Life and Physical Sciences
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

This request is submitted by (department name): Physics & Astronomy

2. Course prefix and number: ASTR 102

3. Texas Common Course Number:

4. Complete course title: Observational Astronomy

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 Fall, Spring, and Summer semester

9. Number of class sections per semester: 4 classes (1 class in each Summer semester)

10. Number of students per semester: 160

11. Historic annual enrollment for the last three years:

12. 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: [Signature] 01 March 2013

   Course Instructor

   Date

   Approvals: [Signature] 3/4/2013

   Date

14. Department Head

   [Signature] 3/5/13

   Date

15. College Dean/Designee

   [Signature]

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.
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.

The proposed course must contain all elements of the Foundational Component Area. How does the proposed course specifically address the Foundational Component Area definition above?

**ASTRONOMY 102 (1 credit): OBSERVATIONAL ASTRONOMY**
Observational and laboratory course which may be taken in conjunction with ASTR 101 or ASTR 314. Use of techniques and instruments of classical and modern astronomy. Prerequisite: ASTR 101 or ASTR 314, or registration therein.

ASTR 102 is an autonomous laboratory course that teaches students how to understand and apply appropriate technology to the study of the natural sciences. Students obtain hands-on experience by learning and applying astronomical observational techniques on small commercial telescopes at the campus observatory and analyzing data obtained with those telescopes. Full development of scientific methods and thought are shown using direct observations of, e.g. the surface of the Moon (craters, mountains, valleys), phases of Venus and the Moon, and the motion of the moons around Jupiter, and how these early astronomical discoveries culminated in the development of Newtonian gravity and dynamics. A linked discussion of planetary systems around other stars also illustrates the limitations of the standard formation model of the Solar System. Throughout the course mathematical techniques are used to illustrate concepts, derive physical relations, and show the manner in which the need to explain natural phenomena led to the development of higher mathematical tools. For example, the need to have a mathematical framework to explain the movement of planets around the Sun led directly to the invention of calculus by Isaac Newton.

Texas A&M is one of only a few schools that offer such an observational astronomy course and it is extremely popular among our students. When students complete the 102 course, they have the skills and knowledge to be competent amateur astronomers.

For more information, please contact the Undergraduate Astronomy Coordinator Dr. Kim-Vy Tran (vy@physics.tamu.edu) and visit the website astronomy.tamu.edu

**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.

The proposed course is required to contain each element of the Core Objective.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

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

Astronomy 102 is focused on applying the scientific method by acquiring astrophysical observations and analyzing the resulting data to test hypotheses. We engage the students in understanding experimental design and troubleshooting through laboratory exercises that are designed to enhance understanding and comprehension of the physical phenomena observed in the night sky. Students learn to navigate the night sky using a celestial coordinate system to determine when objects rise and set and how to locate objects on a given date and time. Night sky targets include stars, the Moon, and objects from the Messier catalog and New General Catalog; the latter include galaxies, star clusters, planetary nebulae, etc. By observing objects in the night sky, students analyze how the night sky changes and develop a deeper appreciation of the underlying physical concepts.

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

Astronomy 102 is based at our Physics Observatory and students learn general astronomy, coordinate systems, star charts and telescope design in a classroom environment while making observations using sophisticated telescopes in an outdoor environment. In this existing construct, three to four students share a telescope as a lab group and the students assist each other during their laboratory time. In learning to navigate the night sky, students must learn to read star charts and communicate to their peers about how to locate and observe night sky objects. Each student learns how to explain the concepts during one-on-one discussions with their teacher, specifically by showing where objects are in the night sky and how to locate them. The students also keep a lab manual where all of their observations are recorded; the lab manual is examined at the end of the semester and is included in the final course grade.
Texas A&M University
Core Curriculum
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):

ASTR 102 teaches students how to navigate the night sky by learning about the celestial coordinate system (Right Ascension and Declination), reading star charts, and determining when objects rise and set. Several of these steps require manipulation of numerical data, e.g. target coordinates to determine position on a given date and time, and empirical knowledge to use the telescope. Several fundamental physical concepts are taught by observing night sky phenomena. For example, observing the Moon’s surface demonstrates that it must be spherical and has features including mountains, craters, and valleys. Observation of binary stars illustrates how gravity works on large scales and that stars have different temperatures (colors). Identifying galaxies beyond the Milky Way gives a sense of the vast physical and times scales in the Universe.

Student understanding is evaluated using regular quizzes, keeping a semester-long lab manual, and with one-on-one discussion with the teacher to identify objects in the night sky.

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

ASTR 102 is arguably one of the best courses to develop cooperative learning skills for students spanning the range in personality because teamwork is an essential component of active learning in the course. Students learn to work effectively in small groups to take astronomical observations, obtain and analyze data, and interpret their results. The telescopes require at least two students to operate successfully, and students need to discuss which objects they will observe and how to locate the object in the night sky using star charts and celestial coordinates. While the students are evaluated individually, their participation and ability to learn with others is key to their success in ASTR 102.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
ASTR 102: OBSERVATIONAL ASTRONOMY
(FALL 2012)

Meeting:

Observatory Phone Number: (979) 845-0536
Map to Observatory: http://observatory.tamu.edu/directions.html

All sections begin meeting the first week of classes.

Section 501 meets on Monday nights from 7:30 to 10:30 PM, beginning August 27th
Section 502 meets on Tuesday nights from 7:30 to 10:30 PM, beginning August 28th
Section 503 meets on Wednesday nights from 7:30 to 10:30 PM, beginning August 29th
Section 504 meets on Thursday nights from 7:30 to 10:30 PM, beginning August 30th

Students are responsible for their own transportation to and from the observatory. While on the property, drive slowly and be cautious of wildlife as this is also a preservation area. The maximum speed limit is 25 mph. Speed is restricted to 10 mph in the parking area. Failure to obey these speed restrictions will result in a significant decrease in your final point total!

Managing the Gate:

The “white” gate noted on the map will either be opened or closed when you arrive for your first class at the observatory. If it is closed, wait patiently in your vehicle and your instructor will meet you at the gate and lead you to the observatory. If the gate is opened when you arrive, carefully follow the map and drive directly to the observatory.

Once you have been introduced to the area and after the first week of classes, you are responsible for managing the white gate. When you arrive, let yourself in the gate and lock it behind you. This gate must remain locked at all times. Failure to manage the gate properly becomes a burden on the entire class as the class lock will have to be removed. The combination to the class lock is: 0218 Note: this lock is only on the gate during class time.

Fire Danger Notice:

Due to the extended drought, the fire danger is extreme. Absolutely no object that emits a flame i.e.(matches, cigarette lighter) is permitted on any property owned by Ecology Conservation and Range Science or the Department of Physics & Astronomy (Observatory). Likewise, no smoking is allowed on the property, regardless of your physical location. Do not drive your vehicle onto any grass unless an emergency or unavoidable conditions warrant such behavior. This especially includes the area along the unpaved roadway.
Attendance:

You are expected to arrive on time. You will only receive half credit for arriving after a lab assignment has been given to the class. There are no make-ups for students who do not have an official, written excuse as outlined in the student rules. For those with an excused absence, make-ups are given on an as-needed basis and coordinated with your instructor. You must attend the section for which you are enrolled. You will not receive credit for work completed while attending another section.

Quizzes & Exam:

There will be a minimum of five (5) quizzes given during the course. The dates for these quizzes may not be announced in advance. Quiz questions are generated from discussions in class and the readings in the text. You may elect to take an optional exam at the end of the term. If so, your quiz and exam scores will account for 20% (each) of your final grade. If no exam is taken, your quiz grades will account for 40% of your final grade.

Lab Practicals:

You will have two lab Practicals during the course to test your knowledge of the night sky and your telescope pointing skills. Dates for lab Practicals are dependent on the weather and progress of the individual class. Therefore, dates for lab Practicals will be announced by the instructor at least one class night in advance of the practical.

Correspondence:

Throughout the course, any additional information regarding the class will be sent via email to your Neo email account. It is your responsibility to check your email before coming to class each class night. Typically, emails will not be sent after 5:00 PM. If you need assistance with your Neo email, visit the Student Computing Center on campus.

Additional Course Rules:

- Students must have: red filtered flashlight; something with which to write; star charts; and a calculator with common functions such as Sin, Cosine, etc. We will discuss the flashlight in our first class.

- Students must print the star charts, which can be found on the web site. Bring these charts with you to your first class. http://observatory.tamu.edu/courses/observational/

- Do Not Bring Food To The Observatory! Eat dinner or a snack before coming to class. Drinks are okay to bring into the classroom/observing area; however, you must take it with you when you leave. Drinks are not allowed near the computers in the classroom. Failure to obey these simple guidelines will result in a 40 point reduction in your final grade!

Lab Manual:

You must visit the url below to download and print the lab manual. The manual must be printed, punched and placed inside of a simple 3-hole folder. Hard binders are discouraged and your instructor may require that you replace a hard binder with a folder. You will be leaving the manual at the observatory for the duration of the course. You must have the manual with you on your first class day. Instructors grade the work in your lab manual. If you fail to bring a manual, you cannot receive credit for any work completed.

Lab Manual Download: http://observatory.tamu.edu/courses/observational/manuals/

Grading:

(Grading will be on a 100-point scale. There is no curve.)

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* Equipment and Facilities Care: This category cannot increase your final grade, but can significantly reduce your grade. Misuse of any equipment; not driving at appropriate speeds; not putting the equipment away properly; and not obeying the general rules outlined in this syllabus including the Observatory Safety Rules (below), can all result in a decrease in points for the term. Your instructor has sole discretion to remove points from your total for the reasons stated above.
Observatory Safety Rules

The following is a list of safety and related rules that must be followed by all who visit or attend classes at the observatory. The rules are separated into three main categories: Fire and Emergency, Telescope and General Safety. A list of emergency telephone numbers can also be found below for reference. Students are required to sign the Observatory Safety Rules Agreement online through Howdy. If you fail to do this by the end of the drop/add period, your name will be removed from the grade book and you will not receive credit for your work. Further, you will not be allowed at the observatory. Students who do not follow the rules may have their final grade reduced significantly as mentioned in the “Grading” section. If the agreement is not available to sign via Howdy, your instructor will inform you to sign and return the physical copy at the end of this document.

Emergency Telephone Numbers

Emergency Operator (All life-threatening Emergencies) 9-911
Area Maintenance V (Building Problems and Repair) 5-5542
24 hr Radio Room (Elevator & Pest problems, After-hours Maintenance) 5-4311
Environmental Health & Safety Dept. (Chemical spills/problems) 5-2132
After normal work hours call the Radio Room at 5-4311.
Evacuation Coordinator 5-0536
University Police 5-2345
University Hospital 5-1511
College Station Fire Department (Non-Emergency) 764-3700
College Station Police Department (Non-Emergency) 764-3600
Bryan Police Department (Non-Emergency) 361-3680
Bryan Fire Department (Non-Emergency) 361-3888

Fire and Emergency Safety

The "grassy area" mentioned below refers to the intersection of the parking area and eastern fence line. Your instructor will familiarize you with this area. It is important to know the location of the grassy area as it is the meeting place for all persons during any emergency that requires you to exit the buildings. Do not drive away in your vehicle! Remain in the grassy area until you are dismissed by your instructor or emergency personnel.
There are two numbered buildings at the observatory:

1. Building #1238 (0.5 Meter Observatory): The small, double room observatory near the east fence line.

2. Building #1239 (Student Observatory / Classroom): The large building containing the classroom, restrooms and water fountains. The restrooms and water fountains are located in Rm 109.

Four fire extinguishers are located inside the observatory that are accessible to all persons:

1. Inside the classroom against the west wall near the exit door.

2. Inside the main entrance door to the student observatory against the east wall.

3. Second floor of the student observatory between the elevator and stairwell exit.

4. Inside the door leading into the 0.5 meter observatory.

There are Fire Alarm Pull Stations located next to each exit door in both buildings and on the second floor inside the stairwell of the student observatory.

If you are in Building #1238 (0.5 Meter Observatory): All occupants are to proceed through the only marked exit door to the grassy area.

If you are in Building #1239 (Student Observatory / Classroom) First Floor: If in the classroom (Rm 106), exit through either of the marked exit doors and proceed to the grassy area. If in any area other than the classroom and if possible, proceed through the marked exit door in Rm 109. Proceed to the grassy area.

If you are in Building #1239 (Student Observatory / Classroom) Second Floor: All occupants are to proceed down the stairs and exit through the marked exit door in Rm 109 (first floor where the restrooms and water fountains are located). Proceed to the grassy area.

The observatory is at the top of a hill near the Easterwood Airport and is exposed to all weather conditions. Severe weather can develop suddenly, especially during the summer months when prevailing winds are from the south. Straight Line Winds exceeding 80 mph have been recorded during summer thunderstorms and are dangerous conditions. As a result, your instructor may not allow you to leave until the threat has passed, even if class is officially over by the clock! You are required to remain at the observatory until you are dismissed by your instructor.

In the event of an emergency, follow the instructions given to you by your instructor. Above all, remain calm and quiet so that instructions can be heard by all. If you are asked to perform a duty by your instructor, follow their instructions.
Telescope Safety

When picking the telescope up from ground level, be certain to lift with your legs and not your back. Although the 8" telescopes weigh less than 30 pounds, serious back injury can occur from improper lifting.

Before moving the telescope to an object in the night sky, be certain that all persons are clear of the telescope to prevent getting hit.

Warning! Never look directly at the Sun with the naked eye or with a telescope. Permanent and irreversible eye damage may result. Never use a telescope to project an image of the Sun onto any surface. Internal heat build-up can create a fire causing personal injury. Damage to the telescope and/or any accessories attached to it can also occur.

Never use an eyepiece solar filter or a Herschel wedge. Internal heat build-up inside the telescope can cause these devices to crack or break, allowing unfiltered sunlight to pass through to the eye.

Never leave the telescope unsupervised when children are present or with adults who may not be familiar with the correct operating procedures of the telescope.

Never point the telescope at the Sun unless you have the proper solar filter. When using the telescope with the correct solar filter, always cover the finderscope. Although small in aperture, finderscopes have enough light gathering power to cause permanent and irreversible eye damage. In addition, the image projected by the finderscope is hot enough to burn skin or clothing.

The 12' safety ladders in the domed observatories must be set so they cannot roll when a person is climbing. The first step of the ladder releases the wheels to prevent rolling. Hold the ladder up by the hand rails and press down on the first step with your foot and gently lower the ladder to the ground. Hold the hand rails at all times when climbing or standing on the ladders.

General Safety

All persons must wear shoes that completely cover the feet, such as tennis shoes or boots. Sandals or open toe shoes or open heel shoes are prohibited.

The student observing deck is where you will setup a telescope to complete your observational laboratory assignment. The deck is made of wood planks that can become detached and pose a tripping hazard. Likewise, notebooks and other necessary items can be laying on the deck while you are working and can pose a tripping hazard. You are required to have a red filtered flashlight at all times when outdoors at the observatory. Red light allows you to maintain your night vision while working in the dark. Use your light when walking on the deck or between the deck and the classroom building to avoid tripping.
The maximum speed limit on the unpaved section of road leading to the observatory is 25 mph. Speed is restricted to 10 mph in the parking area next to the observatory. Be cautious of automobiles, tractors and utility vehicles that may be moving without headlights. Be cautious of pedestrian traffic, especially near the observatory. Pedestrians can be very difficult to see since the road is narrow and there are trees and tall grass along the road's edge.

All persons should be aware that the property surrounding the Physics Teaching Observatory is open rangeland and prone to poachers (a person who hunts illegally), especially during the fall and winter months. If you witness any person(s) with a rifle or any firearm within the property, contact University Police immediately! If you are at the observatory, let your instructor know immediately and they will be responsible for contacting law enforcement.

During active mosquito months, all persons visiting or taking classes at the observatory must use insect repellent when outside for protection against viruses that can be transmitted by mosquitoes and other biting insects.

Bats are flying mammals indigenous to our region. The bat population living near the observatory have been known to carry rabies. If you find a bat on the ground whether dead or alive, do not touch or come in contact with the animal in any way! Alert the person in charge. Environmental Health and Safety will be contacted and will be responsible for the proper handling of the animal. If a bat flies inside any building, leave the building; prop open an outside door; and stand clear of the door. Bats will typically fly out on their own within 10 or 15 minutes. If the bat cannot get out, contact University Pest Control to remove the animal. Do not attempt to catch or handle the bat! If you do come in contact with a bat, let your instructor know immediately so the animal can be quarantined if possible and tested properly. Wash the area of contact vigorously with soap and water and see your health professional as soon as possible for guidance.
Observatory Safety Rules Agreement  
(ASTR 102 ALL SECTIONS)  

I acknowledge that I have received the course syllabus either from my instructor or by internet download and that my instructor has reviewed the syllabus with me personally or with my class. 

By signing below, I agree to follow all of the Course Requirements and Observatory Safety Rules as established in the course syllabus. This includes following the instructions given to me by my instructor and new rules that may be adopted during the course of the semester. 

In addition, I acknowledge that I have read the information below regarding the Americans with Disabilities Act; the Aggie Honor Code; and syllabus amendment information. 

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 the Department of Student Life, Services for Students with Disabilities, in Room B118 of Cain Hall, 979-845-1637. 

The Aggie Honor Code is "An Aggie does not lie, cheat, or steal or tolerate those who do." For more information, refer to the Honor Council Rules and Procedures on the web at http://www.tamu.edu/aggiehonor/. 

While the information in this syllabus was accurate at the time of writing, it may be necessary to amend information and policies during the course of the semester. Such amendments to this syllabus will be announced via email and by your instructor. 

Print Full Name ________________________________

Signature ________________________________ Date ________________
Texas A&M University

Core Curriculum Cover Sheet

Initial Request for a course to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Plant Pathology & Microbiology

2. Course prefix and number: BESC 201

3. Texas Common Course Number: ESCI 1301

4. Complete course title: Introduction to Bioenvironmental Sciences

5. Semester credit hours: 3

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

☐ Communication  ☐ Creative Arts
☐ Mathematics  ☐ American History
☒ Life and Physical Sciences  ☐ Government/Political Science
☐ Language, Philosophy and Culture  ☐ 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: One

10. Number of students per semester: 120

11. Historic annual enrollment for the last three years: 244 219 165

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. 

13. Submitted by:

Linda Sharp

Course Instructor

Date 2/8/2013

Approvals:

Charles M. Karius

Department Head

Date 2/14/2013

College Dean/Designee

Date

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

Not approved 3-4-13

Approx. 4-1-13

See form instructions for submission/approval process.
March 5, 2013

To: Core Curriculum Council

From: Heather H. Wilkinson, Associate Professor PLPM/BESC Degree Program

Re: Cover Letter for Revisions for the BESC 201 application to remain in the core curriculum as a course within the Life and Physical Sciences Foundational Component Area

In response to your comments at the March 4, 2013 public review of BESC 201 as a core curriculum course within the Foundational Component Area: Life and Physical Sciences I have made the two minor changes you specifically requested, as well as, providing the additional information necessary to make our plans explicitly clear no matter which instructor teaches the course. **We feel this has greatly improved the document for the purposes of establishing standard operating procedures.** For the sake of clarity below are all the changes made relative to the original submission:

- The syllabus was changed to include 14 weeks instead of 15.
- In the FUNCTIONAL COMPONENT AREA - To more explicitly reference our intention to include the scientific method, as well as, to provide a more elaborate description the following was added:
  - "Through interaction with media, readings, lectures and class discussion students review and evaluate data and observable facts related to science-based studies of the environment. A major theme will be to examine environmental issues in the context of these studies, with particular emphasis on the role of the scientific method in the study. Further, students are expected to provide written explanations of how exposure to the data and the conclusions from studies relates to their own worldview."
- In the CRITICAL THINKING objective description - To further elaborate the critical thinking aspects of each of the major assignments (i.e. not just quizzes and tests) the following was added:
  - "Prompts within the journal assignments will be designed to assess how students integrate and synthesize their understanding of data, course concepts, and scientific principles to bolster, modify and/or create their own worldviews. Further, creative thinking will be assessed during evaluation of the group podcast assignment".
- In the COMMUNICATION objective description – To further define the oral, written and visual aspects of the assignments the following new text was added:
  - "This [podcast] assignment requires students to practice oral, written and visual communication skills. Effective group work will require oral negotiation among team members and the podcasts themselves will require effective narration. Students will work together to create written scripts for the narration and a written transcript for the podcast will be submitted with the assignment. The podcasts will be evaluated based on effective use of visual communication to include: graphs, photographs, animation, video clips or simulations as appropriate. Students will be expected incorporate data in their presentations to effectively convey the issues specific to the country."
  - "(supported by data rich specific examples) in the course. Thus, grading will be based on both effective written and visual communication (e.g. graphs, tables, figures) and also evidence of reflection and connection."
o "Student participation in class discussions during face-to-face meetings will constitute oral communication. To deal with issues of class size and introvert/extravert inherent differences these discussions will be staged in a variety of different contexts (e.g. spontaneous responses to questions during lecture, think-pair-share arrangements, small groups with prompts provided prior to class) to provide ample opportunity for students to perform. When topics engender a great deal of discussion there is also the possibility of providing a forum within the eCampus discussion area, which many students find satisfying instead of just dropping the topic due to the end of the lecture period. Participation in class and class attendance are 10% of the grade. An attendance sign-in sheet will be distributed each day of class. Each unexcused absence results in a deduction of 0.5 points up to a total of 5 points associated with attendance. Participation will involve subjective assessment by the instructor of the degree to which students contribute meaningfully to class discussion as well as evidence of active listening."

