials include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless permission is expressly granted.

As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, http://student-rules.tamu.edu/, under the section "Scholastic Dishonesty."

**HONOR SYSTEM AND ACADEMIC DISHONESTY:** "An Aggie does not lie, cheat, or steal, or tolerate those who do." Texas A&M has a Scholastic Dishonesty policy to which both students and faculty must comply. If you have any questions about the University's Scholastic Dishonesty Policy, please review the Student Rules or see me. The Aggie Honor program is the new program that will handle all cases of academic dishonesty. The Aggie Honor program website is located at http://www.tamu.edu/aggiehonor.
Texas A&M University

Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Oceanography

2. Course prefix and number: OCNG 251  3. Texas Common Course Number: GEOL 1345

4. Complete course title: Oceanography

5. Semester credit hours: 3

6. This request is for consideration in the following Foundational Component Area:

☐ Communication
☐ Mathematics
☒ Life and Physical Sciences
☐ Language, Philosophy and Culture

☐ Creative Arts
☐ American History
☐ Government/Political Science
☐ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:

☐ Yes  ☒ No

8. How frequently will the class be offered? every semester

9. Number of class sections per semester: 12 to 15 in Fall/Spring; 1 during summer

10. Number of students per semester: 790 to 1010 in Fall/Spring; 30 to 100 during summer

11. Historic annual enrollment for the last three years: 2011/12: 1760  2010/11: 1632  2010/09: 1560

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

12. Submitted by:

Mary e Richardson

Course Instructor

Approvals:

13. 23 January 2013

Date

14. Department Head

2013

Date

15. College Dean/Designee

2013

Date

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thech.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University
Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

The ocean covers 71% of the Earth’s surface and therefore directly or indirectly affects most processes in the Earth System, including human activities. OCNG 251 Oceanography focuses on describing and explaining the major features and processes that occur in the ocean and how they interact with other components of the Earth System. For example, ocean currents help us to understand how heat energy is transferred from low to high latitudes, affecting global climate. A better understanding of the role of the oceans in the Earth system will help students become informed citizens capable of understanding environmental issues of societal importance, such as climate change and sea level rise. Information will be presented within the context of the scientific method. For example, the theory of plate tectonics will be presented to not only illustrate how this process has shaped the ocean basins, but also to illustrate how hypotheses develop and are tested, and how a theory is based on many empirical observations and types of evidence. Oceanography is an interdisciplinary and quantitative science; a goal of OCNG 251 is to integrate and synthesize knowledge and fundamental concepts from across the life and physical sciences to better understand the ocean.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Critical thinking is integrated into the learning outcomes of OCNG 251 Oceanography. Students will be expected to use critical thinking to synthesize knowledge and concepts from several scientific disciplines to enable them to describe and explain processes in the ocean. Critical thinking will be tested during class as students will be expected to analyze, evaluate and interpret information (such as graphs, maps, diagrams, or table of data) while working in small teams and then communicate their findings to the rest of the class. Critical thinking will also be tested in four exams that take place during the semester.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Students will be required to communicate through writing and verbally to meet the learning outcomes of OCNG 251 Oceanography. Students will communicate their knowledge and the results of their critical thinking in writing during exams. During class, students will work in teams to analyze and evaluate information and they will communicate their results verbally to the rest of the class. In addition, informal discussions during class will develop students’ rhetorical skills.
Texas A&M University

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Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

*Empirical* and *quantitative skills* are developed during OCNG 251. They are required to meet the learning objectives of the course and develop students’ understanding and application of the scientific method. Students will analyze and interpret data over a range of temporal and spatial scales. For example, an understanding of water properties and how they affect ocean circulation requires an integration of spatial scales from molecular to global. Students will *analyze* empirical data, such as changes in the *fundamental oceanographic properties* of seawater with depth. Students will use *quantitative data* to learn fundamental concepts by producing and interpreting graphical representations, make *calculations* and draw *conclusions* or make *predictions* based on their analysis.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Teamwork is an important element of modern science as major scientific problems are rarely solved by individual researchers. This is particularly true within the field of oceanography, which integrates physics, chemistry, geology, and biology to understand the ocean. OCNG 251 will address the teamwork core objective through group activities designed to meet the learning outcomes of the course. Students will work in small teams to analyze, evaluate, or interpret information at least every other class. In addition to taking the exams individually, students will take the exam in small teams which will develop communication and analytical skills in a group setting.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course title and number: Oceanography: OCNG 251 (3-0, CR 3)
Term: Fall 2014
Meeting times and location: TR 11:10 AM – 12:25 PM; O&M Bldg, room 112