- In the EMPIRICAL AND QUANTITATIVE SKILLS objective description – To further define the oral, written and visual aspects of the assignments the following new text was added:
  o "In instances where simple calculations are appropriate for a concept these will be included on quizzes and exams."
  o "... Thus grading will be based on both effective communication (see communication) and also evidence of reflection and connection (as defined in the AACU VALUE rubric integrative learning; www.aacu.org/valu/rubrics/pdf/integrativelearning.pdf). It is important to note, students will be prompted to support their journal entries with appropriate reference to data and observable facts (e.g. graphs, figures, specific conclusions from studies, etc) and the degree of effectiveness of this will be part of the journal assessment."

- In the TEAMWORK objective description: There are no changes.
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?

BESC 201: Introduction to Bioenvironmental Sciences surveys environmental science highlighting the roles and effects of biological components, including most significantly humans. A further emphasis is placed on scientific literacy when interpreting all sides of environmental issues.

Through interaction with media, readings, lectures and class discussion students review and evaluate data and observable facts related to science-based studies of the environment. A major theme will be to examine environmental issues in the context of these studies, with particular emphasis on the role of the scientific method in the study. Further, students are expected to provide written explanations of how exposure to the data and the conclusions from studies relates to their own worldview.

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):

Learning Outcomes:
Apply information learned through readings and other media posted within the learning management system
Comprehend the interdisciplinary concepts integral to environmental science
Analyze current environmental issues and evaluate potential solutions
Assess the costs and benefits of conservation vs. remediation or technological solutions

Assessment:
Students will take weekly online quizzes to assess their comprehension of the reading and other media. Further there will 4 unit exams given in class (multiple choice). Prompts within the journal assignments will be designed to assess how students integrate and synthesize their understanding of data, course concepts, and scientific principles to bolster, modify and/or create their own worldviews. Further, creative thinking will be assessed during evaluation of the group podcast assignment.

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

Learning Outcomes:
Relate the features of human populations to different types of environmental degradation
Recognize the impact of globalization on the environment
Recognize the ecological footprints left by different peoples of the Earth
Participate in class discussions and actively listen to student presentations
Texas A&M University

Core Curriculum

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

Work effectively in a group to create a presentation about an assigned country
Recognize the variety of worldviews associated with the environment
Excavate and describe your own worldview and speculate about how and why you formed it

Assessment:
Students will work in groups to create podcast presentations that highlight the demographic and environmental issues of a country. This assignment requires students to practice oral, written and visual communication skills. Effective group work will require oral negotiation among team members and the podcasts themselves will require effective narration. Students will work together to create written scripts for the narration and a written transcript for the podcast will be submitted with the assignment. The podcasts will be evaluated based on effective use of visual communication to include: graphs, photographs, animation, video clips or simulations as appropriate. Students will be expected incorporate data in their presentations to effectively convey the issues specific to the country. Assessment of the podcast assignment includes the quality of the end product (based on a rubric provided, used by both the instructor and members of the class via peer review) and also the quality of individual participation in its creation (based on within group reflection on peer performance).

Students will respond to journaling prompts within the eCampus journal tool. This assessment is designed to encourage students to reflect on the relationship between their worldview and the scientific principles (supported by data rich specific examples) in the course. Thus, grading will be based on both effective written and visual communication (e.g. graphs, tables, figures) and also evidence of reflection and connection.

Student participation in class discussions during face-to-face meetings will constitute oral communication. To deal with issues of class size and introvert/extravert inherent differences these discussions will be staged in a variety of different contexts [e.g. spontaneous responses to questions during lecture, think-pair-share arrangements, small groups with prompts provided prior to class] to provide ample opportunity for students to perform. When topics engender a great deal of discussion there is also the possibility of providing a forum within the eCampus discussion area, which many students find satisfying instead of just dropping the topic due to the end of the lecture period. Participation in class and class attendance are 10% of the grade. An attendance sign-in sheet will be distributed each day of class. Each unexcused absence results in a deduction of 0.5 points up to a total of 5 points associated with attendance. Participation will involve subjective assessment by the instructor of the degree to which students contribute meaningfully to class discussion as well as evidence of active listening.

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

Learning Outcomes:
Apply information learned through readings and other media
Analyze current environmental issues and evaluate potential solutions
Assess the costs and benefits of conservation vs. remediation or technological solutions

Assessment:
Students will take weekly online quizzes and also in class exams to assess their ability to apply information to make informed conclusions. In instances where simple calculations are appropriate for a concept these will be included on quizzes and exams.

Students will respond to journal prompts within the eCampus journal tool. This assessment is designed to encourage students to reflect on the relationship between their worldview and the concepts in the course. Thus grading will be based on both effective communication (see communication) and also evidence of reflection and connection (as defined in the AACU VALUE rubric integrative learning: www.aacu.org/valu/rubrics/pdf/integrativelearning.pdf)
Texas A&M University

Core Curriculum

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

It is important to note, students will be prompted to support their journal entries with appropriate reference to data and observable facts (e.g. graphs, figures, specific conclusions from studies, etc) and the degree of effectiveness of this will be part of the journal assessment.

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

Learning Outcome:
Work effectively in a group to create a presentation about a assigned country

Assessment:
Students will work in groups to create podcast presentations that highlight the demographic and environmental issues of a country. Assessment of this includes the quality of the end product (based on a rubric provided, used by both the instructor and members of the class via peer review) and also the quality of individual participation in its creation (based on within group reflection on peer performance).

The assessment of teamwork will be most evidenced by within group feedback provided to the instructor and to the students.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Syllabus
BESC 201 Introduction to Bioenvironmental Sciences
Spring Semester, 2014

Time: MWF 11 30-12:20
Location: TBA
Instructor: Dr. Libo Shan
Assistant Professor, Plant Molecular Biology
132A Borlaug
979-845-8818
lishan@temu.edu
Office Hours: 9:30 – 11 M&W; or by appointment

Description
Introduction Bioenvironmental Sciences (3cr) provides students with a broad survey of environmental science with an emphasis on scientific literacy, current events, global and international issues, and historic context.

Prerequisites
None

Textbook
Essential Environment: The Science Behind the Stories, Fourth Edition
Author(s): Jay Withgott; Matthew Laposata

Learning Outcomes
- Apply information learned through readings and other media posted within the learning management system.
- Comprehend the interdisciplinary (e.g. agricultural science, biology, chemistry, ecology, economics, geology, history, policy, etc) concepts integral to environmental science.
- Analyze current environmental issues and evaluate potential solutions.
- Relate the features of human populations to different types of environmental degradation.
- Assess the costs/benefits of conservation vs. remediation or technological solutions.
- Recognize the impact of globalization on the environment.
- Recognize the ecological footprints left by different peoples of the Earth.
- Participate in class discussions and actively listen to student presentations.
- Work effectively in a group to create an presentation about an assigned country
- Recognize the variety of worldviews associated with the environment
- Excavate and describe your own worldview and speculate about how and why you formed it.
## Using eCampus

1. Sign in to Blackboard Learn at [http://eCampus.tamu.edu](http://eCampus.tamu.edu) by following the link to NETID Login.
2. Contact your instructor for any technical assistance you may need with this course. Help Desk Central cannot assist in resolving technical issues with Blackboard Learn.
4. A community for all students participating in eCampus is accessible from Blackboard Learn. You will click on Community tab located at the top of the screen. The student community is called eCampus Student Community. This space is for students to discuss their experience and to seek assistance, if needed from other students. The space is not moderated by any instructor. Questions to instructors should not be posted here.

### Reading quiz and Exam Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Reading</th>
<th>Reading Assessment</th>
<th>Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-Jan-14</td>
<td>Chapter 1. Science and Sustainability: An Introduction to Environmental Science</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>20-Jan-14</td>
<td>Chapter 2. Environmental Systems: Chemistry, Energy, and Ecosystems</td>
<td>2</td>
<td>UNIT 1</td>
</tr>
<tr>
<td>27-Jan-14</td>
<td>Chapter 3. Evolution, Biodiversity, and Population Ecology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>3-Feb-14</td>
<td>Chapter 4. Species Interactions and Community Ecology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>10-Feb-14</td>
<td>Chapter 5. Environmental Economics and Environmental Policy</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>17-Feb-14</td>
<td>Chapter 6. Human Population</td>
<td>6</td>
<td>UNIT 2</td>
</tr>
<tr>
<td>24-Feb-14</td>
<td>Chapter 10. Environmental Health and Toxicology</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>3-Mar-14</td>
<td>Chapter 17. Managing Our Waste</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>10-Mar-14</td>
<td>Chapter 18. The Urban Environment: Creating Sustainable Cities</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>17-Mar-14</td>
<td>Chapter 7. Soil, Agriculture, and the Future of Food</td>
<td>10</td>
<td>UNIT 3</td>
</tr>
<tr>
<td>24-Mar-14</td>
<td>Chapter 8. Biodiversity and Conservation Biology</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>31-Mar-14</td>
<td>Chapter 9. Forests, Forest Management, and Protected Areas</td>
<td>12</td>
<td></td>
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<tr>
<td>7-Apr-14</td>
<td>Chapter 13. Atmospheric Science and Air Pollution</td>
<td>13</td>
<td>UNIT 4</td>
</tr>
<tr>
<td>14-Apr-14</td>
<td>Chapter 14. Global Climate Change</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>21-Apr-14</td>
<td>Chapter 15. Nonrenewable Energy Sources, Their Impacts, and Energy Conservation</td>
<td>15</td>
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<tr>
<td>28-Apr-14</td>
<td>Course Wrap-up</td>
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</tr>
</tbody>
</table>

*The reading assessments will be posted each week at noon on Wednesday and be available for 24 hours before they close at noon on Thursday.

** The unit exams will be given the last Friday of each unit.
Grading

There will be **15 online assessments** via eCampus (LMS Blackboard) used to measure mastery of concepts in reading materials. In addition to the assessments, the exams will serve as reviews for materials that will be on the unit exams. The 15 assessments will **count for 30% of the overall grade (2.0 points each)**. The reading assessments will be posted each week at noon on Wednesday and be available for 24 hours before they close at noon on Thursday. There will be 1 hour to complete the quiz once you start it.

There will be **four unit exams, each worth 10% of the course grade**. The exams will be based on material from readings, posted resources, and class discussions. One week prior to the exam a review will be posted to guide your studying. The unit exams will be given the last Friday of each unit. Make-up exams require evidence of an excused absence (http://student-rules.tamu.edu/rule7.htm).

**Attendance and Class Participation** will account for **10% of the grade**. An attendance sign-in sheet is distributed each day of class. Each unexcused absence results in a deduction of 0.5 points up to a total of 5 points associated with attendance total. Participation will involve the subjective assessment by the instructor of degree to which you contribute meaningfully to class discussion as well as evidence of active listening.

**Excavating your worldview (Journal reflections)**: At the beginning of each unit you will receive prompts that related to the upcoming course concepts and their relationship to a worldview. Throughout the unit as you learn you should think about these relationships and respond to the prompts. Each journaling prompt will end at the end of the unit. Journal entries for each unit will count for 2.5 points each = 4 X 2.5 = 10 points total.

**Group Presentations**: You will work in groups of 6 to create a 4-5 minute podcast presentation that highlights the demographics and environmental issues of an assigned country. The presentations will be assessed based on a rubric provided via eCampus, to include some portion of the overall presentation grade based on peer-review by other students in the course and some portion of the individual student grade based on within group peer evaluation of your contribution.

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Assessments</td>
<td>30%</td>
</tr>
<tr>
<td>Unit Exam I</td>
<td>10%</td>
</tr>
<tr>
<td>Unit Exam II</td>
<td>10%</td>
</tr>
<tr>
<td>Unit Exam III</td>
<td>10%</td>
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<tr>
<td>Unit Exam IV</td>
<td>10%</td>
</tr>
<tr>
<td>Attendance and Participation</td>
<td>10%</td>
</tr>
<tr>
<td>Journal Reflections</td>
<td>10%</td>
</tr>
<tr>
<td>Group Presentation</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Americans with Disabilities Act (ADA) Policy Statement**

(ADA) is a federal antidiscrimination 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 Department of Student Life, Services for Students with Disabilities in Room B118 of Cain Hall or call 845-1637.

**Academic Integrity Statement**

Aggie Honor Code: "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 excuse any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit:

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): Department of Biology

2. Course prefix and number: BIOL 101

3. Texas Common Course Number: 1311, 1111, 1411

4. Complete course title: Eotany

5. Semester credit hours: 4

6. This request is for consideration in the following Foundational Component Area:
   - [ ] Communication
   - [ ] Mathematics
   - [x] 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
   - [x] No

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

9. Number of class sections per semester: 8

10. Number of students per semester: 192

11. Historic annual enrollment for the last three years: '09-10 = 136 '10-11 = 110 '11-12 = 121

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. 

13. Submitted by:
   Ira F. Greenbaum
   Course Instructor
   Director, BIOL Lower Division

14. Approvals:
   [signature]
   Department Head

15. College Dean/Designee
   [signature]

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

not a-prov. App. See form instructions for submission/approval process.

3-4-13 4-1-13
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?

Biology 101 is an introductory botany course that covers the anatomy, development, physiology, reproduction, genetics, evolution, and diversity of algae and non-vascular and vascular plants. The development of agriculture and its effects on human society are explored, as well as human manipulation of plants. Weekly laboratory exercises focus on using the scientific method to reinforce and further explore lecture topics.

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 scientific method is the basis of both lecture and lab. Lectures present knowledge obtained from historical and current investigations and encourage students to consider ways in which this knowledge can be applied or furthered. Lecture exams assess students' ability to analyze and think critically about information presented throughout the course. Laboratory exercises involve designing and performing experiments to test hypotheses and interpreting the data gathered. Detailed observation and comparison of organisms from single-celled algae to flowering plants, along with experiments with transgenic plants, contribute to an understanding of evolution and provide a framework for the discussion of emergent research in plant systematics and genetics. Lab assessments include lab reports, weekly quizzes, and a short research topic paper which is presented to the class.

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

Lab reports and quizzes require written and graphic interpretation of experimental results via discussion, graphs, tables, charts, and drawings. Laboratory sessions include question and answer sessions to reinforce learning. The final lab project involves writing a presentation, delivering it in front of the lab section, and facilitating discussion.

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

Lab exercises covering cell theory and division, plant development, heredity, enzymes, photosynthesis, respiration, protein synthesis, and transgenic plants involve the generation, analysis, and interpretation of exercise-specific data. Results are summarized in writing and/or tabular or graphic form for lab reports and quizzes. The plant diversity labs allow observation and analysis of variation in anatomy, physiology, and reproduction. Lab quizzes over the diverse labs emphasize recognition and analysis of features. Lectures and lecture exams invite the students to consider how research conclusions could be used to make decisions about land use, nutrition, transgenic plant development, etc.
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):

The majority of the lab exercises require the students to work in groups to set up, run, and collect data on the experiments. Different groups or members of each group perform separate components of the lab exercise; the groups or group-members then interact to produce a set of group-compiled results. Each student subsequently uses the group-compiled results as the basis for his/her written lab assignment (in-class, homework or lab report). Teamwork is assessed by direct observation by the lab instructor and the assignment of appropriate participation points. During the interactive lab summaries students have the ability to consider different interpretations of the data and how these might yield different points of view.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
BIOLOGY 101 - BOTANY
GENERAL INFORMATION - Fall 2012

COURSE DESCRIPTION (4 credits): The origin of agriculture and its profound effect on the development of human society are integrated with classical information on plant anatomy, physiology and evolution together with contemporary information on gene structure, function, cloning and the ways in which transgenic plants are created and their importance in feeding the burgeoning world population. The course includes laboratory exercises that reinforce the lecture topics and a CD is available that contains the course material in PDF format.

COURSE OBJECTIVES: Students are expected to attend both lecture and lab where they will be introduced to the study of plant biology. Using plant models, students study the scientific method, the chemical basis of life, cell structure and biology, and the principles of genetics and evolution. Upon completion of the course, students will be able to recognize and classify the major plant groups. In addition they will be able to describe and discuss cell structure and function and the physiological processes of photosynthesis and respiration. The successful student will be able to discuss the relationships of the fundamental biochemical events of DNA replication, transcription and translation to cell division and gene expression. Students will be able to isolate DNA, setup PCR reactions and interpret gel electrophoresis results. Finally, they will be able to discuss the relevance of plants and scientific investigation to human society.

LECTURE- MWF 9:10-10 a.m., BSBE 115. A synopsis of lecture notes and overhead material is located at http://elearning.tamu.edu

Exam review sessions - 7:30 to 9:00 p.m.: Thursday Sept 20; Tuesday Oct 16; Thursday Nov 8 (all in BSBE 115). The review for the Final Exam (December 7) will be in the normal class time and place.


LABORATORY- All laboratory sections meet in Heldenfels 305. There are no makeup labs. If you miss lab for a university approved reason, you must notify your instructor within two class days and provide documentation within one week to be considered for a makeup assignment. See http://student-rules.tamu.edu section 7 for more information. Note: The Texas A&M University Explanatory Statement of Absence Form is NOT an acceptable excuse for this course.

LECTURE - Please refer to the class notes at http://elearning.tamu.edu for more information. If you miss an exam for a university approved reason you must contact Dr. Hall within 2 working days of the absence and show written evidence within 1 week to substantiate the absence was for an accepted reason. See http://student-rules.tamu.edu/section 7. The Lower Division Biology Program DOES NOT accept the Texas A&M University Explanatory Statement of Absence Form as an excused absence. In order to make up an exam, you must obtain a signed makeup authorization from Dr. Hall and bring the form to Held 315. It is your responsibility to notify Dr. Hall of your absence, provide verification, and insure your name is on the list for the make-up exam. Make-up exams typically consist of essay and short answer questions and will NOT be scheduled without instructor permission.

All make-up exams will be in Heldenfels Hall, room 200 from 5:30-6:30 p.m. Make-up for Exam 1 will be on Oct. 4th, makeup for Exam 2 will be Nov. 1, and makeup for Exam 3 will be Nov. 29. It is your responsibility to notify your instructor of your absence and to insure your name is on the sign-up list for the appropriate make-up exam. Make-up exams typically consist of essay and short answer questions and they will NOT be rescheduled unless there is proof of authorized absence.

Determination of your course grade will be as follows:

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 lecture examinations, 100 points each</td>
<td>Lab Quizzes/writeups, 12 at 10 points each</td>
</tr>
<tr>
<td>1 final examination (comprehensive)</td>
<td>Two laboratory reports at 15 points each</td>
</tr>
<tr>
<td>Sub Total</td>
<td>Lab participation points</td>
</tr>
<tr>
<td>430</td>
<td>120</td>
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<tr>
<td></td>
<td>30</td>
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<td></td>
<td>20</td>
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<tr>
<td></td>
<td>Sub Total</td>
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<tr>
<td></td>
<td>170</td>
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</tbody>
</table>
Note: Of the total possible points (600), 170 will be earned in the Laboratory.
To determine your grade: Add points scored for Exams I through IV; add total points for lab activities. To this total add the total PopQuizz bonus points. Divide this total by 6 to get a % score. Normally, 90-100% = A; 80-89% = B;
70-79% = C and 60-69% = D.

Bonus point opportunities - Pop Quizzes will be held in class without prior notice! The instructor has no obligation to provide any other means for announcement of these quizzes. There will be NO opportunities to make-up these quizzes as they are totally BONUS points.

Computer access information
Activate your Net ID and password at http://gateway.tamu.edu/ then use these codes to check the grade information posted to http://elearning.tamu.edu. You can also use these codes to access the HOWDY portal at https://howdy.tamu.edu.

Grade Checks & Exam Challenges
Please note that grade checks and exam challenges can only be made by computer application. Submit requests for grade checks via the Lower Division Biology Homepage at: http://www.bio.tamu.edu/lid. You will be notified by email when a grade check is ready for pickup. Come to 315 Heldenfels and show your I.D. to pickup a grade check. Exam challenges are submitted via an Exam Challenge Form at: http://www.bio.tamu.edu/lid. All exam challenge forms will be forwarded to Dr. Hall for review.

Re-grading: Is at the discretion of the lab instructor. Any re-grade will be for the entire exam or assignment, so the score may go up, go down, or remain unchanged. Requests for re-grading must be initiated within two weeks of the assignment being returned to the student and must be completed before the last official day of classes.

Academic Integrity: – “An Aggie does not lie, cheat or steal or tolerate those who do”. The Honors Council provides a means to report and appeal allegations of academic dishonesty. Please see the Rules and Procedures at http://www.tamu.edu/aggiehonor. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

Academic misconduct involves any of the following offenses: cheating, fabrication, falsification, multiple/duplicate submissions, plagiarism and complicity in these offenses. Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of the student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, is sufficient grounds to initiate an academic dishonesty case. See http://aggiehonor.tamu.edu/Descriptions/.

Copyright: The handouts used in this course are copyrighted. "Handouts" are all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, in-class materials, class notes on the web, review sheets, problem sets and copy packets. You do not have the right to copy them unless you are expressly granted permission. 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 under the section "Scholastic Dishonesty".

Statement on Disabilities: The Americans with Disabilities Act 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 for their disabilities. If you believe you have a disability requiring accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall, room B118 or call 845-1637 (website http://disability.tamu.edu).
<table>
<thead>
<tr>
<th>Lecture Schedule and Subject</th>
<th>Reading Assignment</th>
<th>Lab Manual Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Botany 101 – Lecture and Lab Schedule – Fall 2012</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>BOTTN 101 (3-3)</strong> MWF 9:10-10 a.m., BSBE 115</td>
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<tr>
<td><strong>Instructor:</strong> Dr. Tim Hall <a href="mailto:tim@idmb.tamu.edu">tim@idmb.tamu.edu</a></td>
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<tr>
<td><strong>Office Location:</strong> BSBW 407</td>
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<tr>
<td><strong>Office Hours:</strong> W 1:15 am; F 2:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Office Phone:</strong> 845-7728</td>
<td></td>
<td></td>
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<tr>
<td><strong>Segment I - Plant basics</strong></td>
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<tr>
<td><strong>Aug 27</strong> M Seeds - Germination</td>
<td>Ch. 6 (87-88); CD</td>
<td>Ex 1. The Cell Theory</td>
</tr>
<tr>
<td><strong>Aug 29</strong> W Plant Cell components</td>
<td>Ch. 2 (16-23); CD</td>
<td>Seed germination setup</td>
</tr>
<tr>
<td><strong>Aug 31</strong> F Plant Tissues</td>
<td>Ch. 3 (28-32); CD</td>
<td>Ex 3. Seedling Development</td>
</tr>
<tr>
<td><strong>Sept 3</strong> M Stems, 1 cavae</td>
<td>Ch. 3 (33-35) and Ch. 4 (49-50)</td>
<td></td>
</tr>
<tr>
<td><strong>Sept 5</strong> W Roots Soils and Water</td>
<td>Ch. 3 (34-35) and Ch. 4 (49-50)</td>
<td></td>
</tr>
<tr>
<td><strong>Sept 7</strong> F Angiogenesis early sites - domesticated crops</td>
<td>Ch. 11 (173-180) CD</td>
<td>Ex 5. Enzymes</td>
</tr>
<tr>
<td><strong>Sept 10</strong> M Angiosperm life cycle</td>
<td>Ch. 5-6 (69-98); CD</td>
<td></td>
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<tr>
<td><strong>Sept 12</strong> W Carbohydrates Lipoys, amino acids-Proteins</td>
<td>Ch. 1 (8-12); CD</td>
<td></td>
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<tr>
<td><strong>Sept 14</strong> F Photosynthesis Light (energy) reactions</td>
<td>Ch. 4 (56-61); CD</td>
<td></td>
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<tr>
<td><strong>Sept 17</strong> M Photosynthesis Dark (chemical) reactions</td>
<td>Ch. 4 (67); CD</td>
<td></td>
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<tr>
<td><strong>Sept 19</strong> W Respiration</td>
<td>Ch. 2 (24-27); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Sept 20</strong> R Review session: 7:30-9:00 p.m.</td>
<td>Germination paper due</td>
<td></td>
</tr>
<tr>
<td><strong>Sept 21</strong> F Cell cycle, cell division - Mitosis</td>
<td>Ch. 2 (24-27); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Sept 24</strong> M ***EXAM I *** (to Respiration)</td>
<td>Ex 7. Cellular Respiration</td>
<td></td>
</tr>
<tr>
<td><strong>Sept 26</strong> W Cell cycle, cell division - Meiosis</td>
<td>Ch. 7 (99-112); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Sept 28</strong> F Genetics - Mendel - DNA replication</td>
<td>Ch. 7 (99-112); CD</td>
<td></td>
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<tr>
<td><strong>Oct 1</strong> M Nucleic Acids-DNA replication</td>
<td>CD; Ch. 7 (12-14)</td>
<td></td>
</tr>
<tr>
<td><strong>Oct 3</strong> W Gene Structure-transcription-translation</td>
<td>See CD; Ch. 7.2 (112-115)</td>
<td></td>
</tr>
<tr>
<td><strong>Oct 5</strong> F McClintock-transposons-epigenetics</td>
<td>Ch. 12 (192-194); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Segment II - Plant diversity</strong></td>
<td></td>
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<tr>
<td><strong>Oct 8</strong> M Taxonomy; Plant systematics &amp; evolution</td>
<td>Ch. 8 (118-133) CD</td>
<td></td>
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<tr>
<td><strong>Oct 10</strong> W Algae</td>
<td>Ch. 22 (382-398)</td>
<td></td>
</tr>
<tr>
<td><strong>Oct 12</strong> F Bryophytes</td>
<td>Ch. 13 (134-142); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Oct 15</strong> M Ferns; fern allies (seedless vasc plants)</td>
<td>Ch. 9 (142-144); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Oct 16</strong> T Review session - 7:30 to 9:00 p.m.</td>
<td>Ex 8. Non-seed bearing plants</td>
<td></td>
</tr>
<tr>
<td><strong>Oct 17</strong> W Gymnosperms</td>
<td>Ch. 9 (144-149); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Oct 19</strong> F <em><strong>EXAM II</strong></em> (to Ferns - seedless vasc plants)</td>
<td></td>
<td></td>
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<tr>
<td><strong>Oct 22</strong> M Good fungi - Bad fungi</td>
<td>Ch. 23-25 (399-462); CD</td>
<td></td>
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<tr>
<td><strong>Oct 24</strong> W Grasses</td>
<td>Ch. 12 (183-186)</td>
<td></td>
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<tr>
<td><strong>Oct 26</strong> F Legumes and starchy staples</td>
<td>Ch. 13 (205-217); Ch. 14 (218-232)</td>
<td></td>
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<tr>
<td><strong>Oct 29</strong> M Plant nutrition</td>
<td>See CD; Ch. 15 (235-248)</td>
<td></td>
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<tr>
<td><strong>Oct 31</strong> W Plant Growth and Development</td>
<td>See CD; Ch. 15 (246-247)</td>
<td></td>
</tr>
<tr>
<td><strong>Nov 2</strong> F Ecology, Nutrient cycles</td>
<td>Ch. 26 (465-490)</td>
<td></td>
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<tr>
<td><strong>Segment III - Biotechnology</strong></td>
<td></td>
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<tr>
<td><strong>Nov 5</strong> M Gene Cloning and Biotechnology</td>
<td>See CD</td>
<td></td>
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<tr>
<td><strong>Nov 7</strong> W Gene synthesis</td>
<td>See CD</td>
<td></td>
</tr>
<tr>
<td><strong>Nov 8</strong> R Review session - 7:30 to 9:00 p.m.</td>
<td>See CD; Ch. 15 (249-250)</td>
<td></td>
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<tr>
<td><strong>Nov 9</strong> F Genetic Engineering of Plants</td>
<td></td>
<td></td>
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<tr>
<td><strong>Nov 12</strong> M <em><strong>EXAM III</strong></em> (to Gene synthesis)</td>
<td>See CD; Ch. 15 (250-260)</td>
<td></td>
</tr>
<tr>
<td><strong>Nov 14</strong> W Transgenic Plants: Analysis</td>
<td>Ch. 7 (115); CD</td>
<td></td>
</tr>
<tr>
<td><strong>Nov 16</strong> F Gene silencing - RNAi</td>
<td>Ex 11. Protein Synthesis</td>
<td></td>
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<tr>
<td><strong>Nov 19</strong> M Feeding a Hungry World</td>
<td>Ch.12 (195-197); Ch. 15 (246-260);</td>
<td></td>
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<tr>
<td><strong>Nov 21</strong> W Thanksgiving Holiday</td>
<td>THANKSGIVING BREAK</td>
<td></td>
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<tr>
<td><strong>Nov 23</strong> F Thanksgiving Holiday</td>
<td></td>
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<tr>
<td><strong>Nov 26</strong> M Biomes</td>
<td>Ch. 6 (478-488)</td>
<td></td>
</tr>
<tr>
<td><strong>Nov 28</strong> W Medicinal Plants</td>
<td>Ch. 19 (321-336)</td>
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<tr>
<td><strong>Nov 30</strong> F Psychoactive Plants</td>
<td>Ch. 20 (341-359)</td>
<td></td>
</tr>
<tr>
<td><strong>Dec 3</strong> M Review in lecture room</td>
<td>Ex 13. Campus Tour and Virtual Field Trip</td>
<td></td>
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<tr>
<td><strong>Dec 5</strong> W Reading Day</td>
<td>Dead Days</td>
<td></td>
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<tr>
<td><strong>Dec 7</strong> F <em><strong>FINAL EXAM</strong></em> 10 a.m.-12 p.m. FRIDAY</td>
<td>Exams</td>
<td></td>
</tr>
<tr>
<td><strong>Dec 9</strong> M Review in lecture room</td>
<td>Finals</td>
<td></td>
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</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): Department of Biology

2. Course prefix and number: BIOL 107

3. Texas Common Course Number: 1313, 1113, 1413

4. Complete course title: Zoology

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? every fall and spring semester

9. Number of class sections per semester: 8 (fall), 6 (spring)

10. Number of students per semester: 192 (fall), 168 spring

11. Historic annual enrollment for the last three years: '09-10 = 292, '10-11 = 267, '11-12 = 244

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:

IRA F. GREENBAUM

Course Instructor Director Biol Lower Division

13. Date: 2/2 January 2013

Approvals:

14. Department Head

Date: 2/15/13

15. College Dean/Designee

Date: 2/15/13

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

3-4-13

not appr. A.M. See form instructions for submission/approval process.

4-1-13
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?

**Biology 107** is a survey of animal life emphasizing cell organization, genetics, evolution, diversity of invertebrates/vertebrates, anatomy/physiology, the interaction of animals with their environment and how these impact the human experience. Course includes a weekly laboratory component that implements use of the scientific method to reinforce and provide supplemental information related to lecture topics.

**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 scientific method is the fundamental basis of both zoology lecture and lab. Lectures expose students to historical scientific experiments allowing them to hypothesize possible outcomes, reinterpreted results, and explore alternative methodologies. Lecture exams consist of a variety of questions to assess students’ ability for critical thinking, analysis, application, and synthesis of course information. The zoology laboratory component provides a hands-on, active learning approach with scientific method based exercises that support students developing their own hypotheses, and independently generating, analyzing, and interpreting data. Experimental conclusions are critiqued, evaluated and summarized in formal written lab reports, homework assignments, quizzes and laboratory practical exams.

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

Students interpret laboratory experimental results in conventional written lab reports and homework assignments implementing graphs, tables, figures, and text. Lab practical stations mimic visual representations of experimental setups requiring students to convey the purpose, main idea, or hypothesis of the exercise. Microscopic slide images, specimen dissections, and biological model/process observations are recorded, diagrammed, and/or illustrated weekly in a laboratory illustration notebook. Lab introductions and conclusions involve instructor/student interaction with examination and summarization of concepts through the medium of rapid fire questions.

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

All laboratory exercises involve the generation and/or manipulation and subsequent analysis of numerical data. These data are presented and summarized in tabular and/or graphic form for homework, lab reports, quizzes, and practical exams. Specific lecture topics, specifically genetics and evolution, also require students to manipulate and interpret numerical data. Students’ attitude in these practices are evaluated via computational problems on lecture exams.

Appr. 4-1-13
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):

The majority of laboratory exercises require students to work in groups (typically of four students). Members of each group perform separate components of the lab exercise; the group members then interact to produce a set of group-compiled results. Each student subsequently uses the group-compiled results as the basis for his/her written lab assignment (in-class, homework or lab report). Teamwork is assessed by direct observation by the lab instructor and the assignment of appropriate participation points. During interactive lab summaries and lecture discussions of specific experiments, students have the opportunity to consider different explanations of data and how these might yield different points of view. During lecture, students have the opportunity to interact with classmates to solve problems presented via a classroom interactive media mechanism. Students may discuss the problem, assist others with understanding the concept, and then independently infer and submit their answers electronically.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Zoology

SPRING 2013 LECTURE SYLLABUS-BIOLOGY 107 (ZOOLOGY)

Professor: Dr. Leslie Kels Winemiller  e-mail: lesliew@mail.bio.tamu.edu
Office: 320 Heldenfels  phone: 979-862-7484
Office Hours: Tuesdays and Thursdays (9:30-10:30 am; 2:30-3:30 pm) or by appointment

COURSE DESCRIPTION: Biology 107 (Zoology) surveys animal life with respect to cell organization, genetics, evolution, diversity, anatomy/physiology, and interaction of animals with their environment.

LEARNING OUTCOMES: Zoology is the scientific study of animals. The main objective of this course is to introduce students to the panorama of animal life by exploring the following topics:

1. Pervasive themes link even the most diverse animals.
2. An animal's structure and activity is determined by an array of cells interacting with one another and the environment.
3. Animal growth, repair, development, and reproduction are all dependent on cell division processes.
4. Animals inherit a structural and functional organization from their ancestors in the form of genes, the fundamental units of inheritance.
5. Animal diversity is dependent on genetic changes occurring within populations, evolution, which over long periods of time can lead to the formation of new species.
6. Animal diversity, as a result of evolutionary processes, is organized into a wide range of taxonomic phyla revealing a myriad of anatomical, physiological, and ecological attributes.

COURSE MATERIALS:
   ISBN: 0-07-765986-4
2. Top Hat Monocle Subscription ($20.00) - purchase at http://www.tophatmonocle.com; to be used in conjunction with a cell phone, smart phone, laptop computer, or ipod touch.
3. Refer to lab syllabus for required laboratory materials.

ATTENDANCE POLICY: Regular attendance is expected and strongly encouraged for success in the course. Attendance will be recorded using the Top Hat Monocle online system in conjunction with a cell phone, smart phone, laptop computer, or ipod touch. Students with 4 or less absences may qualify for the next higher letter grade if their course average is borderline.

The Lower Division Instruction Program does not accept the TAMU Explanatory Statement of Absence Form as an adequate verification for an absence. Students who miss class and want to make up missed assignments must provide verification for the reason of absence (see Student Rules 7, http://student-rules.tamu.edu/).

Prior notification of absence is expected whenever possible (Student Rule 7.3). For an absence due to illness or injury, each student must notify the instructor within two working days of the absence. Additionally, the student must provide, within one week, written and signed evidence of consultation with a medical professional confirming that the injury or illness was serious enough to justify the absence. Submitted evidence will be verified prior to approval of any makeup.
**LECTURE EXAMS:** Lecture grades will be determined from three 100-point lecture exams and one 150-point final exam. Each 100-pt lecture exam consists of 45 multiple-choice. The final exam is cumulative and consists of 65 multiple-choice questions. Exams cover both lecture information and textbook assignments. For each exam, students are required to bring a #2 pencil and your TAMU student ID card. Only these items along with small purses (closed and fastened on the floor) are allowed at a desk. Cell phones, pagers, calculators, notebooks, backpacks, etc. are not allowed in the seating area. **Scantrons will be provided for each exam.** Students will not be admitted late to an exam after the first person has finished and left the classroom.

**EXAM SCHEDULE**

<table>
<thead>
<tr>
<th>EXAM</th>
<th>Date</th>
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<tbody>
<tr>
<td>I (100 pts.)</td>
<td>Tuesday, February 5</td>
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<tr>
<td>II (100 pts.)</td>
<td>Tuesday, March 5</td>
</tr>
<tr>
<td>III (100 pts.)</td>
<td>Tuesday, April 9</td>
</tr>
<tr>
<td>FINAL (150 pts.)</td>
<td>Monday, May 6, 1-3 PM</td>
</tr>
</tbody>
</table>

**ZIPs:** Zoology Interactive Points (ZIPs) are **BONUS** point opportunities (short quizzes) offered to students during class using the Top Hat Monocle online system in conjunction with a cell phone, smart phone, ipod touch, or laptop computer. Bonus points are added to each student's cumulative point total at the end of the semester (before averaging). ZIP sessions are unannounced and can only be completed by students who are present in class. **There are NO makeup opportunities for ZIPS.**

**EXAM CHALLENGE:** After the exam, the key will be posted at [http://elearning.tamu.edu](http://elearning.tamu.edu). If students think there is an error on the key, they may state your objections through a **challenge.** Challenges are submitted to the instructor via e-mail [lesliew@mail.bio.tamu.edu](mailto:lesliew@mail.bio.tamu.edu) and should include test form, question number, and referenced evidence to support your challenge. If a student's written comments support the challenge, then the key will be revised. Note that this challenge period only lasts 24 hours from the time the exam key is posted. Final exams will not be returned or posted, and have no challenge period.