Course Description and Prerequisites
Overview of the ocean environment; interrelation of the sub-disciplines of ocean sciences; importance of the ocean to human beings; human impact on the oceans.

Prerequisite: Concurrent registration in OCNG 252 is recommended but not required. Topics learned in lecture are reinforced in the laboratory course OCNG 252.

Course Objectives and Learning Outcomes

Course Objectives:

- Understand scientific principles and concepts of Oceanography.
- Foster appreciation for the complexity of the Earth and its oceans.
- Develop understanding of the oceans' role in and importance to the Earth's environment.
- Encourage informed action as citizens of the planet responsible to future generations.

Learning Outcomes:

- Identify reasons why sustainable practices regarding ocean resources (e.g. fisheries, hydrocarbons) are important and affect students' present and future life and the world economy;
- Demonstrate how the oceans are connected to and drive major Earth processes, such as atmospheric and oceanic circulation, climate and weather, plate tectonics, and sustainability of human and marine populations
- Discuss the importance of oceanography in global initiatives and political decisions for the present and future.
- Explain the theory of plate tectonics and its relationship to the formation of major features of the seafloor.
- Describe the principles involved in the generation of waves and tides and evaluate their effects on coastal processes and marine ecosystems
- Analyze atmospheric and oceanic circulation systems, their interconnections and driving forces.
- Summarize the major physical and chemical properties of seawater and how each affects marine life.
• Explain the relationship between producers and consumers in the ocean and how they affect the cycling of carbon among the ocean, atmosphere and sediments.

• Identify the consequences of a rise in sea-level on the coastal zone and society and possible mitigation and adaptation strategies.

Instructor Information
Name: Dr. Mary Jo Richardson. Regents’ Professor
Telephone number: 979-845-7966
Email address: mrichardson@ocean.tamu.edu
Office hours: Tuesday, Wednesday, Thursday 8:30 AM – 9:30 AM or by appointment.
Office location: O&M 306C

Textbook and/or Resource Material

Essentials of Oceanography is required. Used copies are available. A three-hole punched version is available. Copies are available at the library. Additional materials may be assigned in class and will be made available on elearning.

Grading Policies
Exams:
There will be four exams in class. There is no final exam. Each exam will cover all material and chapters listed in the course outline since the previous exam and any current events related to the course. Knowledge of basic concepts covered previously will be assumed. Exams may include multiple choice and short answer questions. Exam material will come from class presentations, readings and assignments.

Notes, calculators, phones, or other electronic devices will not be allowed during exams. Exams will be given twice in the exam period. During the first 50 minutes everyone will take the exam individually. During the next 25 minutes you will take the exam in groups of 5. I will assign groups before the first exam. The group exam grade will be weighted by your attendance for each segment of the course to determine your total points earned for each exam. I will provide the Scantrons for the exams.

Make-up exams policy:
It is your responsibility to contact me in person with your university authorized absence to be allowed to take a make-up exam. Make-up exams will be given within 1-2 weeks following each exam. Make-up exams will be essay format.

Attendance and participation:
Regular attendance and participation in class is necessary and will be used in determining the weighting factor used for the group exams in calculation of the total points earned.

Clickers:
Clickers will be provided for in-class use and will be used for attendance and accessing understanding. The department clickers are used in multiple classes. You will be assigned a
numbered clicker that you will use during class. Please return your clicker to its proper slot at
the end of class. Loss of your clicker will result in a fee of $100 added to your student account.

Extra Credit:
Your lowest exam grade will count least – 19% versus 27% for your highest 3 exam grades.
No additional extra credit will be given. Focus your efforts on attending class and learning the
class material.