**MAKEUP EXAMS:** Will be given only in the event of an authorized university approved absence (see Attendance Policy) Upon approval of an excuse, a student must obtain a **signed authorization form** from the instructor and bring it to Heldenfels 315 to register for the makeup exam. **Makeup exams will consist of essay and short answer type questions.**

**MAKEUP EXAM SCHEDULE**

<table>
<thead>
<tr>
<th>EXAM</th>
<th>Date</th>
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<tbody>
<tr>
<td>I</td>
<td>Thursday, February 21, 5:30-6:30 PM, Held 200</td>
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<tr>
<td>II</td>
<td>Thursday, March 28, 5:30-6:30 PM, Held 200</td>
</tr>
<tr>
<td>III</td>
<td>Thursday, April 25, 5:30-6:30 PM, Held 200</td>
</tr>
</tbody>
</table>

**COURSE WEBSITES:** Syllabi and course materials can be located at [http://elearning.tamu.edu](http://elearning.tamu.edu). The Introductory Biology Homepage at [http://www.bio.tamu.edu/di](http://www.bio.tamu.edu/di) contains general course and contact information. The textbook website is located at [http://www.mhhe.com/maderbiology11](http://www.mhhe.com/maderbiology11).
**COURSE GRADE:**

Lecture composes **70%** of the final course grade, and **lab** composes **30%** of the final grade. Lecture grade is determined by 3 regular exams (100 pts. each = **300 pts**); bonus points; 1 final exam (**150 pts**).

\[
\text{Lecture Grade} \times 0.7 + \text{Laboratory Grade} \times 0.3 = \text{Final Course Grade}
\]

\[
3 \text{ Regular Exams} + \text{Final Exam} + \text{Bonus Points} = 450 \times 100 = \text{Lecture Grade}
\]

\[
\text{Total Lab Points (Exams, Homework, Quizzes, Lab Report, Lab Notebook)} = 500 \times 100 = \text{Lab Grade}
\]

**COURSE SCHEDULE**

<table>
<thead>
<tr>
<th>TOPIC</th>
<th><strong>Biology 107: 11th edition</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>Ch. 1; 1-19</td>
</tr>
<tr>
<td>A View of Life</td>
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<tr>
<td><strong>CELLS &amp; INHERITANCE</strong></td>
<td>Ch. 4; 60-84</td>
</tr>
<tr>
<td>Cell Structure and Function</td>
<td>Ch. 5; 85-103</td>
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<tr>
<td>Membrane Structure and Function</td>
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<tr>
<td>The Cell Cycle and Cellular Reproduction</td>
<td>Ch. 9; 153-170</td>
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<tr>
<td>Meiosis and Sexual Reproduction</td>
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<tr>
<td>Mendelian Patterns of Inheritance</td>
<td>Ch. 11; 192-213; Ch. 32; 619</td>
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<tr>
<td><strong>EVOLUTION</strong></td>
<td>Ch. 15; 271-288</td>
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<tr>
<td>Darwin and Evolution</td>
<td>Ch. 16; 289-305</td>
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<tr>
<td>How Populations Evolve</td>
<td>Ch. 17; 306-326</td>
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<tr>
<td>Speciation and Macroevolution</td>
<td>Ch. 19; 347-361</td>
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<tr>
<td>Systematics and Phylogeny</td>
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<tr>
<td><strong>ANIMALIA/FORM &amp; FUNCTION</strong></td>
<td>Ch. 28; 519-548; 606-607; 664-665; 666-667; 681-682; 694; 720; 736-737; 773</td>
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<tr>
<td>Invertebrate Evolution</td>
<td>Ch. 29; 549-569; 695-696; 774</td>
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<tr>
<td>Vertebrate Evolution</td>
<td>pp. 597, 608-609, 666, 658, 756-757; 681-683, 681-684</td>
</tr>
<tr>
<td>The Fishes Form &amp; Function</td>
<td>pp. 597, 608-609, 669-670, 681</td>
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<tr>
<td>Amphibians Form &amp; Function</td>
<td>pp. 597, 608-609, 670, 757, 681-684</td>
</tr>
<tr>
<td>Bird Form &amp; Function</td>
<td>pp. 597, 608-609, 670, 757, 681-684</td>
</tr>
<tr>
<td>Mammal form &amp; Function</td>
<td></td>
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</tbody>
</table>
GENERAL INFORMATION:

**Lower Division Biology Instruction Office:** Information is available online at [http://www.bio.tamu.edu/ldi](http://www.bio.tamu.edu/ldi) or in Heldenfels 315 (Monday - Friday, 8 am - 5 pm, phone 845-4651, e-mail introbio@mail.bio.tamu.edu).

**Grade Checks:** Submit grade check requests at [http://www.bio.tamu.edu/ldi](http://www.bio.tamu.edu/ldi). Students will be notified by e-mail when the results are ready and must bring a student ID to Heldenfels 315 to pick up the grade check.

**Grade Release:** Family Educational Rights and Privacy Act of 1974 (FERPA) prohibits faculty or staff from posting grades by phone or e-mail. Grades will be online via Vista/Blackboard. To access this site: Logon to [http://elearning.tamu.edu](http://elearning.tamu.edu), select TAMU LOGON, logon with NetID and password, select Biology 107.

**Q-Drop:** Tuesday, April 2 (5:00 pm) is the deadline for dropping a course with no penalty (Q grade). If students have any question as to whether or not to Q-drop, they should talk to their instructor before this date. After this date, students will be assigned a letter grade or must negotiate a W (withdrawal) or NG (no grade) through your academic dean (see Student Rule 10.3).

**Academic Integrity:** "An Aggie does not lie, cheat, steal, or tolerate those that 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 rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. Academic misconduct involves any of the following offenses: cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity in any of these offenses. All incidents of academic dishonesty will be referred to the Biology Lower Division Program, are subject to academic penalties, and will be reported to the Texas A&M Honors System Office at [http://www.tamu.edu/aggiehonor](http://www.tamu.edu/aggiehonor).

**Disability Statement:** 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 for their disabilities. Students who have a disability requiring an accommodation should contact the Disability Services in Cain Hall, Room B118, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu).

**Copyright Statement:** The handouts used in this course are copyrighted. "Handouts" are all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, power point slides, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, students do not have the right to copy the handouts, unless the instructor expressly grants permission.

**Copyright 2013 (Leslie K. Winemiller)** as to this syllabus and all lectures. Students are prohibited from selling (or being paid for taking) notes during this course to or by any person or commercial firm without the express written permission of the professor teaching this course. Students are also prohibited from posting notes on the internet without the express written permission of the professor teaching this course.
SPRING 2013 - BIOLOGY 107 LAB SYLLABUS

SECTION: ___________________________  DAY: ___________________________  TIME: ___________________________

LAB INSTRUCTOR: ___________________________  OFFICE: ___________________________

PHONE: ___________________________  E-MAIL: ___________________________

COURSE OBJECTIVES: Biology 107 lab serves to reinforce and supplement information presented during lecture. Information either will be presented first in lab and then reviewed during lecture or vice versa. To enhance the laboratory experience, students should review their syllabus and read each laboratory exercise prior to the weekly lab meeting. Each laboratory exercise in the manual contains a list of objectives and review questions. Students should use these objectives and questions to review information for quizzes and/or lab exams.

ATTENDANCE POLICY: Laboratory attendance is extremely important! NO makeup opportunities will be provided for missed material, quizzes, or exams unless the student notifies the lab instructor of the absence within 2 working days and provides an authorized university excuse within a week of the absence. Zeros will be recorded for any missed material without such an excuse. See attendance policy on lecture syllabus for more information.

LABORATORY MATERIALS:
3. Dissection Kit - Purchase at bookstores.
4. Safety goggles - Purchase at bookstores.
5. Blue Marble Composition Notebook (Blank Pages) - Purchase at bookstores
6. Colored Pencils

NOTE: • NO FOOD, DRINK, or ELECTRONICS (cell phones, pagers, etc.) allowed in the laboratory. • Goggles and close-toed shoes are required for lab entry!

\[
\text{LAB GRADE:} \quad \text{Final Lab Grade: } \frac{\text{Your total points}}{500} \times 100 = \_\_\_\_\_\_\_\%
\]
Lab comprehends 30% of total course grade.

<table>
<thead>
<tr>
<th>Quiz Grades (80 pts.)</th>
<th>Assignments (200 pts. total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (8 pts.)</td>
<td>1. Scientific Method Assignment (10 pts.)</td>
</tr>
<tr>
<td>2. (8 pts.)</td>
<td>2. Genetics Problems (10 pts.)</td>
</tr>
<tr>
<td>3. (8 pts.)</td>
<td>3. Hardy-Weinberg Problems (10 pts.)</td>
</tr>
<tr>
<td>4. (8 pts.)</td>
<td>4. Natural Selection Lab Report (50 pts.)</td>
</tr>
<tr>
<td>5. (8 pts.)</td>
<td>5. Table I: Invertebrate Animal Phyla (10 pts.)</td>
</tr>
<tr>
<td>6. (8 pts.)</td>
<td>6. Table II: Invertebrate Animal Phyla (10 pts.)</td>
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<tr>
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2. Labels—required labels are in parentheses next to each illustration title
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4. Phylum and Class names (if applicable)

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Lab 4 (6 Illustrations): Whitefish Blastula Cells Mitotic phases, interphase, prophase, metaphase, anaphase, and telophase (label chromosome, aster, spindle, cleavage furrow, plasma membrane, and nuclear envelope in each phase if present); Mammalian Ovary (primary follicle, secondary follicle, egg, vesicular follicle); Mammalian Testes (seminiferous tubule, mature sperm, interstitial cells); Bull Sperm (flagellum, plasma membrane)

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Lab 10 (7 Illustrations): Clam (umbo, hinge ligament, gills, foot, incumbent and excurrent siphons, mantle, adductor muscle, visceral mass); Squid (arm, fin, gills, tentacle, mantle, funnel, eye); Earthworm (mouth, anus, setae, segment, cuticle, septum, pharynx, crop, intestine); Earthworm cross section (coelom, cuticle, longitudinal muscle, circular muscle, intestine, setae, ventral blood vessel, ventral nerve cord); Crayfish (antenna, claw, walking leg, swimmeret, abdomen, gills, compound eye, carapace, uropod, telson); Grasshopper (head, thorax, abdomen, antenna, compound eye, tympanum, spiracle, leg, forewing, hindwing); Sea Star (arm, anus, mouth, spine, tube feet, digestive gland, gonad, central disk, sieve plate)

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| *Jan. 21-25        | Lab 3: Cell Structure and Function                                   | Scientific Method Assignment Due                         |
| Jan. 28-Feb. 1     | Lab 4: Mitosis and Meiosis                                            | Quiz #1                                                  |
| Feb. 4-8           | Lab 5: Mendelian Genetics
                   Lab 6: Human Genetics                                                | Quiz #2                                                  |
| *Feb. 11-15        | Lab 7: Evidences for Evolution                                        | Quiz #3                                                  |
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                   Natural Selection Experiment                                         | Quiz #4
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| Feb. 25-March 1    | **Practical Exam I**                                                 |                                                          |
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                   Hardy-Weinberg Problems Due
                   Natural Selection Lab Report Due                                   |
| March 11-15        | *Spring Break*
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                   Table I-Animal Phyla Assignment Due                                 |
| **March 25-29      | Lab 11: The Vertebrates
                   Lab 12: Basic Mammalian Anatomy I
                   Spirometer Exercise/Gills
                   Urinalysis Exercise                                                 | Quiz #7
                   Table II-Animal Phyla Assignment Due                                 |
| **Apr. 1-5         | Lab 13: Basic Mammalian Anatomy II
                   Cardiophysiology Exercise                                            | Quiz #8
                   Table III-Animal Phyla Assignment Due
                   Urinalysis Diagnosis Assignment Due
                   Lab Illustration Notebook Due                                        |
| **Apr. 8-12        | Lab 14: Chemical Aspects of Digestion                                 | Quiz #9
                   Cardiophysiology Assignment Due                                     |
| **Apr. 15-19       | Lab 15: Nervous System and Senses
                   EEG Exercise                                                        | Quiz #10
                   Digestion Assignment Due                                             |
| Apr. 22-26         | **Practical Exam II**                                                | EEG Analysis Assignment Due                                |

*Goggles Required For Class
+Dissection Kit Required For Class
Zoology Lab

SPRING 2013 - BIOLOGY 107 LAB SYLLABUS

SECTION: ___________________  DAY: ___________________  TIME: ___________________

LAB INSTRUCTOR: ___________________  OFFICE: ___________________  PHONE: __________  E-MAIL: __________

COURSE OBJECTIVES: Biology 107 lab serves to reinforce and supplement information presented during lecture. Information either will be presented first in lab and then reviewed during lecture or vice versa. To enhance the laboratory experience, students should review their syllabus and read each laboratory exercise prior to the weekly lab meeting. Each laboratory exercise in the manual contains a list of objectives and review questions. Students should use these objectives and questions to review information for quizzes and/or lab exams.

ATTENDANCE POLICY: Laboratory attendance is extremely important! NO makeup opportunities will be provided for missed material, quizzes, or exams unless the student notifies the lab instructor of the absence within 2 working days and provides an authorized university excuse within a week of the absence. Zeros will be recorded for any missed material without such an excuse. See attendance policy on lecture syllabus for more information.

LABORATORY MATERIALS:
(ISBN: 0-07-7655848)
2. Dissection Kit - Purchase at bookstores.
3. Safety goggles - Purchase at bookstores.
4. Blue Marble Composition Notebook (Blank Pages) - Purchase at bookstores
5. Colored Pencils

NOTE: *NO FOOD, DRINK, or ELECTRONICS (cell phones, pagers, etc.) allowed in the laboratory.
*Goggles and close-toed shoes are required for lab entry!

LAB GRADE: 
Final Lab Grade: Your total points 500 x 100 = ____% 
Lab grade composes 30% of total course grade.

<table>
<thead>
<tr>
<th>Quiz Grades (80 pts.)</th>
<th>Assignments (200 pts. total)</th>
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<tr>
<td>1. (8 pts.)</td>
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<td>4. Natural Selection Lab Report (50 pts)</td>
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PARTICIPATION POINTS: Each student has the potential to earn 70 participation points. Failure to clean the lab area, follow directions, be prepared for lab, or behave appropriately in the lab setting may result in deductions of participation points.

PRACTICAL EXAMS: There will be two 100-point practical exams that will include practical and concept questions covering information from laboratory experiments and protocols, observations of specimens/models, and microscope slides.

ASSIGNMENTS: Each student will be responsible for twelve assignments. All homework assignments should be turned in at the beginning of the period. Papers turned in during or after the office hours are considered late and will have twenty percent deducted for each day overdue. There will be one lab report assigned that is based upon data collected in the lab. The lab instructor will give more specific information regarding the format and content of this report. This report must be typed. Information on the scientific method in Exercise 1 and lab report preparation in Appendix A of the lab manual maybe useful for writing the lab report. The report must be each student's own work.

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Labs 5 & 6 (3 Illustrations): Meiosis Simulation on p. 56 (products of segregation involving A and a); Meiosis Simulation on p. 57-59 (show 2 arrangements at metaphase I and II, anaphase I and II, telophase I and II involving independent assortment of A/a and R/r); Barr Body (Barr body, nucleus, cell membrane)

Lab 7 (3 Illustrations): Side by side comparison of frog, chick, and pig embryos (pharyngeal pouch, tail, eye, somite)

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+Dissection Kit Required For Class
1. This request is submitted by (department name): Department of Biology

2. Course prefix and number: BIOL 111

3. Texas Common Course Number: 1306, 1106, 1406

4. Complete course title: Introductory Biology I

5. Semester credit hours: 4

6. This request is for consideration in the following Foundational Component Area:
   - [ ] Communication
   - [ ] Mathematics
   - [x] 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
   - [x] No

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

9. Number of class sections per semester: 79 (fall), 32 (spring)

10. Number of students per semester: 1896 (fall), 786 (spring)

11. Historic annual enrollment for the last three years: '09-10 = 2484  '10-11 = 2496  '11-12 = 2368

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: Ira F. Greenbaum
    Course Instructor
    Director Biol Lower Division
    Approvals:
    [Signature]
    Department Head
    [Signature]
    College Dean/Designee
    [Signature]

13. Date: 22 January 2013
14. Date: 1/5/13
15. Date: 2/3/13

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

Not approved 3-4-13
Approved 4-1-13

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?

Biology 111 is the first half of an introductory two-semester survey of contemporary biology that covers the chemical basis of life, structure and biology of the cell, molecular biology and genetics including the role of biotechnology in molecular genetics. Course includes a weekly laboratory that emphasizes the scientific method to reinforce and provide supplemental information related to the lecture topics.

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 scientific method is the fundamental basis of both lecture and lab. Lectures discuss knowledge obtained from interpreting results of historical scientific experiments and allow students to explore the implications of alternative outcomes. Lecture exams include questions to assess students' ability for critical thinking and analysis and their capacity for synthesizing information presented at different times during the course. The laboratory component of the course include hands-on practice and evaluation of exercises based on the scientific method including the identification of specific hypotheses, analysis of data from in-lab exercises, interpretation of results, formulation of exercise related questions, weekly quizzes, and written homeworks and lab reports.

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

Homework assignments and lab reports require written interpretation of the results of the laboratory exercises. Labs conclude with an instructor/student interactive summary during which students orally respond to and ask questions. Both lecture and lab utilize visual communication through interpretation of data presented in graphs, tables, and figures.

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

All lab exercises involve the generation and/or manipulation and analysis of of exercise-specific numerical data. As described above, these are then summarized in tabular and/or graphic form for homeworks, lab reports, quizzes and practical exams. Certain lecture topics, particularly in biological chemistry and genetics, also require students to manipulate and interpret numerical data. Students’ facility in these areas are specifically evaluated on lecture exams.

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

Core Curriculum

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

A majority of the laboratory exercises require the students to work in groups (typically groups of four). Different groups or members of each group perform separate components of the lab exercise; the groups or group-members then interact to produce a set of group-compiled results. Each student subsequently uses the group-compiled results as the basis for his/her written lab assignment (in-class, homework or lab report). Teamwork is assessed by direct observation by the lab instructor and the assignment of appropriate participation points. During the interactive lab summaries students have the ability to consider different interpretations of the data and how these might yield different points of view.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Biology 111, Introductory Biology I
Lecture/Lab Syllabus, Fall 2012
Sections 501-513
TR 9:35-10:50, HELD 200

Lecture Professor: Dr. Thomas McKnight
E-mail: mcknight@mail.bio.tamu.edu

Office: Butler 101 B
Phone: 845-3896
Office Hours: after class or by appointment

Course Description: Biology 111 is the first half of an introductory two-semester survey of contemporary biology that covers the chemical basis of life, structure and biology of the cell, molecular biology and genetics. Course includes laboratory that reinforces and provides supplemental information related to the lecture topics. Biology 111 is the first course in a rigorous two-course series for life science majors and other students intending to pursue a career in biomedical sciences. It is not designed as a course for students who just need to fulfill the science course requirement in the core curriculum. BIOL 101, BIOL 107, and BIOL 113 may be more suitable for non-science majors. If you have any question about which biology course you should take, please see your academic advisor.

Course Objectives: Biology 111 is a 4-credit hour course that consists of 150 minutes of lecture and 170 minutes of lab each week. Students are expected to attend both lecture and lab where they will be introduced to the fundamentals of biological structure and function. Upon completion of Biology 111 students should be able to demonstrate a basic grasp of the major themes of Biology including the importance of water, carbon, and macromolecules to life on Earth. Students should be able to discuss basic cell structure and describe significant processes that occur in the cell such as membrane function, cellular respiration, photosynthesis, communication and cell division. Finally the successful student will be able to demonstrate an understanding of the processes and relationships of genetics, inheritance, protein synthesis, the regulation of gene expression, and the role of biotechnology in molecular genetics, the study of viruses, and the evolution of genomes.

Texts/Materials: Texts are on reserve in the Evan’s library annex, 4th floor.
- *Campbell Biology* (9th edition) by Reece et al. - required.
- Campbell Biology Website - recommended. Subscription is included with a new text, or may be purchased online at [http://masteringbiology.com](http://masteringbiology.com).

General Information:

*Lower Division Biology Instruction Office:* Administrative questions pertaining to Biology 111 may be referred to 315 Heldenfels (HELD), Mon. through Fri. 8 am to 5 pm, 845-4651, e-mail: introbio.tamu.edu

*Webpage:* The Lower Division Instruction webpage at [http://www.bio.tamu.edu/ldi/](http://www.bio.tamu.edu/ldi/) has contact information for faculty, teaching assistants and staff, as well as exam challenge forms and scantron grade check request forms.