Exam grades will be posted on eLearning.tamu.edu.

Exams: Four exams (combined points for individual and group exams) – 100 pts each -
total of 400 pts

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&gt;359</td>
</tr>
<tr>
<td>B</td>
<td>320-359</td>
</tr>
<tr>
<td>C</td>
<td>280-319</td>
</tr>
<tr>
<td>D</td>
<td>240-279</td>
</tr>
<tr>
<td>F</td>
<td>&lt;240</td>
</tr>
</tbody>
</table>

Other Pertinent Course Information

Cell phones, mp3-players, and other e-devices must be turned off during class. Computers are only
allowed with web access turned off (airplane mode). Should you need to use an e-device for emergency
purposed during class, be respectful – excuse yourself from the class and return when the emergency is
over. Disrespectful students will be asked to leave class.

I encourage you to come see me during my office hours early in the semester if you have any questions
about the course. Please do not wait until the end of the semester when much of your grade in the
course is already earned.

Americans with Disabilities Act (ADA)

“The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides
comprehensive civil rights protection for persons with disabilities. Among other things, this legislation
requires that all students with disabilities be guaranteed a learning environment that provides for
reasonable accommodation of their disabilities. If you believe you have a disability requiring an
accommodation, please contact the Disability Services in Room B118 of Cain Hall. The phone number is
845-1637.” For additional information visit http://disability.tamu.edu

Honor Code

The Honor Code, based on the long-standing affirmation that is fundamental to the value of the A&M

For additional information please visit: http://aggiehonor.tamu.edu/

Copyright Notice

“All materials used in this course are copyrighted. These materials include but are not limited to syllabi,
quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because
these materials are copyrighted, you do not have the right to copy the handouts, unless permission is
expressly granted.”
Plagiarism Statement

"As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated". If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, http://student-rules.tamu.edu, under the section "Scholastic Dishonesty."

Course Outline

Class topics and exam dates may change. Notice of exam date changes will be announced in class and posted on eLearning.tamu.edu.

<table>
<thead>
<tr>
<th>Week</th>
<th>Chapter Title/Topic</th>
<th>Text Reading (Chapters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Introduction/Overview/Current topics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introduction to Planet “Earth”</td>
<td>1</td>
</tr>
<tr>
<td>Week 2</td>
<td>Plate Tectonics and the Ocean Floor</td>
<td>2</td>
</tr>
<tr>
<td>Week 3</td>
<td>Marine Provinces</td>
<td>3</td>
</tr>
<tr>
<td>Week 4 - Tuesday</td>
<td>EXAM 1</td>
<td></td>
</tr>
<tr>
<td>Week 4</td>
<td>Marine Sediment</td>
<td>4</td>
</tr>
<tr>
<td>Week 5</td>
<td>Water and Seawater</td>
<td>5</td>
</tr>
<tr>
<td>Week 6</td>
<td>Air-Sea Interaction/Climate</td>
<td>6 &amp; 16</td>
</tr>
<tr>
<td>Week 7 - Tuesday</td>
<td>EXAM 2</td>
<td></td>
</tr>
<tr>
<td>Week 7</td>
<td>Ocean Circulation</td>
<td>7</td>
</tr>
<tr>
<td>Week 8</td>
<td>Waves and Water Dynamics</td>
<td>8</td>
</tr>
<tr>
<td>Week 9</td>
<td>Tides</td>
<td>9</td>
</tr>
<tr>
<td>Week 10</td>
<td>Coast: Beaches and Shoreline Processes</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>The Coastal Ocean</td>
<td>11</td>
</tr>
<tr>
<td>Week 11 - Tuesday</td>
<td>EXAM 3</td>
<td></td>
</tr>
<tr>
<td>Week 11</td>
<td>Marine Life and the Marine Environment</td>
<td>12</td>
</tr>
<tr>
<td>Week 12</td>
<td>Biological Productivity and Energy Transfer</td>
<td>13</td>
</tr>
<tr>
<td>Week 13</td>
<td>Animals of the Pelagic Environment</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Animals of the Benthic Environment</td>
<td>15</td>
</tr>
<tr>
<td>Week 13 - Thursday</td>
<td>EXAM 4</td>
<td></td>
</tr>
<tr>
<td>Week 14</td>
<td>International oceanographic expeditions</td>
<td></td>
</tr>
</tbody>
</table>
Texas A&M University

Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Oceanography

2. Course prefix and number: OCEG 252

3. Texas Curriculum Course Number: GEOL 1145

4. Complete course title: Oceanography Laboratory

5. Semester credit hours: 1

6. This request is for consideration in the following Foundational Component Area:

☐ Communication

☐ Mathematics

☒ Life and Physical Sciences

☐ Language, Philosophy and Culture

☐ Creative Arts

☐ American History

☐ Government/Political Science

☐ Social and Behavioral Sciences

7. This course should also be considered for International and Cultural Diversity (ICD) designation:

☐ Yes

☒ No

8. How frequently will the class be offered? every semester

9. Number of class sections per semester: 41 to 45 in Fall/Spring; 4 during summer

10. Number of students per semester: 810 to 900 in Fall/Spring; 80 during summer

11. Historic annual enrollment for the last three years: 2011/12: 1780

2010/11: 1744

2010/09: 1714

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

12. Submitted by:

[Signature]

Course Instructor:

[Signature]

Date: 2/5/13

Approvals:

[Signature]

Department Head:

[Signature]

Date: 2/7/13

14. College Dean/Designee:

[Signature]

Date:

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at

www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

The ocean covers 71% of the Earth's surface and therefore directly or indirectly affects most processes in the Earth System, including human activities. OCNG 252 Oceanography Laboratory will introduce students to fundamental concepts in the geosciences. Students will apply the scientific method to solve oceanography problems in a laboratory setting. Through a series of practical experiments, students will be able to describe and explain several phenomena relating to the geology, physics, chemistry, and biology of the ocean. For example, students will investigate how physical factors interact to affect the density of seawater and using this knowledge they will be able to predict how temperature and salinity changes affect seawater density, stratification, and ocean currents.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Students will employ critical thinking to successfully complete the laboratory experiments that are the foundation of this class. For example, students will use critical thinking to evaluate the quality (e.g. accuracy and precision) of the data they collect. Critical thinking and application of the scientific method will be required to interpret and use the data for the calculations, evaluations, and predictions required for answers in their lab reports. Several of the learning outcomes of OCNG 252 require students to think critically.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Students will develop written, visual, and verbal communication skills. Students will use written and visual communication as text and graphs to communicate the results of the laboratory experiments in their lab reports. Verbal communication is necessary to successfully complete the laboratory experiments as the students will work in pairs or small teams.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

Empirical and quantitative skills are integrated into the learning outcomes for OCNG 252. Students will collect empirical data during the laboratory experiments. They will manipulate these data and make calculations to present and interpret their results. The manipulation of quantitative data will be required to explain the solutions to oceanographic problems and to enable the students to think critically and make predictions about how that experimental system would behave under different conditions.
Texas A&M University
Core Curriculum
Initia Request for a Course Addition to the Fall 2014 Core Curriculum

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Teamwork is essential to meet the learning outcomes of OCNG 252. Students will work in pairs or small groups of four students during the laboratory experiments. To successfully complete each experiment students will have to be able to collaborate, communicate, and organize with the other members of their group.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course title and number  OCNG 252 Section 501
Term  Fall 2014
Meeting times and  Room 208, 10:00-12:00 Monday
location

Course Description and Prerequisites

This course is a lab based introduction to oceanography topics. There are no prerequisites for this course, but a general understanding of basic math is needed and some familiarity with Microsoft Excel is useful. While this class complements the oceanography 251 lecture course, OCNG 251 and 252 do NOT need to be at the same time. OCNG 252 may be taken as a standalone course.

Learning Outcomes

After successfully completing the Introduction to Oceanography lab, students will be able to:

1) Describe the bathymetric variability of the seafloor and how to contour it.
2) Discuss the deposition and transport of sediments in the ocean.
3) Evaluate the different methods for determining salinity and assess which method is more accurate and precise.
4) Investigate how physical factors affect seawater density through experimentation.
5) Describe how density is determined and the role it plays in ocean circulation.
6) Give examples of how climate change impacts the ocean.
7) Describe how waves travel through the water.
8) Describe the effects of seasonal variability on the surface ocean and the organisms in it.
9) Manage and organize laboratory experiments as part of a pair or group of peers.

Core Objectives

Students will develop critical thinking skills, communication skills, empirical and quantitative skills and teamwork throughout the semester through the following activities:

- Students demonstrate teamwork each week as they work in pairs or groups of four to make the necessary measurements for each lab.
- They develop empirical and quantitative skills as they individually perform calculations to answer the problems assigned for the lab.
- Students hone critical thinking skills as they use the data and calculations to draw conclusions and answer the text questions.
- Communication skills are fostered as they write up their answers for the lab reports (forms) and communicate with the peers in their group as they make the measurements necessary for the lab.
Instructor/TA Information

TA Name: XXXXXXXX
TA Telephone number: 979-XXX-XXXXXX
Email address: xxxxxxxxx@neo.tamu.edu
Office hours: (1 hour per section)
Office location: XXX, O&M Eller Building

Lab Supervisor: Dr. Shari Yvon-Lewis
TA Telephone number: 979-458-1816
Email address: syvon-lewis@ocean.tamu.edu
Office location: 412, O&M Eller Building

Textbook and/or Resource Material

REQUIRED: Experiments in Oceanography by Dr. John H. Wormuth, ONLINE EDITION, 2011. It is only available online via WebCom. Can be purchased online at http://webcom.gritxle.com/oceanography

Grading Policies

A total grade for each of the 11 labs will be composed by the following:

10% PreLab Online Assignments (completed through Webcom)
40% PostLab Online Assignments (completed through Webcom)
40% Forms and Participation
10% In class quizzes

Students will work in pairs or groups of 4 for each lab performing measurements, however all calculations and written lab reports will be done individually.

If you miss a lab without a university excuse or fail to do make-up work when allowed, you will receive a zero for that lab. Nothing will be accepted late and it is your responsibility to watch due dates for online assignments.

Tardiness:
At the beginning of each class a brief presentation will be given to inform you of any necessary procedural changes, equipment instructions or vital background information. You MUST be on time for this presentation. If you miss any part of this presentation, credit may be deducted from your participation. Whether or not you are present, you are responsible for knowing the information presented. If you are late on a day when a quiz is being administered, you will receive a zero for the quiz. If you are late, it is your responsibility to sign in on the attendance sheet or be marked as absent for the day.

Attendance policy:
If you miss a lab without documentation of a university excused absence, all associated assignments (online or forms) will be marked as zero even if completed.
University Excused Absences – [http://student-rules.tamu.edu](http://student-rules.tamu.edu) (under the “attendance” section)

NOTE: You must notify the instructor BEFORE you miss class that you will be absent or she is under no obligation to adhere to the university approved excuse. It is your responsibility to contact the instructor to make up the lab IF you have an excuse. You must turn in the appropriate excuse forms to the instructor before you make up the lab. You are responsible for getting any assignment due in that lab to the instructor before you make up the lab.

**Make up labs:**
If you miss a lab and have a University Approved Excuse, you will be allowed to make up the lab. Due to the nature of the lab schedule, you will ONLY be able to make up a lab DURING the SAME week you missed. The labs are scheduled every two hours with the first one beginning at 8 am morning and the last one beginning at 6 pm (on Fridays the last lab begins at noon). You may not simply attend whichever lab you choose, and must set up a makeup time through me.

If you do not make up the lab during the same week missed, the total lab grade will be averaged into your final class grade as a zero (no online assignments related to that lab will be counted).

**Safety:**
In order to enable a safe learning environment, there are 18 cubbies available at the front of the room. ALL personal belongs must be stowed there for the duration of all labs. This includes cell phones, ipods, purses, book bags, etc. Since we are in a laboratory setting, everyone must wear closed toed shoes for every meeting of this course, and food and drinks are never to be brought into the lab. For the labs where simple chemicals (weak acid, silver nitrate) are used, safety goggles, gloves and aprons are provided and must be used. These are kept in the lab, so you are welcome to use them at any other time you would like. The location of other safety equipment (fire extinguisher, broken glass container, eye wash, etc.) found in the lab will be brought to your attention by the Teaching Assistant.