*Vista/Blackboard:* Grade information and materials posted by faculty may be located on the course VISTA/BLACKBOARD site. To access VISTA/BLACKBOARD:
  - Logon to [http://elearning.tamu.edu/](http://elearning.tamu.edu/)
  - Choose the TAMU (Net ID) logon option
  - Logon with your Net ID and password
  - Choose the Biol 111 course list link
Release of Grades: The Family Educational Rights and Privacy Act (FERPA) prohibits faculty and staff from posting grades to unsecured websites, or reporting grades by e-mail or telephone. Individual grade information is available via VISTA/BLACKBOARD.

Absence Policy: The Lower Division Program does not accept the Texas A&M University Explanatory Statement of Absence Form as an adequate verification for an absence. Students who miss class and want to make up one or more missed assignments must provide verification for the reason of the absence (see Student Rules 7, Attendance http://student-rules.tamu.edu/rule07). Prior notification of absence is expected whenever possible (Student rule 7.3).

For an absence due to illness or injury, you must notify your instructor within two working days of the absence. Additionally, you must provide, within one week, written and signed evidence of consultation with a medical professional confirming that the injury or illness was serious enough to justify the absence. Submitted evidence will be verified prior to approval of any makeup.

Make up Exams: Will be given only in the event of an authorized university approved absence (see Absence Policy). The exam may be essay and will be given only with the permission of the instructor. Obtain a signed authorization form from your instructor and bring it to 315 HELD to register for a make up test. You may not take a make up to improve a test score.

Scantron Grade Checks: If you think that your posted exam grade is incorrect, you may have your scantron rechecked. Submit grade check requests at http://www.bio.tamu.edu/ldf/. You will be notified via e-mail when the results are ready. Bring your student I.D. to 315 HELD to pickup your grade check.

Course Grade: Designation of letter grades should be expected to be determined as follows:

\[
A = 90-100\%, B = 80-89\%, C = 70-79\%, D = 60-69\%, F \leq 59\%
\]

Some downward adjustment of letter grade cutoffs (i.e. curve) may be applied dependent on the class numerical grade distribution and the instructor's judgment. Final lab totals may be subject to statistical normalization. Grades are awarded only on the basis of your performance in the class.

The course percentage is 75% lecture and 25% laboratory. Calculate your course percentage as follows:

\[
\text{Lecture Percentage} = \frac{\text{total lecture points}}{450} \times 100
\]

\[
\text{Lab Percentage} = \frac{\text{total lab points}}{450} \times 100
\]

\[
\text{Course Percentage} = (\text{Lecture Percentage} \times 0.75) + (\text{Laboratory Percentage} \times 0.25)
\]

Q-Drop: Friday, November 2nd (5:00 pm) is the deadline for dropping a course with no penalty (Q grade). If you have any question as to whether or not to Q-drop, see your instructor before this date. After this date you must take a letter grade or negotiate a W (withdrawal) or NG (no grade) through your academic dean (see Student rule 10.3).

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.

Academic misconduct involves any of the following offenses: cheating, fabrication, falsification, multiple/duplicate submissions, plagiarism and complicity in any of these offenses. All incidents of academic dishonesty will be referred to the Biology Lower Division Program, are subject to academic penalties, and will be reported to the Texas A&M Honors System Office http://aggiehonor.tamu.edu/.
Copyright: The materials used in this course are copyrighted. This includes, but is not limited to syllabi, lecture notes, quizzes, exams, lab problems, in-class materials, review sheets and problem sets. You do not have the right to copy or provide course materials to others without the permission of the instructor.

Americans with Disabilities Act (ADA) Policy Statement: 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 for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall, room B118 or call 845-1637 (website http://disability.tamu.edu/).

Lecture Information:

Lecture Exams: There will be three 100 point lecture exams and one 150 point final exam. Each lecture exam will have 40 multiple-choice questions worth 2.5 points each. The final exam is cumulative and will have 60 multiple-choice questions worth 2.5 points each (for a total of 150 points). Exams cover both lecture material and text assignments. For each exam, you are required to bring a #2 pencil and your TAMU student ID. Failure to provide positive identification will result in a score of zero for the exam. Your instructor may permit a non-programmable calculator for specified exams. A purse may be carried to your desk but must be closed and left on the floor. No other items will be permitted at your desk.

Lecture Exam Schedule:

<table>
<thead>
<tr>
<th>Lecture Exam</th>
<th>Date</th>
<th>Exam Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1 (100 points)</td>
<td>Thurs., Sept. 20</td>
<td>9:35-10:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 2 (100 points)</td>
<td>Tues., Oct. 16</td>
<td>9:35-10:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 3 (100 points)</td>
<td>Tues., Nov. 13</td>
<td>9:35-10:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Final Exam (150 points)</td>
<td>Fri., Dec. 7</td>
<td>12:30-2:30</td>
<td>HELD 200</td>
</tr>
</tbody>
</table>

Exam Challenges: After each lecture exam, a copy of the key will be posted on VISTA/BLACKBOARD. If you think there is an error in the key, submit an Exam Challenge Form at: http://www.bio.tamu.edu/lci/ within 24 hours. Give referenced support as to why an alternative answer choice should be accepted. Note: Final exams will not be returned or posted, and have no challenge period.

Rescheduling Exams: Lecture exams must be taken with your registered section. A grade of ZERO will be given for any exam taken out-of-section. A final exam may be rescheduled provided you show proof of three or more final exams scheduled for the same day. Make arrangements for an alternate final exam time in HELD during the last week of class.

Make up Exam Schedule: See Make up Exams (previous Page)
## BIOLOGY 111 LECTURE SCHEDULE

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>CHAPTER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTRODUCTION</strong></td>
<td></td>
</tr>
<tr>
<td>Introduction: Themes in the Study of Life</td>
<td>Ch. 1</td>
</tr>
<tr>
<td><strong>THE CHEMISTRY OF LIFE</strong></td>
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<tr>
<td>The Chemical Context of Life</td>
<td>Ch. 2</td>
</tr>
<tr>
<td>Water and Life</td>
<td>Ch. 3</td>
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<tr>
<td>Carbon and Molecular Diversity of Life</td>
<td>Ch. 4</td>
</tr>
<tr>
<td>The Structure and Function of Large Biological Molecules</td>
<td>Ch. 5</td>
</tr>
<tr>
<td><strong>THE CELL</strong></td>
<td></td>
</tr>
<tr>
<td>A Tour of the Cell</td>
<td>Ch. 6</td>
</tr>
<tr>
<td>Membrane Structure &amp; Function</td>
<td>Ch. 7</td>
</tr>
<tr>
<td>An Introduction to Metabolism</td>
<td>Ch. 8</td>
</tr>
<tr>
<td>Cellular Respiration and Fermentation</td>
<td>Ch. 9</td>
</tr>
<tr>
<td>Photosynthesis</td>
<td>Ch. 10</td>
</tr>
<tr>
<td>Cell Communication</td>
<td>Ch. 11</td>
</tr>
<tr>
<td>The Cell Cycle</td>
<td>Ch. 12</td>
</tr>
<tr>
<td><strong>GENETICS</strong></td>
<td></td>
</tr>
<tr>
<td>Meiosis and Sexual Life Cycles</td>
<td>Ch. 13</td>
</tr>
<tr>
<td>Mendel and the Gene Idea</td>
<td>Ch. 14</td>
</tr>
<tr>
<td>The Chromosomal Basis of Inheritance</td>
<td>Ch. 15</td>
</tr>
<tr>
<td>The Molecular Basis of Inheritance</td>
<td>Ch. 16</td>
</tr>
<tr>
<td>From Gene to Protein</td>
<td>Ch. 17</td>
</tr>
<tr>
<td>Regulation of Gene Expression</td>
<td>Ch. 18</td>
</tr>
<tr>
<td>Viruses</td>
<td>Ch. 19</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>Ch. 20</td>
</tr>
<tr>
<td>Genomes and their Evolution</td>
<td>Ch. 21</td>
</tr>
</tbody>
</table>
Lab Information:

Lab Instructor: ___________________________ E-mail: ___________________________

Section: ___________ Office: HEld 317 E Office Hours: ___________ Phone: 845-4653

Lab Safety:
- You will be required to sign a Safety Agreement indicating that you have read, understood, and agree to follow the safety regulations required for this course.
  A. Logon to the Howdy Portal, select My record
  B. Find the registration box link to LSA (lab safety acknowledgement)
  C. Read the LSA and then agree to it
- Eating, drinking, and use of tobacco products are prohibited in the laboratory.
- University safety regulations require closed-toe shoes in the laboratory. You will be refused admittance to the lab if you wear sandals or open-toed shoes.
- Safety goggles are required. Bring safety goggles to all labs.

Lab Exams: There will be two 100 point practical exams. Each practical exam will have 25 stations with 1 to 4 questions per station for a total of 100 points per exam. The second practical exam is not comprehensive.

Quizzes: There will be nine 15-point quizzes. These may be a combination of written and practical questions.

Assignments: There will be 8 homework assignments worth a total of 90 points. Two points are automatically deducted for late assignments, and an additional point is deducted for each additional day overdue. Late homework may be logged in at HEld 317 E. Should HEld 317 E be closed, late homework may be logged in at HEld 315.

Participation Points: Each TA will award a maximum of 25 points based upon cooperation, class participation, adherence to safety procedures, attendance, and cleanup.

Bonus Points: There are no bonus point opportunities in lab!

Regrading: Is at the discretion of the lab instructor. Any re-grade will be for the entire exam or assignment, so the score may go up, go down, or remain unchanged. Requests for re-grading must be initiated within two weeks of the assignment being returned to the student and must be completed before the last official day of classes.

Lab Rescheduling: A verifiable university approved excuse is required before a student may be rescheduled into another lab section during the same week, if space permits. To reschedule a missed lab during the same week lab is missed, bring written verifiable evidence of a university excused absence to 315 HEld as early as possible. There will be NO make up labs. If you miss a lab for a university approved reason and cannot be rescheduled, then you must contact your lab instructor within two working days after the lab to make arrangements for a make up quiz or assignment. Failing to contact your instructor in a timely manner will result in a zero for the missed assignment.

Makeups: Lab makeup assignments are restricted to students with approved absences (see Student rule 7) and must be scheduled by the student within two weeks of the end of the absence. Note: Rule 7.1.6.3 “An absence for a non acute medical service does not constitute an excused absence”. A non acute medical excuse will not be accepted as a valid reason to miss a practical exam.
Laboratory Assignments:

Work individually: All laboratory assignments are individual projects. You may not work together on written assignments without the permission of your lab instructor.

Plagiarism and Proper Citation: Copying from texts, lab manuals, internet sources, or other students without proper credit is plagiarism and will be considered cheating. If you quote from another source, you must credit that source in your text and properly cite the reference in a literature cited section. The following is an example of a proper citation:


Assignment 1 - Termite Behavior (5 pts). Present a short, in-class presentation of the termite behavior experiment with special reference to how the experiment followed the scientific method.

Assignment 2 — Properties of water (15 pts). Follow the instructions on page 33 for the report on the starch/ amylase experiment. Submit the text via Turn-it-in.com print the receipt and attach the originality report to your paper when you submit to your instructor.

Assignment 3 – Enzymes graphs (15 pts). Work independently! Graph the data for the four parameters that affect enzyme activity. Properly label and title each graph. Follow the guidelines on page 69 and, write a short abstract summary for all the test experiments. Submit the text to Turn-it-in.com and print the receipt and submit the graphs, and written description to your lab instructor.

Assignment 4 – Cells in-class summary questions (5 pts). Write a practical exam question for each lab objective. Practical questions require A setup as part of the question. The setup must be from the lab exercise (equipment, specimens, slides, diagrams, graphs, models, text illustrations etc). Avoid written multiple choice options, yes/no, male/female, true/false, or either/or answers.

For each question include:

- Your name:
- Setup
- Question
- Answer
- Objective

Example
Student X
3 slides A- Bacteria, B- Cyanobacteria, C- green algae
Which represents an organism most likely formed via one or more endosymbiotic events?
C- green algae
Differentiate between prokaryotic and eukaryotic cells.

Assignment 5 – Cellular Metabolism (5 pts). Work individually! Complete Table 6-2 on page 100 and answer all questions on page 101. Properly label Table 6-2. Turn in the assignment to your instructor before you leave class.

Assignment 6- Photosynthesis (15 pts). Work Independently! See page 123 for instructions. Write an abstract and graph the results of the absorption and action spectra measurements. Attach data Tables 7-3, 7-4, and 7-6. Label and title each graph. Note: an abstract is a short, one or two paragraph summary statement of the experiment and its results. Be sure to include a statement of the hypothesis and whether the results supported or refuted the hypothesis. Submit the text via Turn-it-in.com and print the receipt. Attach the receipt to your graphs and abstract and turn in the assignment to your instructor.

Assignment 7 – Forensic Biology (25 pts). Work individually! Follow the guidelines in Appendix B (p. 237) to write a scientific lab report over the forensic investigation done in this lab. Attach appropriate data tables, graphs, and photographs. Label and title all tables and graphs. Describe how variables were controlled. Describe the results and discuss whether the evidence exonerates or focuses attention on one of the suspects. Attach the cover sheet from Appendix B for grading. Submit the text via Turn-it-in.com, print the receipt, and attach it to your report when you submit it.

Assignment 8-Flowchart (5pts). At the beginning of class submit a flowchart outlining the steps to be taken from DNA extractions through PCR.
**Student Support:**

*Help desk:* Students needing individual assistance will find a Teaching Assistant in 317 E HELD. Check the schedule posted outside of 317 E HELD – phone 845-4653.

*Biology Image Library:* Images of lab slides and specimens are available online via the TAMU Biology Images Library at [http://biologyimages.tamu.edu/](http://biologyimages.tamu.edu/). Images are taken offline prior to the beginning of each practical exam week.

1st Exam Review: Username: Biology 111       Password: Biology 111   Goes offline: M, Oct. 8, 7:45 a.m.
2nd Exam Review: Username: Biology 111-2nd   Password: Biology 111   Goes offline: M, Nov. 26, 7:45 a.m.

*Problems:* Courtesy dictates that you first discuss any problem with your laboratory instructor. If the problem has not been resolved, please contact Mr. Chris Lee (Teaching Coordinator) at 458-3399 (or by e-mail at elee@mail.bio.tamu.edu) to make an appointment to discuss the situation.
# BIOLOGY 111 LABORATORY SCHEDULE

**Fall 2012**

<table>
<thead>
<tr>
<th>LAB MANUAL CHAPTER</th>
<th>DATES</th>
<th>ASSIGNMENT DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. 1 - The Discovery Process</td>
<td>Aug. 27-30</td>
<td>Assignment 1 (in-class)</td>
</tr>
<tr>
<td>Ch. 2 - The Properties of Water, Quiz 1</td>
<td>Sept. 3-6</td>
<td></td>
</tr>
<tr>
<td>Ch. 3 - Biomolecules, Quiz 2</td>
<td>Sept. 10-13</td>
<td>Assignment 2 – submit Text turn-it-in.com</td>
</tr>
<tr>
<td>Ch. 4 - Enzymes - Protein Catalysts, Quiz 3</td>
<td>Sept. 17-20</td>
<td></td>
</tr>
<tr>
<td>Ch. 5 - Cells - The Basic Unit of Life, Quiz 4</td>
<td>Sept. 24-27</td>
<td>Assignment 3 – submit text to turn-it-in.com Assignment 4 -(in-class)</td>
</tr>
<tr>
<td>Ch. 6 – Cellular Metabolism , Quiz 5</td>
<td>Oct. 1-4</td>
<td>Assignment 5-(in class)</td>
</tr>
<tr>
<td><strong>LAB PRACTICAL EXAM 1</strong></td>
<td>Oct. 8-11</td>
<td></td>
</tr>
<tr>
<td>Ch. 7 – Photosynthesis</td>
<td>Oct. 15-18</td>
<td></td>
</tr>
<tr>
<td>Ch. 8 – Cell Division, Quiz 6</td>
<td>Oct. 22-25</td>
<td>Assignment 6- submit text turn-it-in.com</td>
</tr>
<tr>
<td>Ch. 9 – Theory of Heredity, Quiz 7</td>
<td>Oct. 29- Nov. 1</td>
<td></td>
</tr>
<tr>
<td>Ch. 10 – Forensic Biology, Quiz 8</td>
<td>Nov. 5-8</td>
<td></td>
</tr>
<tr>
<td>Ch. 11 – PCR and DNA Typing and, Quiz 9</td>
<td>Nov. 12-15</td>
<td>Assignment 7 – Submit turn-it-in.com Assignment 8 (in-class)</td>
</tr>
<tr>
<td>Ch. 12- Protein Synthesis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Thanksgiving**

Nov. 19-22

**LAB PRACTICAL EXAM 2**

Nov. 26 –29

*Goggles are required every week.*

*Open-toed shoes are prohibited in lab. Must wear close-toe shoes.*

### Lab Practical Make up Exam Schedule

<table>
<thead>
<tr>
<th>Lab Make up Exam 1</th>
<th>TBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Make up Exam 2</td>
<td>TBA</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): **Department of Biology**
2. Course prefix and number: **BIOL 112**
3. Texas Common Course Number: **1307, 1107, 1407**
4. Complete course title: **Introductory Biology II**
5. Semester credit hours: **4**
6. This request is for consideration in the following Foundational Component Area:
   - [ ] Communication
   - [ ] Mathematics
   - [X] 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:
   - [X] Yes
   - [ ] No
8. How frequently will the class be offered: **every fall and spring semester**
9. Number of class sections per semester: **20 (fall), 52 (spring)**
10. Number of students per semester: **480 (fall), 1248 (spring)**
11. Historic annual enrollment for the last three years: **'09-10 = 1532, 10-11 = 1450, 11-12 = 1353**

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: **IRA F. GREENBAUM**
    Course Instructor, **DIRECTOR, BIO LMER DIVISION**
    **Date: 2/5/13**
13. Approvals:
    **Date: 2/5/13**
14. Department Head
    **Date: 2/5/13**
15. College Dean/Designee
    **Date: 2/5/13**

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

3-4-13 not aprr.
App 4-1-13

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?

Biology 112 is the second half of an introductory two-semester survey of contemporary biology that covers evolution, the history of life, biodiversity (including human parasites and their diseases) and form and function of organisms including human cardiopulmonary and nervous systems. Course includes a weekly laboratory that emphasizes the scientific method to reinforce and provide supplemental information related to the lecture topics.

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 scientific method is the fundamental basis of both lecture and lab. Lectures discuss knowledge obtained from interpreting results of historical scientific experiments and stresses inductive reasoning in interpreting biological patterns and processes. Lecture exams include questions to assess students’ ability for critical thinking and analysis and their capacity for synthesizing cumulative information presented during the course. The laboratory component of the course includes the analysis of population-genetic data, detailed comparisons of organisms from single-celled organisms to mammals and exercises measuring cardiopulmonary and nervous-systems function. Lab assessments include weekly quizzes, two major laboratory practical exams and written homeworks and lab reports.

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

Homework assignments and lab reports require written interpretation of the results of the laboratory exercises. Labs conclude with an instructor/student interactive summary during which students orally respond to and ask questions. Both lecture and lab utilize visual communication through interpretation of data presented in graphs, tables, and figures.

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

Population genetics, cardiopulmonary and nervous system and animal diversity lab exercises involve the generation and/or manipulation and analysis of of exercise-specific data. These are then summarized in tabular and/or graphic form for homeworks, lab reports, quizzes and practical exams. Then animal diversity lab assignment requires cladistic analysis (phylogenetic reconstruction) of character-state data. Certain lecture topics, particularly in evolution/population genetics also require students to manipulate and interpret numerical data. Students’ facility in these areas are specifically evaluated on lecture exams and laboratory written assignments.
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):

Laboratory exercises frequently require the students to work in groups (typically groups of four). Members of each group perform separate components of the lab exercise; the group members then interact to produce a set of group-compiled results. Each student subsequently uses the group-compiled results as the basis for his/her written lab assignment (in-class, homework or lab report). One lab assignment requires an oral 5-10 minute in-class group presentation. Teamwork is assessed by direct observation by the lab instructor and the assignment of appropriate participation points. During the interactive lab summaries students have the ability to consider different interpretations of the data and how these might yield different points of view.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Biology 112, Introductory Biology II
Lecture/Lab Syllabus, Fall 2012
Sections 501-511
MWF 8:00-8:50, HELED 200

Lecture Professor: Dr. Carol Johnson  E-mail: cjohnson@bio.tamu.edu

Office: HELED 320  Phone: 845-7766  Office Hours: MF 9-11 & TR 2-4

Course Description: Biology 112 is the second half of an introductory two-semester survey of contemporary biology that covers evolution, the history of life, and form and function of organisms. Course includes laboratory that reinforces and provides supplemental information related to the lecture topics.

Course Objectives: Biology 112 is a 4 credit hour course that consists of 150 minutes of lecture and 170 minutes of lab each week. Students are expected to attend both lecture and lab where they will be introduced to the fundamentals of evolution, biological diversity, and the form and function of organisms with an emphasis on anatomy and physiology. Upon completion of Biology 112 students should be able to discuss key concepts of evolutionary theory, the history of life on Earth, evidence for evolution, and construct evidence-based phylogenies to describe biodiversity within an evolutionary framework. Students should also demonstrate an understanding of organs and organ systems with respect to supporting the evolution and adaptation of complex organisms to different environments.

Texts/Materials: Texts are on reserve in the Evan’s library annex, 4th floor.

- Campbell Biology (9th edition) by Reece et al. – required.
- Student Study Guide for Campbell’s Biology – recommended.
- Mastering Biology Website – recommended. Subscription is included with a new text, or may be purchased online at http://masteringbiology.com
- Safety goggles required
- Dissection kit required

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\[
\text{Lecture Percentage} = \frac{\text{total lecture points}}{450} \times 100
\]

\[
\text{Lab Percentage} = \frac{\text{total lab points}}{450} \times 100
\]

\[
\text{Course Percentage} = (\text{Lecture Percentage} \times 0.75) + (\text{Laboratory Percentage} \times 0.25)
\]

**Q-Drop:** Friday, November 2, (5:00 pm) is the deadline for dropping a course with no penalty (Q grade). If you have any question as to whether or not to Q-drop, see your instructor before this date. After this date you must take a letter grade or negotiate a W (withdrawal) or NG (no grade) through your academic dean (see Student rule 10.3).

**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.

Academic misconduct involves any of the following offenses: cheating, fabrication, falsification, multiple/duplicate submissions, plagiarism and complicity in any of these offenses. All incidents of academic dishonesty will be referred to the Biology Lower Division Program, are subject to academic penalties, and will be reported to the Texas A&M Honors System Office [http://aggiehonor.tamu.edu/](http://aggiehonor.tamu.edu/).

**Copyright:** The materials used in this course are copyrighted. This includes, but is not limited to syllabi, lecture notes, quizzes, exams, lab problems, in-class materials, review sheets and problem sets. You do not have the right to copy or provide course materials to others without the permission of the instructor.

**Americans with Disabilities Act (ADA) Policy Statement:** 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 the Department of Disability Services in Cain Hall, call 845-1637, or e-mail disability@tamu.edu.

**Lecture Information:**

**Lecture Exams:** There will be three 100 point lecture exams and one 150 point final exam. Each lecture exam will have 40 multiple-choice questions worth 2.5 points each. The final exam is cumulative and will have 60 multiple-choice questions worth 2.5 points each (for a total of 150 points). Exams cover both lecture material and text assignments. For each exam, you are required to bring a #2 pencil and your TAMU student I.D. Failure to provide positive identification will result in a score of zero for the exam. Your instructor may permit a non-programmable calculator for specified exams. A purse may be carried to your desk but must be closed and left on the floor. No other items will be permitted at your desk.

**Lecture Exam Schedule:**

<table>
<thead>
<tr>
<th>Lecture Exam</th>
<th>Date</th>
<th>Exam Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1 (100 points)</td>
<td>Wed., Sept. 19</td>
<td>8:00-8:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 2 (100 points)</td>
<td>Wed., Oct. 17</td>
<td>8:00-8:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 3 (100 points)</td>
<td>Wed., Nov. 14</td>
<td>8:00-8:50</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Final Exam (150 points)</td>
<td>Fri., Dec. 7</td>
<td>10:00-noon</td>
<td>HELD 200</td>
</tr>
</tbody>
</table>

**Exam Challenges:** After each lecture exam, a copy of the key may be posted on VISTA/BLACKBOARD. If you think there is an error in the key, submit an Exam Challenge Form at: http://www.bio.tamu.edu/ldi within 24 hours. Give referenced support as to why an alternative answer choice should be accepted. Note: Final exams will not be returned or posted, and have no challenge period.

**Scantron Grade Checks:** Submit grade check requests at http://www.bio.tamu.edu/ldi/. You will be notified via e-mail when the results are ready. Bring your student I.D. to 315 HELD to pickup your grade check.

**Rescheduling Exams:** Lecture exams must be taken with your registered section. A grade of ZERO will be given for any exam taken out-of-section. A final exam may be rescheduled provided you show proof of three or more final exams scheduled for the same day. Make arrangements for an alternate final exam time in 315 HELD during the last week of class.

**Make up Exams:** Will be given only in the event of an authorized university approved absence (see Absence Policy). The exam may be essay and will be given only with the permission of the instructor. Obtain a signed authorization form from your instructor and bring it to 315 HELD to register for a make up test. You may not take a make up to improve a test score.

**Make up Exam Schedule:** See Make Up Exams (previous page)

<table>
<thead>
<tr>
<th>Lecture Make up Exam</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>Oct.  4</td>
<td>5:30-6:30</td>
<td>HELD 200</td>
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<tr>
<td>Exam 2</td>
<td>Nov. 1</td>
<td>5:30-6:30</td>
<td>HELD 200</td>
</tr>
<tr>
<td>Exam 3</td>
<td>Nov. 29</td>
<td>5:30-6:30</td>
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</table>
# BIOLOGY 112 LECTURE SCHEDULE

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>CHAPTER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MECHANISMS OF EVOLUTION</strong></td>
<td></td>
</tr>
<tr>
<td>Descent with modification: A Darwinian View of Life</td>
<td>Ch. 22</td>
</tr>
<tr>
<td>The Evolution of Populations</td>
<td>Ch. 23</td>
</tr>
<tr>
<td>The Origin of Species</td>
<td>Ch. 24</td>
</tr>
<tr>
<td>The History of Life on Earth</td>
<td>Ch. 25</td>
</tr>
<tr>
<td><strong>THE EVOLUTIONARY HISTORY OF BIOLOGICAL DIVERSITY</strong></td>
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<tr>
<td>Phylogeny and the Tree of Life</td>
<td>Ch. 26</td>
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<tr>
<td>Bacteria and Archaea</td>
<td>Ch. 27</td>
</tr>
<tr>
<td>Protists</td>
<td>Ch. 28</td>
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<tr>
<td>Plant Diversity I: How Plants Colonized Land</td>
<td>Ch. 29</td>
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<tr>
<td>Plant Diversity II: The Evolution of Seed Plants</td>
<td>Ch. 30</td>
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<tr>
<td>Fungi</td>
<td>Ch. 31</td>
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<tr>
<td>An Introduction to Animal Diversity</td>
<td>Ch. 32</td>
</tr>
<tr>
<td>Invertebrates</td>
<td>Ch. 33</td>
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<tr>
<td>Vertebrates</td>
<td>Ch. 34</td>
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<tr>
<td><strong>ANIMAL FORM AND FUNCTION</strong></td>
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<tr>
<td>Animal Nutrition</td>
<td>Ch. 41</td>
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<tr>
<td>Circulation and Gas Exchange</td>
<td>Ch. 42</td>
</tr>
<tr>
<td>Osmoregulation and Excretion</td>
<td>Ch. 44</td>
</tr>
<tr>
<td>Hormones and the Endocrine System</td>
<td>Ch. 45</td>
</tr>
<tr>
<td>Animal Reproduction</td>
<td>Ch. 46</td>
</tr>
<tr>
<td>Nervous System</td>
<td>Ch. 49</td>
</tr>
</tbody>
</table>
Lab Information:

Lab Instructor: ___________________________ E-mail: ___________________________

Section: __________ Office: HELD 317 E Office Hours: __________ Phone: 845-4653

Lab Safety:
- You will be required to sign an **ONLINE** Safety Agreement indicating that you have read, understood, and agree to follow the safety regulations required for this course.
  - A. Logon to the Howdy Portal, select My record
  - B. Find the registration box link to LSA (lab safety acknowledgment)
  - C. Read the LSA and then agree to it.
- Eating, drinking, and use of tobacco products are prohibited in the laboratory.
- University safety regulations require closed-toe shoes in the laboratory. You will be refused admittance to the lab if you wear sandals or open-toed shoes.
- Safety goggles are required. Bring safety goggles to all labs.

Dissection Kit: Required.

Lab Exams: There will be two 100 point practical exams. Each practical exam will have 25 stations with 1 to 4 questions per station for a total of 100 points per exam. The second practical exam is not comprehensive.

Quizzes: There will be nine 15-point quizzes. These may be a combination of written and practical questions and with the exception of the first quiz will cover the current week’s lab.

Assignments: There are 7 assignments worth a total of 90 points. Two points are automatically deducted for late assignments, and an additional point is deducted for each additional day overdue. Late homework may be logged in at 317E HELD. Should HELD 317E be closed, late homework may be logged in at HELD 315.

Participation Points: Each TA will award a maximum of 25 points based upon cooperation, class participation, attendance, and cleanup.

Bonus Points: There are no bonus point opportunities in lab!

Regrading: Is at the discretion of the lab instructor. Any re-grade will be for the entire exam or assignment so the score may go up, go down, or remain unchanged. Requests for re-grading must be initiated within two weeks of the assignment being returned to the student and must be completed before the last official day of classes.

Lab Rescheduling: A verifiable university approved excuse is required before a student may be rescheduled into another lab section during the same week, if space permits. To reschedule a missed lab during the same week lab is missed, bring written verifiable evidence of a university excused absence to 315 HELD as early as possible. There will be NO make up labs. If you miss a lab for a university approved reason and cannot be rescheduled, then you must contact your lab instructor within two working days after the absence to make arrangements for a make up quiz or assignment. Failing to contact your instructor in a timely manner will result in a zero for the missed assignment.

Makeups: Lab makeup assignments are restricted to students with approved absences (see Student rule 7) and must be scheduled by the student within two weeks of the end of the absence. Note: Rule 7.1.6.3 “An absence for a non acute medical service does not constitute an excused absence”. A non acute medical excuse will not be accepted as a valid reason to miss a practical exam.
Laboratory Assignments:

**Work individually:** All laboratory assignments are individual projects. You may not work together on written assignments without the permission of your lab instructor.

**Plagiarism and Proper Citation:** Copying from texts, lab manuals, internet sources, or other students without proper credit is plagiarism and will be considered cheating. If you quote from another source, you must credit that source in your text and properly cite a reference in the literature cited section. The following is an example of a proper citation:


**Assignment 1 - Population Genetics (10 pts).** Five-ten minute in-class group presentation. Describe the technique used, the relationship between sickle cell allele and malaria, your data analysis and results culminating in a funding recommendation to the World Health Organization (WHO). If asked to submit a write-up, attach a completed Table 1-3 and answer the questions in addition to writing a summary statement recommending where WHO should concentrate their malaria eradication and treatment budget.

**Assignment 2 - Single-celled organism drawings (10 pts).** Work individually. At the end of lab, submit a labeled drawing of each of the single-celled organism wet mounts or slides examined in the lab. Label the structure, the organism, and the magnification at which each drawing was made. Submit to your instructor before you leave lab.

**Assignment 3 - Plant Diversity (10 pts).** Work individually. Complete the table on page 83, draw and label generalized life cycle. Complete part 3 starting on page 99 and label figure 5-16. Submit to your instructor before you leave lab.

**Assignment 4 - Flowering Plant Anatomy (10 pts).** Work individually. Draw and label the structures that differentiate monocot root and stem anatomy from eudicot root and stem anatomy. Complete the Table on page 123. Submit both to your instructor before you leave lab.

**Assignment 5 - Animal Diversity report (20 pts).** Work individually. Summarize the evolutionary relationship of the clades of the animals studied in chapters 8, 9, and 10. Construct a character state table for the clades and construct a phylogeny showing the distinguishing traits at each branch point of the cladogram. Write a one page description describing the evolutionary changes present on the phylogeny. Submit the text via turn-it-in.com, print the receipt and attach the description, receipt, character state table, and cladogram when you submit the assignment to your lab instructor.

**Assignment 6- Cardiopulmonary (20pts).** Work individually. Use the guidelines in Appendix B to write a report summarizing the effect of exercise on cardiopulmonary function. Attach an ECG trace. Report on the effect of exercise on heart rate, pulmonary rate and blood pressure. Use the means of the class data and determine whether there was a gender effect. Submit your report to Turn-it-in.com and print the receipt. Attach the cover sheet from Appendix B to your report and turn in the package to your lab instructor.

**Assignment 7- Nervous System in-class summary (10pts).** Work individually. Complete table 14-2 and write a brief paragraph describing which areas were most sensitive. Also list some advantages of greater sensitivity in these areas. Submit the table and write-up to your instructor before you leave lab.
Student Support:

Help desk: Students needing individual assistance will find a Teaching Assistant in 317E HELD - phone 845-4653. Check the schedule posted outside of 315 HELD.

Biology Image Library: Images of lab slides and specimens for review are available online via the TAMU Biology Images Library at http://biologyimages.tamu.edu. Images are taken offline prior to the beginning of each practical exam week.

1st Exam Review: Username: Biology 112 Password: Biology 112 Goes offline: M, Oct. 8 7:45 a.m.
2nd Exam Review: Username: Biology 112-2nd Password: Biology 112 Goes offline: M, Nov. 26 7:45 a.m.

Problems: Courtesy dictates that you first discuss any problem with your laboratory instructor. If the problem has not been resolved, please contact Mr. Chris Lee (Teaching Coordinator) at 458-3399 (or by e-mail at clee@mail.bio.tamu.edu) to make an appointment to discuss the situation.
# BIOLOGY 112 LABORATORY SCHEDULE

<table>
<thead>
<tr>
<th>LAB MANUAL CHAPTER</th>
<th>DATES</th>
<th>ASSIGNMENT DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1 - Population Genetics</td>
<td>Aug. 27-30</td>
<td>Assignment 1 (in-class)</td>
</tr>
<tr>
<td>Chapter 2 - Evidence of Evolution - Quiz 1</td>
<td>Sept. 3-6</td>
<td></td>
</tr>
<tr>
<td>Chapter 3 - Single-Celled Organisms - Quiz 2</td>
<td>Sept. 10-13</td>
<td>Assignment 2 (in-class)</td>
</tr>
<tr>
<td>Chapters 4 &amp; 5 - Plant Diversity I and II - Quiz 3</td>
<td>Sept. 17-20</td>
<td>Assignment 3 (in-class)</td>
</tr>
<tr>
<td>Chapter 6 - Flowering Plant Anatomy - Quiz 4</td>
<td>Sept. 24-27</td>
<td>Assignment 4 (in-class)</td>
</tr>
<tr>
<td>Chapter 8 - Invertebrate Diversity I - Quiz 5</td>
<td>Oct. 1-4</td>
<td></td>
</tr>
<tr>
<td><strong>LAB PRACTICAL EXAM 1</strong></td>
<td>Oct. 8-11</td>
<td></td>
</tr>
<tr>
<td>Chapter 9 - Invertebrate Diversity II</td>
<td>Oct. 15-18</td>
<td></td>
</tr>
<tr>
<td>Chapter 10 - Deuterostomes - Quiz 6</td>
<td>Oct. 22-25</td>
<td>Assignment 5 submit text via Turn-it-in.com</td>
</tr>
<tr>
<td>Chapter 11 - Cardiopulmonary Function - Quiz 7</td>
<td>Oct. 29-Nov. 1</td>
<td></td>
</tr>
<tr>
<td>Chapter 12 - Digestive and</td>
<td>Nov. 1-8</td>
<td>Assignment 6 submit text via turn-it-in.com</td>
</tr>
<tr>
<td>Chapter 13 - Osmoregulation - Quiz 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chapter 14 - Nervous System - Quiz 9</td>
<td>Nov. 12-15</td>
<td>Assignment 7 (in class)</td>
</tr>
<tr>
<td>Thanksgiving</td>
<td>Nov. 19-22</td>
<td></td>
</tr>
<tr>
<td><strong>LAB PRACTICAL EXAM 2</strong></td>
<td>Nov. 26-29</td>
<td></td>
</tr>
</tbody>
</table>

*Goggles are required every week.
*Open-toed shoes are prohibited in lab. Must wear closed-toe shoes.

**Lab Practical Make up Exam Schedule**

- Lab Make up Exam 1: TBA
- Lab Make up exam 2: TBA
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): Department of Biology

2. Course prefix and number: BIOL 113 (123) 3. Texas Common Course Number: 

Essentials in Biology (and Essentials in

4. Complete course title: Biology Lab) 5. Semester credit hours: 4

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

☐ Communication ☐ Creative Arts
☐ Mathematics ☐ American History
☒ Life and Physical Sciences ☐ Government/Political Science
☐ Language, Philosophy and Culture ☐ 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 spring and fall semester

9. Number of class sections per semester: 2 (fall), 3 (spring)

10. Number of students per semester: 300

11. Historic annual enrollment for the last three years: '09-10 = 389 '10-11 = 446 '11-12 = 434

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. By signing below, the Department Head and the College Dean confirm all information is accurate and complete.

13. Submitted by:

IRA F. GREENBAUM 22 January 2013
Course Instructor/Director BIOL Lower Division

Approvals:

Date

14. Department Head

Date

15. College Dean/Designee

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?

**Biology 113/123 (Essentials of Biology and Essentials of Biology Lab)** is a one-semester survey of basic biological principles highlighting chemical basis of life, cell biology, bioenergetics, genetics, evolution, diversity, form/function, the interaction of organisms with their environment and how each of these impact the human experience. Course includes a weekly laboratory component that implements use of the scientific method to reinforce and provide supplemental information related to lecture topics.

**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 scientific method is the fundamental basis of both lecture and lab. Lectures expose students to historical scientific experiments allowing them to hypothesize possible outcomes, reinterpret results, and explore alternative methodologies. Partial lecture topics (DNA profiles, cancer causes/treatments, Y-chromosome analysis, mitochondrial DNA interpretations) require students to examine, infer, compare, and contrast data. Lecture exams provide a variety of questions to assess students’ ability for critical thinking, analysis, application, and synthesis of these course topics. The laboratory provides a hands-on, active learning approach with scientific method based exercises that support students developing their own hypotheses, and independently generating, analyzing, and interpreting data. Experimental conclusions are critiqued, evaluated and summarized in quizzes, homeworks and in-class assignments.

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

Students interpret laboratory experimental results in written in-class and homework assignments implementing graphs, tables, figures, and text. Lab introductions and summaries involve instructor/student interaction with examination and summarization of concepts through the vehicle of review questions. Labs conclude with with an instructor/student interactive summary during which students orally respond to and ask questions. Both lecture and lab utilize visual communication through interpretation and analysis of data presented in graphs, tables and figures.

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

All laboratory exercises involve the generation and/or manipulation and subsequent analysis of numerical data. These data are presented and summarized in tabular and/or graphic form for homeworks and in-class assignments and
Texas A&M University

Core Curriculum

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

quizzes. Specific lecture topics, specifically biological chemistry, STR (short-tandem repeat) analysis, fossil dating, and genetics, also require students to manipulate and interpret numerical data. Students' aptitude in these practices are evaluated via computational problems on lecture exams, weekly lab quizzes and graded homework and in-class assignments.

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

The majority of laboratory exercises require students to work in groups (typically of four students). Different groups or members of each group typically perform separate components of the lab exercise; the groups or group-members then interact to produce a set of group-compiled results. Each student subsequently uses the group-compiled results as the basis for his/her written lab assignment (in-class or homework). Teamwork is assessed by direct observation by the lab instructor and the assignment of appropriate participation points. During interactive lab summaries and lecture discussions of specific experiments, students have the opportunity to consider different explanations of data and how these might yield different points of view. During lecture, students have the opportunity to interact with classmates to solve problems presented via a classroom interactive media mechanism. Students may discuss the problem, assist others with understanding the concept, and then independently infer and submit their answers electronically (via Top-Hat Monocle software).