**PreLab and PostLab Assignments:**
All PreLab and PostLab Assignments are short, online assignments completed through the Emanual: Experiments in Oceanography (see above under “textbook” for WebCOM website). The PreLab assignments are to be completed AFTER reading the chapter of the Emanual and BEFORE coming to class for that topic. The PostLab assignments are to be completed AFTER performing the in class exercises for each topic.

**Forms and Participation:**
Each week while conducting your exercises you will be required to complete a form. This will include data collected during your exercises as well as answers to questions based upon the exercises. Participation will be lost for various reasons including, but not limited to: tardiness, lack of attentiveness, lack of preparation, and lack of participation in group activities.

**Quizzes:**
In class quizzes will be administered without warning and will generally be based on the required reading for that day, though they may contain information learned from previous labs.
### Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100-90%</td>
</tr>
<tr>
<td>B</td>
<td>89.99 -80%</td>
</tr>
<tr>
<td>C</td>
<td>79.99 - 70%</td>
</tr>
<tr>
<td>D</td>
<td>69.99 - 60%</td>
</tr>
<tr>
<td>F</td>
<td>59.99% and below</td>
</tr>
</tbody>
</table>

There will be no rounding. There will be no curve.

### Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Dates</th>
<th>Topic Summary</th>
<th>Required Reading (WebCom)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/25-8/29</td>
<td>Syllabus: The expectations and requirements for this course will be discussed, and students will be introduced to WebCom (required). Safety: no special Personal Protective Equipment (PPE) required.</td>
<td>Bathymetry</td>
</tr>
<tr>
<td>9/1-9/5</td>
<td>Bathymetry: Simple box models and computers show how dynamic the seafloor surface can be. Safety: no special Personal Protective Equipment (PPE) required.</td>
<td>Bathymetry</td>
</tr>
<tr>
<td>9/8-9/12</td>
<td>Isostasy and Rock Density: Using simple materials of various densities, the principles behind plate tectonics are revealed. Safety: no special Personal Protective Equipment (PPE) required.</td>
<td>Isostasy and Rock Density</td>
</tr>
<tr>
<td>9/15-9/19</td>
<td>Sedimentation: Deep-sea underwater sediment flows are recreated in lab using saltwater solutions with food coloring to distinguish density. Safety: no special Personal Protective Equipment (PPE) required.</td>
<td>Sedimentation</td>
</tr>
<tr>
<td>9/22-9/26</td>
<td>Albedo and Solar Radiation: The light energy from the sun warms surface waters and is reflected by ice, but only a fraction reaches depths. Safety: no special Personal Protective Equipment (PPE) required.</td>
<td>Albedo and Solar Radiation</td>
</tr>
<tr>
<td>9/29-10/3</td>
<td>Salinity: This fundamental property is measured for almost any study involving the ocean. Here the advantages and disadvantages of common methods will be reviewed. Safety: Silver Nitrate is used for a chemical titration – use caution and wear work clothes in addition to the required provided Personal Protective Equipment (PPE).</td>
<td>Salinity</td>
</tr>
</tbody>
</table>
Density
Salinity and temperature control density, which in turn, drives the major circulation patterns in the ocean. This lab demonstrates this intrinsic physical property.

Safety: Dry ice is used – use the Personal Protective Equipment (PPE) provided.

Climate Change
Weak acids demonstrate how carbon dioxide in the air affects the organism in the ocean.

Safety: Use the Personal Protective Equipment (PPE) provided.

Waves
From tides to tsunamis, the properties and speeds of different wave types are investigated.

Safety: no special Personal Protective Equipment (PPE) required

Plankton
Although this group is small in size, almost all life in the oceans depends upon planktonic organisms. Various types will be identified by microscope, drawn or counted.

Safety: no special Personal Protective Equipment (PPE) required

Seasonality
The tilt of the earth that causes our seasons also effects the ocean. Simple statistics and color maps clarify how.

Safety: no special Personal Protective Equipment (PPE) required

Nekton/Benthos
A wide variety of species inhabit the ocean; videos and preserved samples show a fraction of them and their behaviors.

Safety: Specimens are in jars of Formalin or alcohol – be careful not to drop them - no special Personal Protective Equipment (PPE) required

10/6-10/10
10/13-10/17
10/20-10/24
10/27-11/31
11/3-11/7
11/10-11/14
11/17-11/21
11/24-11/28

Thanksgiving Break – NO LABS
Lab Finals (Section Dependent)

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

Academic Integrity
For additional information please visit: http://aggiehonor.tamu.edu/

"An Aggie does not lie, cheat, or steal, or tolerate those who do."
Copyright Notice
All materials in this class are copyrighted. These materials include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problems sets. Because of these materials are copyrighted, you do not have the right to copy the handouts, unless permission is expressly granted.

Plagiarism Statement
As commonly defined, plagiarism consists of passing off as one's own ideas, words, writing, etc., which belong to another. On accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academics, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.
Texas A&M University

Core Curriculum

Initial Request for a lower division course included in the current Core Curriculum
to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Soil & Crop Sciences

2. Course prefix and number: SCSC 105

3. Texas Common Course Number: AGRI 1307

4. Complete course title: World Food and Fiber Crops

5. Semester credit hours: 3

6. This request is for consideration in the following Foundational Component Area:
   - ☐ Communication
   - ☐ Mathematics
   - ☑ Life and Physical Sciences
   - ☐ Language, Philosophy and Culture
   - ☐ Creative Arts
   - ☐ American History
   - ☐ Government/Political Science
   - ☐ Social and Behavioral Sciences

7. This course should also be considered for international and Cultural Diversity (ICD) designation:
   - ☐ Yes
   - ☑ No

8. How frequently will the class be offered? Fall and Sprng Semesters

9. Number of class sections per semester: 2 lecture sections and 10 lab sections

10. Number of students per semester: 115

11. Historic annual enrollment for the last three years: 247 204 218

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by: [Name]

    Course Instructor

    Date: 1/29/13

Approvals:

14. Department Head

    Date: 1-29-13

15. College Dean/Designee

    Date: 2-6-13

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Unit 1 of the lecture part of the course examines the nature of famines and malnutrition in the context of the quantitative past and future of human population growth at global and regional levels. Unit 2 describes the physiological processes of photosynthesis and photosynthetic partitioning, the breeding techniques of selection and hybridization, and their relationship to high yield crop production to meet the needs of the growing human population. Unit 3 explains the major techniques, powers, and limitations of genetic engineering to enhance future crop production. Most of the labs are devoted to the Team Science Project comparing the seedling growth of crop species in pure and mixed cultures requiring students to conduct a valid experiment with replications, randomization, data collection, statistical analysis, data expression, interpretation, and presentation. One lab requires the dissection of crop seeds, vegetative growth, and flowers. Finally, other labs have simulation exercises of selection, hybridization, and the protein probe strategy to find a gene.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Each exam requires the calculation and analysis of numerical/graphical data concerning population growth, crop growth, plant breeding, or genetic engineering. The Team Science Project requires the collection, analysis, and interpretation of data collected by each team from growing plants.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Three lecture exams require medium or long answer, including the construction and interpretation of numerical/graphical data. The Team Science Projects concludes in a poster presentation with tables, graphs, and words. Finally, each student must speak during an oral presentation of the poster to the lab instructor and class.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

On exams students use demographic data to calculate the number of births, deaths, infant deaths, percent of infant deaths, and percent of all deaths due to infant deaths. They also calculate and interpret leaf area index, harvest index, means, and standard deviations. No devices are allowed to assist calculations on the exams. Excel is used to calculate and graph means and standard deviations of treatments in the Team Science Project.
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Every lab project, especially the Team Science Project, involve students working in teams of two to four. They receive a team grade for these projects. These projects require cooperation in dissection, simulations, planting, fertilizing, watering, harvesting, bagging, weighing, data entry, calculations, graphing, interpretation and poster presentation. The professor-in-charge meets with each team individually to assist in the interpretation of the science project.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course title and number  SCSC 105
Term               Fall Spring 2013
Meeting times and location  HPCT 103

Course Description and Prerequisites

This course will introduce students to plant relationships, structure, and development. They will also explore environmental factors affecting plants, the technological aspects of agricultural practices, and food production for an increasing population.