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
3. Change in Courses – Core Curriculum

**BIOL 113. Essentials in Biology**

Course description
From: One-semester survey of basic biological principles, including chemical basis of life, cell biology, bioenergetics, genetics, evolution, anatomy and physiology, reproduction and development, and interaction with the environment. Not suitable for students who plan to take additional courses in the Biology Department. BIOL 123 is the corresponding laboratory course.

To: One-semester introductory biology for non-majors; chemical basis of life, cellular and molecular biology, genetics, evolution, biodiversity and interaction of organisms with their environment; includes a laboratory to supplement and reinforce lecture topics.

Lab and semester credit hours
From: (3-0). Credit 3.
To: (3-3). Credit 4.

**GEOG 203. Planet Earth.**

Course description
From: Overview of Earth's physical environment including climate, water, landforms, and ecosystems; processes that control these systems and their global distributions; human effects on these processes; topics illustrated through hands-on laboratory activities.

To: Earth's physical environment including climate, water, landforms, and ecosystems; processes that control these systems and their global distributions; human effects on these processes.

Lab and semester credit hours
From: (3-2). Credit 4.
To: (3-0). Credit 3.

**GEOS 210. Climate change.**

Lab and semester credit hours
From: (3-2). Credit 4.
To: (3-0). Credit 3.
Texas A&M University

Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
• Submit original form and attachments •

Form Instructions
1. Request submitted by (Department or Program Name): BIOLOGY

2. Course prefix, number and complete title of course: BIOL 113 Essentials in Biology

3. Change requested
   a. Prerequisite(s): From: ____________________________ To: ____________________________
   b. Withdrawal (reason): ____________________________
   c. Cross-list with: ____________________________
   d. Change in course title and description. Enter complete current course title and current course description in item 5; enter proposed course title and proposed course description in item 6. Complete item 7 for change in title.
   e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 7. Attach a course syllabus.

4. For informational purposes only, please indicate course number if this course will be stacked:

5. Complete current course title and current catalog course description: One-semester survey of basic biological principles, including chemical basis of life, cell biology, bioenergetics, genetics, evolution, anatomy and physiology, reproduction and development, and interaction with the environment. Not suitable for students who plan to take additional courses in the Biology Department. BIOL 123 is the corresponding laboratory course.

6. Complete proposed course title and proposed catalog course description (not to exceed 50 words): One-semester in introductory biology for non-majors; chemical basis of life, cellular and molecular biology, genetics, evolution, biodiversity and interaction of organisms with their environment; includes a laboratory to supplement and reinforce lecture topics.

7. a. As currently in course inventory:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course #</th>
<th>Title (excluding punctuation)</th>
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<tbody>
<tr>
<td>BIOL 113</td>
<td>Essentials in Biology</td>
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<table>
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<tr>
<th>Lect.</th>
<th>Lab</th>
<th>SCH</th>
<th>CIP and Fund Code</th>
<th>Admin. Unit</th>
<th>FICE Code</th>
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<td>3</td>
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b. Change to:

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<td>3</td>
<td>0</td>
<td>4</td>
<td>1</td>
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</tbody>
</table>

Approval recommended by:
T.D. McKnight
Department Head or Program Chair (Type Name & Sign) Date: 2/6/13
Chair, College Review Committee: 2/12/13

Department Head or Program Chair (Type Name & Sign) Date: 2/12/13
Chair, GC or UCC: 2/12/13

Submitted to Coordinating Board by:

Associate Director, Curricular Services
Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services — 02/11
PROPOSED SYLLABUS - BIOLOGY 113 ESSENTIALS IN BIOLOGY – FALL 2014

Professor: Dr. Leslie Kelso Winemiller  e-mail: lesliw@mail.bio.tamu.edu
Office: 320 Heldenfels  phone: 979-862-7484
Office Hours: Tuesdays and Thursdays (9:30-10:30 am; 2:30-3:30 pm) or by appointment

COURSE DESCRIPTION: Biology 113 is a one-semester course (4-credits) in introductory biology for non-majors. The course covers the chemical basis of life, cellular and molecular biology, genetics, evolution, biodiversity, and interaction of organisms with their environment. The course includes a laboratory that reinforces and provides supplemental information related to the lecture topics.

LEARNING OUTCOMES: Biology is the scientific study of life. The main objective of this course is to introduce students to the fundamentals of biology by exploring current topics relevant to today’s changing world. Upon completion of Biology 113 students should be able to demonstrate a basic knowledge of major biological theories that encompass the following topics:

1. The process of science: seeking answers to questions on the basis of observation and experimentation
2. Functional characteristics of living organisms
3. Cell structure and cell interactions with one another and the environment
4. Energy requirements and utilization of energy in living organisms
5. Structure, function, and expression of DNA molecules
6. Cell division processes and their role in growth, repair, development, and reproduction
7. Gene inheritance and the role of genes in the structural and functional organization of life
8. Genetic changes within populations, evolution, and the formation of new species.
9. Anatomical, physiological, and ecological characteristics of biologically diverse organisms

COURSE MATERIALS:
3. Top Hat Monocle Subscription ($20.00) - purchase at http://www.tophatmonocle.com; to be used in conjunction with a cell phone, smart phone, laptop computer, or iPod touch.

GENERAL INFORMATION:

Lower Division Biology Instruction Office: Information is available online at http://www.bio.tamu.edu/lbi or in Heldenfels 315 (Monday - Friday, 8 am - 5 pm, phone 845-4651, e-mail introbio@mail.bio.tamu.edu).


Absence Policy: The Lower Division Instruction Program does not accept the TAMU Explanatory Statement of Absence Form as an adequate verification for an absence. Students who miss class and want to make up missed assignments must provide verification for the reason of absence (see Student Rules 7, http://student-rules.tamu.edu). Prior notification of absence is expected whenever possible (Student Rule 7.3). For an absence due to illness or injury, each student must notify the instructor within two working days of the absence. Additionally, the student must provide, within one week, written and signed evidence of consultation with a medical professional confirming that the injury or illness was serious enough to justify the absence. Submitted evidence will be verified prior to approval of any makeup.

Grade Release: Family Educational Rights and Privacy Act of 1974 (FERPA) prohibits faculty or staff from posting grades by phone or e-mail. Grades will be online via Vista/Blackboard. To access this site: Logon to http://elearning.tamu.edu, select TAMU LOGON, logon with NetID and password, select Biology 113.

O-Drop: Tuesday, April 2 (5:00 pm) is the deadline for dropping a course with no penalty (Q grade). If students have any question as to whether or not to Q-drop, they should talk to their instructor before this date. After this date, students will be assigned a letter grade or must negotiate a W (withdrawal) or NG (no grade) through your academic dean (see Student Rule 10.3).
**Academic Integrity:** "An Aggie does not lie, cheat, steal, or tolerate those that 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 rules does not excuse a member of the TAMU community from the requirements or the processes of the Honor System. Academic misconduct involves any of the following offenses: cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity in any of these offenses. All incidents of academic dishonesty will be referred to the Biology Lower Division Program, are subject to academic penalties, and will be reported to the Texas A&M Honors System Office at [http://aggiehonors.tamu.edu](http://aggiehonors.tamu.edu).

**Disability Statement:** 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 for their disabilities. Students who have a disability requiring an accommodation should contact the Disability Services in Cain Hall, Room B118, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu).

**Copyright Statement:** The handouts used in this course are copyrighted. "Handouts" are all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, power point slides, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, students do not have the right to copy the handouts, unless the instructor expressly grants permission.

**Copyright 2013** as to this syllabus and all lectures. Students are prohibited from selling (or being paid for taking) notes during this course to or by any person or commercial firm without the express written permission of the professor teaching this course. Students are also prohibited from posting notes on the internet without the express written permission of the professor teaching this course.

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**Course Grade:** Designation of letter grades should be expected to be determined as follows:

- A = 90-100%; B = 80-89%; C = 70-79%; D = 60-69%; F ≤ 59%

The course percentage is 75% lecture and 25% laboratory.

(Lecture Percentage \( \times 0.75 \)) + (Lab Percentage \( \times 0.25 \)) = Final Course Grade

Lecture grade is determined by 3 exams (100 pts. each = 300 pts); 1 final exam (150 pts); Bonus points (pts. vary)

\[
3 \text{ Exams} + \text{ Final Exam} + \text{ Bonus Points} = \frac{450}{405} \times 100 = \text{Lecture Percentage}
\]

\[
\frac{\text{Total Lab Points (Assignments + Quizzes + Participation Points + Extra Credit)}}{405} \times 100 = \text{Lab Percentage}
\]

---

**Attendance Policy:** Regular attendance is expected and strongly encouraged for success in the course. Attendance will be recorded using the Top Hat Monocle online system in conjunction with a cell phone, smart phone, laptop computer, or iPod touch. Students with 4 or less absences may qualify for the next higher letter grade if their course average is borderline.

**Lecture Exams:** Lecture grades will be determined from three 100-point lecture exams and one 150-point final exam. Each 100-pt lecture exam consists of 45 multiple-choice. The final exam is cumulative and consists of 65 multiple-choice questions. Exams cover both lecture information and textbook assignments. For each exam, students are required to bring a #2 pencil and your TAMU student ID card. Only these items along with small purses (closed and fastened on the floor) are allowed at a desk. Cell phones, pagers, calculators, notebooks, backpacks, etc. are not allowed in the seating area. Scantrons will be provided for each exam. Students will not be admitted late to an exam after the first person has finished and left the class.

**Scantron Grade Checks:** Submit grade check requests at [http://www.bio.tamu.edu/ldl](http://www.bio.tamu.edu/ldl). Students will be notified by e-mail when the results are ready and must bring a student ID to Helden 315 to pick up the grade check.
### EXAM SCHEDULE

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAM I (100 pts.)</td>
<td>Tuesday, Sept. 23</td>
</tr>
<tr>
<td>EXAM II (100 pts.)</td>
<td>Tuesday, Oct. 21</td>
</tr>
<tr>
<td>EXAM III (100 pts.)</td>
<td>Thursday, Nov. 13</td>
</tr>
<tr>
<td>FINAL EXAM (150 pts.)</td>
<td>Wednesday, Dec. 3, 8:00 - 10:00 AM</td>
</tr>
</tbody>
</table>

**BIPS:** Biology Interactive Points (BIPs) are BONUS point opportunities (short quizzes) administered to students during class using the Top Hat Monocle system in conjunction with a cell phone, smart phone, laptop computer, or iPod touch. Bonus points are added to each student's cumulative point total at the end of the semester (before averaging). BIP sessions are unannounced and can only be completed by students who are present in class. **There are NO makeup opportunities for BIPs.**

**Exam Challenges:** After the exam, the key will be posted at [http://elearning.tamu.edu](http://elearning.tamu.edu). If students think there is an error on the key, they may state your objections through a **challenge**. Challenges are submitted to the instructor via e-mail [lesiiew@mail.bio.tamu.edu](mailto:lesiiew@mail.bio.tamu.edu) and should include test form, question number, and referenced evidence to support your challenge. If a student's written comments support the challenge, then the key will be revised. Note that this challenge period only lasts 24 hours from the time the exam key is posted. Final exams will not be returned or posted, and have no challenge period.

**Makeup Exams:** Will be given only in the event of an authorized university approved absence (see Attendance Policy). Upon approval of an excuse, a student must obtain a **signed authorization form** from the instructor and bring it to Heldenfels 315 to register for the makeup exam. You may not take a makeup exam to improve a test score. **Makeup exams will consist of essay and short answer type questions.**

### MAKEUP EXAM SCHEDULE

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAM I</td>
<td>Thursday, Oct. 2, 5:30-6:30 PM, Helden 200</td>
</tr>
<tr>
<td>EXAM II</td>
<td>Thursday, Oct. 30, 5:30-6:30 PM, Helden 200</td>
</tr>
<tr>
<td>EXAM III</td>
<td>Thursday, Nov. 27, 5:30-6:30 PM, Helden 200</td>
</tr>
</tbody>
</table>
# LECTURE TOPICS

**TOPIC**

**UNIT 1: What is Life Made of?**  
Chemistry, Cells, Energy  
Process of Science  
Chemistry and Molecules of Life  
Cell Function and Structure  
Nutrition, Metabolism, Enzymes  
Energy Flow and Photosynthesis  
Dietary Energy and Respiration  

*Biography for a Changing World: 1st edition*

<table>
<thead>
<tr>
<th>Topic</th>
<th>Chapter Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch.1; 1-18</td>
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<tr>
<td>Ch. 2; 19 - 37</td>
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<td>Ch. 3; 39 - 58</td>
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<tr>
<td>Ch. 4; 59 - 79</td>
<td></td>
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<tr>
<td>Ch. 5; 81 - 99</td>
<td></td>
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<tr>
<td>Ch. 6; 101 - 119</td>
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</table>

**UNIT 2: How Does Life Perpetuate?**  
Cell Division and Inheritance  
DNA Structure and Replication  
Genes to Proteins  
Cell Division and Mitosis  
Genetic Mutations and Cancer  
Single-Gene Inheritance and Meiosis  
Complex Inheritance  
Stem Cells and Differentiation  

<table>
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<th>Topic</th>
<th>Chapter Range</th>
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<tr>
<td>DNA Structure and Replication</td>
<td>Ch. 7; 121 - 142</td>
</tr>
<tr>
<td>Genes to Proteins</td>
<td>Ch. 8; 143 - 168</td>
</tr>
<tr>
<td>Cell Division and Mitosis</td>
<td>Ch. 9; 169 - 185</td>
</tr>
<tr>
<td>Genetic Mutations and Cancer</td>
<td>Ch. 10; 187 - 201</td>
</tr>
<tr>
<td>Single-Gene Inheritance and Meiosis</td>
<td>Ch. 11; 203 - 219</td>
</tr>
<tr>
<td>Complex Inheritance</td>
<td>Ch. 12; 221 - 251</td>
</tr>
<tr>
<td>Stem Cells and Differentiation</td>
<td>Ch. 13; 253 - 269</td>
</tr>
</tbody>
</table>

**UNIT 3: How Does Life Change over Time?**  
Evolution and Diversity  
Natural Selection and Adaptation  
Nonadaptive Evolution and Speciation  
Evidence for Evolution  
Life on Earth  
Prokaryote Diversity  
Eukaryote Diversity  

<table>
<thead>
<tr>
<th>Topic</th>
<th>Chapter Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Selection and Adaptation</td>
<td>Ch. 14; 271 - 298</td>
</tr>
<tr>
<td>Nonadaptive Evolution and Speciation</td>
<td>Ch. 15; 299 - 319</td>
</tr>
<tr>
<td>Evidence for Evolution</td>
<td>Ch. 16; 321 - 338</td>
</tr>
<tr>
<td>Life on Earth</td>
<td>Ch. 17; 339 - 357</td>
</tr>
<tr>
<td>Prokaryote Diversity</td>
<td>Ch. 18; 359 - 376</td>
</tr>
<tr>
<td>Eukaryote Diversity</td>
<td>Ch. 19; 377 - 394</td>
</tr>
</tbody>
</table>
**LAB INFORMATION:**

<table>
<thead>
<tr>
<th>SECTION:</th>
<th>DAY:</th>
<th>TIME:</th>
</tr>
</thead>
</table>

**LAB INSTRUCTOR:** ________________________ **OFFICE/OFFICE HOURS:** ________________________

**PHONE:** ________________________ **E-MAIL:** ________________________

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**Lab Safety:** You will be required to sign a Safety Agreement indicating that you have read, understood, and agree to follow the safety regulations required for this course.

A. Logon to the Howdy Portal, select My record  
B. Find the registration box link to LSA (lab safety acknowledgment)  
C. Read the LSA and then agree to it

Eating, drinking, and use of tobacco products are prohibited in the laboratory. University safety regulations require closed-toe shoes in the laboratory. You will be refused admittance to the lab if you wear sandals or open-toed shoes. Safety goggles are required. Bring safety goggles to all labs.

**Quizzes:** There will be thirteen 20 point quizzes that will be a combination of written and practical questions. Quizzes will have a minimum of 30% practical questions and may cover the current topic as well as previously covered material.

**Assignments:** There will be 11 homework and in-class assignments worth a total of 140 points. Two points are automatically deducted for late assignments, and an additional point is deducted for each additional day overdue. Late homework may be logged in at HELD 317E or HELD 315.

**Extra Credit:** A total of 10 extra credit points may be earned by bringing live pill bugs to lab during the week of Feb. 25-28. Five points are awarded for 10 pill bugs and ten points for 20 pill bugs. No points for late pill bugs.

**Participation Points:** Each TA will award a maximum of 25 points based upon cooperation, class participation, attendance, and cleanup.

**Re-grading:** Is at the discretion of the lab instructor. Any re-grade will be for the entire exam or assignment, so the score may go up, go down, or remain unchanged. Requests for re-grading must be initiated within two weeks of the assignment being returned to the student and must be completed before the last official day of classes.

**Lab rescheduling:** A verifiable university approved excuse is required before a student may be rescheduled into another lab section during the same week, if space permits. To reschedule a missed lab during the same week lab is missed, bring written verifiable evidence of a university excused absence to 315 HELD as early as possible. There will be NO make up labs. If you miss a lab for a university approved reason and cannot be rescheduled, then you must contact your lab instructor within two working days after the lab to make arrangements for a make up quiz or assignment. Failing to contact your instructor in a timely manner will result in a zero for the missed assignment.

**Laboratory Assignments:**

**Work individually.** All laboratory assignments are individual projects. Do not work together on written assignments without the permission of your lab instructor. Please carefully check due dates for each assignment.

**Plagiarism and Proper Citation:** Copying from texts, lab manuals, internet sources, or other students is plagiarism and will be considered cheating. If you quote from another source, you must credit that source in your text and properly cite the reference in the literature cited section. The following is an example of a proper citation:

Assignment 1 - The Guiding Principles of Biology (10 pts.). Present a short, in-class presentation of the termite behavior experiment with special reference to how the experiment followed the scientific method.

Assignment 2 - The Cell Theory (10 pts.). Your T.A. will assign you a syndrome from the worksheet on page 31. Work individually to write a one page report on the syndrome. Do not plagiarize your sources, but present the report in your own words. Properly cite sources used, submit the text Turn-it-in.com, print the receipt and attach it to the copy of the report you give to your instructor.

Assignment 3 - Cell Function - The Energy Cycle (15 pts.). Work individually! Graph the spinach action spectrum. Use the data from Table 3-2. Properly label the graph and note which wavelengths of light are primarily responsible for photosynthesis. Write a short summary describing the results and submit the text to Turn-it-in.com. Print the receipt or origination report and give to your instructor along with the graph and write up.

Assignment 4 - Theory of Heredity (15pts). Work independently to complete and turn in the worksheet on pages 89-90. Use complete sentences and/or show your work when answering questions. Answer questions and turn worksheet in to your lab instructor before you leave lab.

Assignment 5 - Forensic Biology (15pts). Work independently to complete and turn in the worksheet on pages 117-118. Use complete sentences and/or show your work when answering questions. Answer questions and turn worksheet in to your lab instructor before you leave lab.

Assignment 6 - Evidence of Evolution (10 pts.). Work independently to complete and turn in the worksheet on pages 137-138. Use complete sentences and/or show your work when answering questions. Answer questions and turn worksheet in to your lab instructor before you leave lab.

Assignment 7 - Plant Communities (10 pts.). Use class data to test the model correlating leaf morphology to climate data. Complete Table 10-1 and calculate MAT and MAP. Work individually to write a brief paragraph discussing the results. How accurate was the model for predicting mean annual temperature and precipitation for College Station? If it wasn’t accurate, what factors might be affecting the predictive qualities of the model? Submit your report to Turn-it-in.com, print the receipt and attach to the report when you submit it to your instructor.