Prerequisites: None

Learning Outcomes or Course Objectives

1. Be able to conduct a valid experiment with replications, randomization, data collection, statistical analysis, data expression, and interpretation.
2. Identify, describe, and explain the major forms of malnutrition, especially related to infant mortality. Calculate and explain the demographic factors determining population growth and their relationship to malnutrition.
3. Describe the physiological processes of photosynthesis and photosynthate partitioning, the breeding techniques of selection and hybridization, and their relationship to high yield crop production in the Green Revolution.
4. Describe the major techniques, powers, and limitations of genetic engineering.

Instructor Information

Name            Dr. Harry Cralle
Telephone number 979-845-9634
Email address  heralle@tamu.edu
Office hours    TBA
Office location  HPCT 217B

Textbook and/or Resource Material

None listed.

Grading Policies

(A: 90-100%; B: 80-89%; C: 70-79%; D:60-69%; F: <60%)

Lecture Exam I (short/medium answers with calculations) – points and date TBA
Lecture Exam II (short/medium answers with calculations) – points and date TBA
Lecture Exam III (short/medium answers with calculations) – Final Exam Wed. May 6, 8:00 a.m. points TBA
Team Science Project (plant culture, measurements, statistical calculations, poster
construction and oral presentation of results) = 220 points

6 Team Lab Projects (dissections, problem solving, calculations) = 180 points (30 points/project)

LATE EXAMS AND PROJECTS REQUIRE PRIOR CONSENT OR OFFICIAL UNIVERSITY EXCUSE.

THERE WILL BE NO CURVE.

Attendance Policy

"The University views class attendance as the responsibility of an individual student. Attendance is essential to complete the course successfully. University rules related to excused and unexcused absences are located on-line at http://student-rules.tamu.edu/rule07."

Lecture Outline

I. World Food Supply: famine, malnutrition, and population
II. Foundations of Modern Crop Production
   A. Origin of agriculture as a genetic revolution
   B. The physiological basis of crop yields
      1. photosynthesis: location, light and dark reactions,
         Leaf Area Index and plant populations, leaf orientation
      2. photosynthetic partitioning: source-sink relationships and harvest index
   C. The Green Revolution
      1. traditional agriculture
      2. landrace plants of wheat: origin, agronomic traits, and production environment
      3. Green Revolution varieties: breeding, agronomic traits, and production environment
III. Biotechnology: genetic engineering and tissue culture:
   A. basic methodology
   B. a method of plant breeding

Lab Outline

Jan. 14-17: No labs
Jan. 22-25: Seeds, Vegetative Growth, and Reproduction (Lab Project #1)
Jan. 28-31: Doing Science I: Team Science Project Planting
Feb. 4-7: Plant Breeding I: Introduction (Lab Project #2)
Feb. 11-14: Plant Breeding II: Selection (Lab Project #3)
Feb. 18-21: Plant Breeding III: Hybridization (Lab Project #4)
Feb. 25-28: Doing Science II: Harvesting and Measurements of Height
March 4-7: Doing Science III: Measurements of Weight
March 11-14: Spring Break
March 18-21: Doing Science IV: Data Analysis using Excel
March 25-28: Doing Science V: Statistical Analysis (Lab Project #5)
April 1-4: DNA and The Basis of Genetic Engineering (Lab Project #6)
April 9-11: Poster Preparation and Lab Makeups
April 15-18: Poster Preparation and Lab Makeups
April 22-25: Presentation of Team Science Project

Americans with Disabilities Act (ADA)
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comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

Academic Integrity

"An Aggie does not lie, cheat, or steal, or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

For additional information please visit: http://aggiehonor.tamu.edu