Assignment 8 - Animal Diversity (15 pts.). Describe the distinguishing characteristics of the major invertebrate phyla, mollusks, arthropods, echinoderms, and chordates as described in chapters 11 and 12. Also draw a phylogeny showing the evolutionary relationship of the coelomate animals. Note a key character state for each branch point on your phylogeny. Submit the text to Turn-it-in.com, print the receipt and attach to your drawing when you submit to your instructor.

Assignment 9 - Digestive and Excretory System (10 pts.). Your TA will assign 1 of 3 enzyme experiments. Write a brief method and results for the assigned experiment. Include Table appropriate data table from the lab manual. Work individually. Properly cite sources used, submit the text to Turn-it-in.com, print the receipt and attach it to the copy of the report you give to your instructor.

Assignment 10 - Cardiovascular Function (20 pts.). Write a lab report. Follow the guidelines in Appendix A. DO NOT COPY APPENDIX A. Graph the class data for the effect of exercise on respiratory rate, pulse rate and blood pressure. Compare the class data to the data set taken by your group. Properly title and label the graphs and write a lab report as presented in Appendix A. Submit your text to Turn-it-in.com. Print the receipt and attach it to your graphs and description when you submit it to your instructor.

Assignment 11 - Nervous System (10pts). Your instructor will ask you and your lab partner to present a class summary of one of the experiments-reflexes, taste, pupillary response, eye anatomy, photoreceptors, touch discrimination, proprioceptors, brain anatomy, or electroencephalography.
Help desk: Students needing individual assistance will find a Teaching Assistant in Heldenfels Room 317E - phone 845-4653. Check the schedule posted outside of Heldenfels 315.

Biology Image Library: Study and review images of lab slides, specimens etc may be available online via the TAMU Biology Images Library at http://biologyimages.tamu.edu. Refer to your instructor for username and password information.

Problems: Courtesy dictates that you first discuss any problem with your laboratory instructor. If the problem has not been resolved, please contact Mr. Chris Lee (Teaching Coordinator) at 458-3399 (or by email clee@mail.bio.tamu.edu) to make an appointment to discuss the situation.

Record your lab grades:

<table>
<thead>
<tr>
<th>Homework and In-Class Assignments (140 pt)</th>
<th>Quiz Grades (260 pt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1 (10 pt)____________________</td>
<td>1. (20 pt)__________</td>
</tr>
<tr>
<td>Assignment 2 (10 pt)____________________</td>
<td>2. (20 pt)__________</td>
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<tr>
<td>Assignment 3 (15 pt)____________________</td>
<td>3. (20 pt)__________</td>
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<tr>
<td>Assignment 4 (15 pt)____________________</td>
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<td>Assignment 7 (10 pt)____________________</td>
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<td>Assignment 8 (15 pt)____________________</td>
<td>8. (20 pt)__________</td>
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<td>Assignment 9 (10 pt)____________________</td>
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<tr>
<td>Assignment 10 (20 pt)___________________</td>
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<tr>
<td>Assignment 11 (10 pt)___________________</td>
<td>11. (20 pt)__________</td>
</tr>
<tr>
<td>Extra credit (10 pt maximum) _________</td>
<td>12. (20 pt)__________</td>
</tr>
<tr>
<td>Participation pt (25 pt).___________</td>
<td>13. (20 pt)__________</td>
</tr>
</tbody>
</table>

5 points for 10 live pillbugs, 10 points for 20.

Total Points (405 possible = 425 minus the lowest earned quiz score*)

*Low quiz score must be an earned score. A quiz grade of zero will not be dropped.

Lab Percentage = \( \frac{\text{total points}}{405} \times 100 \) %
<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>CHAPTER</th>
<th>HOMEWORK/IN-CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Guiding Principles of Biology</td>
<td>Chapter 1</td>
<td>Assignment 1 - in-class</td>
</tr>
<tr>
<td>Week 2</td>
<td>The Cell Theory</td>
<td>Chapter 2</td>
<td></td>
</tr>
<tr>
<td>Week 3</td>
<td>Cell function</td>
<td>Chapter 3</td>
<td>Assignment 2 (turn-it-in.com)</td>
</tr>
<tr>
<td>Week 4</td>
<td>Cell Division</td>
<td>Chapter 4</td>
<td>Assignment 3 (turn-it-in.com)</td>
</tr>
<tr>
<td>Week 5</td>
<td>Theory of Heredity</td>
<td>Chapter 5</td>
<td>Assignment 4 (in-class)</td>
</tr>
<tr>
<td></td>
<td>Gene Expression &amp; Protein Synthesis</td>
<td>Chapter 6</td>
<td></td>
</tr>
<tr>
<td>Week 6</td>
<td>Forensic Biology</td>
<td>Chapter 7</td>
<td>Assignment 5 (in-class)</td>
</tr>
<tr>
<td>Week 7</td>
<td>Evidence for Evolution</td>
<td>Chapter 8</td>
<td>Assignment 6 (in-class)</td>
</tr>
<tr>
<td></td>
<td>Quiz 6</td>
<td></td>
<td>optional extra credit pillbugs due</td>
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<tr>
<td>Week 8</td>
<td>Behavioral Ecology</td>
<td>Chapter 9</td>
<td></td>
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<td>Week 9</td>
<td>Plant Communities</td>
<td>Chapter 10</td>
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<td>Week 10</td>
<td>Animal Diversity I</td>
<td>Chapter 11</td>
<td>Assignment 7 (turn-it-in.com)</td>
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<td></td>
<td>Quiz 9</td>
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<tr>
<td>Week 11</td>
<td>Animal Diversity II</td>
<td>Chapters 12</td>
<td></td>
</tr>
<tr>
<td>Week 12</td>
<td>Digestive &amp; Excretory System</td>
<td>Chapter 13</td>
<td>Assignment 8 (turn-it-in.com)</td>
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<td></td>
<td>Quiz 11</td>
<td></td>
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<tr>
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<td>Cardiopulmonary Function</td>
<td>Chapter 14</td>
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<td>Quiz 12</td>
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<tr>
<td>Week 14</td>
<td>Nervous System</td>
<td>Chapter 15</td>
<td>Assignment 10 (turn-it-in.com)</td>
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<tr>
<td></td>
<td>Quiz 13</td>
<td></td>
<td>Assignment 11 (in-class)</td>
</tr>
</tbody>
</table>

**GOGGLES REQUIRED EVERY WEEK**
**DO NOT WEAR OPENED-TOE SHOES TO LAB.**
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 203 3. Texas Common Course Number: GEOG 1301

4. Complete course title: Planet Earth 5. Semester credit hours: 3

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

☐ Communication ☐ Creative Arts
☐ Mathematics ☐ American History
☒ Life and Physical Sciences ☐ Government/Political Science
☐ Language, Philosophy and Culture ☐ 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 course be offered? Every semester

9. Number of class sections per semester: 5

10. Number of students per semester: 650


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: 12/21/12

☐ George Fox
Course Instructor

14. Department Head

☐ January 14, 2013

15. College Dean/Designee

☐ January 17, 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?

GEOG 203 focuses on describing and explaining the earth’s surface. We group the surface features into three broad categories (climates, ecosystems, and landforms) that correspond with the three major subdisciplines of contemporary physical geography, namely, climatology, biogeography, and geomorphology. In this course we describe the earth’s surface and seek a conceptual understanding of how surface features develop. We use a problem-based approach, as science is at its core a problem-centered endeavor. Students use graphs, maps, quantitative expressions, and conceptual models to understand and predict how earth surface systems operate. Students also gain an understanding of how earth systems (atmosphere, hydrosphere, biosphere, lithosphere) interact to form the landscapes we observe, and how human societies interact with these natural systems. Human interactions with their environments is a fundamental theme in geography.

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 on each objective will be evaluated.

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

Students complete problem-based homework assignments that entail learning fundamental concepts and applying those concepts to various hypothetical and actual scenarios. Problem-solving lies at the heart of scientific inquiry; by using a problem-based approach the students gain general insights about how science is conducted, in addition to specific insights about concepts in physical geography. Class lectures emphasize problem-solving and the development of a general conceptual framework for understanding topics. The quizzes, tests, and in-class activities reinforce problem-solving, creative thinking, analysis, synthesis, concepts, etc.

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

Physical geography is a visual discipline, as it deals with maps and other representations of the earth’s surface (e.g., satellite images, photographs). It also entails graphical characterizations of processes and patterns. Students learn to interpret and synthesize the information contained in these characterizations via lecture material, homework assignments, in-class activities, and tests. They also conduct their own mapping and graphing, and communicate their interpretations in writing, particularly in the context of in-class and homework assignments. The in-class problem-solving exercises involve teamwork in which the students communicate orally with other group members, and also with the entire class at the completion of the teamwork phase of the exercise.

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

Texas A&M University

Core Curriculum

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

Students encounter observable facts about the earth’s surface in every component of the course, whether lectures or reading assignments or tests. They grapple with linking conceptual models to empirical facts. Quantification is an inherent part of characterizing and mapping surface features (e.g., global temperature patterns, biodiversity gradients, stream discharge) and of describing concepts (e.g., through equations describing relationships between variables).

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 integrated into the in-class problem-solving exercises and some of the homework assignments through group exercises, wherein team members collaborate to identify solutions to problems they are given. Each team member contributes insights and information, which are synthesized by the members and summarized in a short report. Students learn the role and limitations of abstract concepts and empirical observations as they relate to problem-solving and to reconciling different points of view about physical geography topics. They also identify and report areas of uncertainty that prevent consensus. The contributions of each student to the process will be assessed by the observations of the instructor, by peer review, and by the student’s own reflections.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course Description: Rain, wind, heat, and cold; forests; grasslands, and deserts; mountains, rivers, plains, and canyons: these are some of the features that cover the surface of the earth. Geography 203 is a course about the earth's surface. We'll group the surface features into three broad categories—climates, ecosystems, and landforms—which correspond with the three major subdisciplines of contemporary physical geography, namely, climatology, biogeography, and geomorphology. Such categories are for our convenience, of course. A glance at any actual landscape shows that even within a small area the earth's surface contains many different features related to all three categories. In this course, we will explore the earth's surface and the interconnected processes that operate to bring about its features.

Learning Outcomes: Students will be able to (1) interpret the arrangement of climates, ecosystems, and landforms over the earth's surface; (2) predict patterns that emerge from the interplay of multiple earth system processes and human actions; (3) explain the manner in which knowledge of the earth's surface has been gained; (4) analyze some types of data and maps that physical geographers commonly use to study the earth; (5) describe geographic patterns through maps, graphs, and quantitative and written expressions; and (6) solve problems through teamwork.

Instructor: Dr. Charles Lafon
Office: 706B Eller O&M Building
Office Hours: TR 1:30–3:00 pm; or by appointment
Phone: 862-3677; Geography Dept. phone: 845-7141
E-mail: clafon@geog.tamu.edu
Class Meeting Time and Place: TR 11:10 am–12:25 pm; ZACH 102

Supplemental Instruction (SI): Melissa Taylor (taylor.melissal1@tamu.edu) will lead the SI sessions for this class.


Other Reading Assignments: The daily schedule below lists other reading assignments by the author's name. PDFs of these essays will be available through the Course Reserves link (under Class Resources) on the University Libraries homepage (http://library.tamu.edu).

Grading: The course grade comprises the following parts:

- Exam 1: 28 points
- Exam 2: 28 points
- Exam 3: 28 points
- Homework exercises: 6 points
- Quizzes: 6 points
- In-class problem-solving exercises: 4 points
- Total: 100 points

I use the standard ten-point grading scale (90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, ≤ 59 = F), but may adjust the grades upward, if necessary, at the end of the semester.

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 (http://student-rules.tamu.edu/rule07). Please see the instructor in advance if you know you will not be able to take an exam on the scheduled date.
Course Outline and Daily Schedule (Tentative):
Chapters & page numbers refer to the Christopherson text; the other reading assignments are listed below.

I. INTRODUCTION

<table>
<thead>
<tr>
<th>Week/Day</th>
<th>Date</th>
<th>Topic</th>
<th>Reading assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/T</td>
<td>Aug 28</td>
<td>Introduction</td>
<td>Ch 1</td>
</tr>
<tr>
<td>R</td>
<td>Aug 30</td>
<td>Latitude, longitude, &amp; maps</td>
<td></td>
</tr>
</tbody>
</table>

II. CLIMATES

A) How the earth receives the energy that makes the climate system work

| 2/T      | Sept 4 | Earth-sun relationships                    | Ch 2                     |
| R        | Sept 6 | Solar radiation & its interaction with the atmosphere | Ch 3 (pp. 60-66), Ch 7 (168-171) |
| 3/T      | Sept 11| Earth’s radiation balance                  | Ch 4 (84-93, 101-103)    |

B) How temperature differs between places and changes over time

| 4/T      | Sept 13| Temperature patterns                       | Ch 5                     |
| R        | Sept 18| Past temperatures: reconstructing climate change | Ch 17 (509-521); Flannery ch 11, Alley ch 6 |
| R        | Sept 20| Climate change: causes & effects           | Ch 10 (282-289)          |

C) How—and where—the wind blows, and implications for climate patterns

| 5/T      | Sept 25| Atmospheric circulation: processes         | Ch 6                     |
| R        | Sept 27| **EXAM 1**                                  |                          |
| 6/T      | Oct 2  | Atmospheric circulation: patterns           | Ch 7 (164-174), Ch 9 (224-233) |
| R        | Oct 4  | Atmospheric circulation: patterns           | Ch 7 (175-178)           |
| 7/T      | Oct 9  | Oceanic circulation & El Niño-Southern Oscillation | Ch 7 (178-187); Ch 8 (195-201) |

D) Moisture in the climate system: humidity and precipitation

| R        | Oct 11 | Atmospheric moisture                       | Ch 7                     |
| 8/T      | Oct 16 | Moisture & atmospheric stability           | Ch 7 (175-178)           |
| R        | Oct 18 | Precipitation                              | Ch 7 (178-187); Ch 8 (195-201) |

E) The weather and climate of air masses, fronts, and storms

| 9/T      | Oct 23 | Air masses & fronts                        | Ch 8                     |
| R        | Oct 25 | Midlatitude and tropical cyclones          |                          |
| 10/T     | Oct 30 | **EXAM 2**                                 |                          |

F) Tying it together: how climates are distributed over the earth’s surface

| R        | Nov 1  | Global climates                            | Skim Ch 10 (251-281)     |

III. ECOSYSTEMS

A) How organisms are distributed over the earth’s surface

| 11/T     | Nov 6  | Geographic distributions & factors that control them | Ch 19 (556-565)          |
| R        | Nov 8  | Biomes and biodiversity                     | Skim Ch 20               |
B) How vegetation responds to storms, fires, and environmental change

12/T Nov 13 Disturbances & succession

Ch 19 (577-581), Demmon, Greene, Lafon (919-934)

IV. LANDFORMS

A) How landforms come about

R Nov 15 Denudation, weathering, & karst

Ch 13

B) How gravity molds landforms

13/T Nov 20 Landslides and other mass movements

R Nov 22 THANKSGIVING

C) How running water molds landforms

T Nov 27 Stream systems and streams as geomorphic agents

Ch 14

14/R Nov 29 Fluvial landforms

T Dec 4 Fluvial landforms

McPhee, Ohio DNR

Final Exam Date and Time: Friday, December 7, 3:00-5:00 pm in our regular classroom

Other Reading Assignments Listed on the Daily Schedule (available from the Library’s e-reserves)


- Greene, S.W. 1931. The forest that fire made. American Forests 37, pp. 583–584, 618.


ADA Statement: 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 the Department of Student Life, Services for Students with Disabilities in Room B118 of Cain Hall. The phone number is 845-1637.

Academic Integrity Statement: An Aggie does not lie, cheat, or steal, or tolerate those who do.

Aggie Honor System Office website: http://aggiehonor.tamu.edu
3. Change in Courses – Core Curriculum

**BIOL 113. Essentials in Biology**

**Course description**

*From:* One-semester survey of basic biological principles, including chemical basis of life, cell biology, bioenergetics, genetics, evolution, anatomy and physiology, reproduction and development, and interaction with the environment. Not suitable for students who plan to take additional courses in the Biology Department. BIOL 123 is the corresponding laboratory course.

*To:* One-semester in introductory biology for non-majors; chemical basis of life, cellular and molecular biology, genetics, evolution, biodiversity and interaction of organisms with their environment; includes a laboratory to supplement and reinforce lecture topics.

**Lab and semester credit hours**

*From:* (3-0). Credit 3.
*To:* (3-3). Credit 4.

**GEOG 203. Planet Earth**

**Course description**

*From:* Overview of Earth’s physical environment including climate, water, landforms, and ecosystems; processes that control these systems and their global distributions; human effects on these processes; topics illustrated through hands-on laboratory activities.

*To:* Earth’s physical environment including climate, water, landforms, and ecosystems; processes that control these systems and their global distributions; human effects on these processes.

**Lab and semester credit hours**

*From:* (3-2). Credit 4.
*To:* (3-0). Credit 3.

**GEOS 210. Climate change.**

**Lab and semester credit hours**

*From:* (3-2). Credit 4.
*To:* (3-0). Credit 3.
Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
Submit original form and attachments.

1. Request submitted by (Department or Program Name):
   Department of Geography

2. Course prefix, number and complete title of course:
   GEOG 203, Planet Earth

3. Change requested
   a. Prerequisite(s): From: __________________________ To: __________________________
   b. Withdrawal (reason):
   c. Cross-list with: __________________________
   d. Change in course title and description. Enter complete current course title and current course description in item 5; enter proposed course title and proposed course description in item 6. Complete item 7 for change in title.
   e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 7. Attach a course syllabus.

4. For informational purposes only, please indicate course number if this course will be stacked:

5. Complete current course title and current catalog course description:
   Planet Earth. Overview of Earth's physical environment including climate, water, landforms, and ecosystems; processes that control these systems and their global distributions; human effects on these processes; topics illustrated through hands-on laboratory activities.

6. Complete proposed course title and proposed catalog course description (not to exceed 50 words):
   Planet Earth. Overview of Earth's physical environment including climate, water, landforms, and ecosystems; processes that control these systems and their global distributions; human effects on these processes

7. a. As currently in course inventory:

   Prefix: GEOG 203
   Course #: 3
   Title (excluding punctuation): PLANET EARTH
   Lect.: 03
   Lab.: 01
   SCH.: 04
   CP and Fund Code: 60040
   Admin Unit: 1250
   EICE Code: 003632
   Level: 2

   b. Change to:

   Prefix: GEOG 203
   Course #: 3
   Title (excluding punctuation): PLANET EARTH
   Lect.: 03
   Lab.: 01
   SCH.: 04
   CP and Fund Code: 60040
   Admin Unit: 1250
   EICE Code: 003632
   Level: 2

   Approval recommended by:
   Department Head or Program Chair (Type Name & Sign) Jan 14, 2013
   Chair, College Review Committee
   Date

   Dean of College
   Date

   Submitted to Coordinating Board by:
   Chair, GC or UCC
   Date

   Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu
   Curricular Services • 02/11
GEOG 203: Supporting Statement for Change in Item 6

We are removing the text, "topics illustrated through hands-on laboratory activities" from the catalog description. This change reflects the decoupling of GEOG 203 from its lab, which will be available separately as GEOG 213.
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 213

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

4. Complete course title: Planet Earth Lab

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? Fall and Spring

9. Number of class sections per semester: 27

10. Number of students per semester: 675


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: Charles W. Lafon

Course Instructor

Approval:

Date: 3/27/13

14. Department Head

Date: 3/24/2013

15. College Dean/Designee

Date: 3-28-13

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.
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?

GEOG 213 is a laboratory course focused on describing and explaining the earth’s surface. We group the surface features into three broad categories (climates, ecosystems, and landforms) that correspond with the three major subdisciplines of contemporary physical geography, namely, climatology, biogeography, and geomorphology. In this course we describe the earth’s surface and seek a conceptual understanding of how surface features develop. We use a problem-based approach, as science is at its core a problem-centered endeavor. Students use graphs, maps, quantitative expressions, and conceptual models to understand and predict how earth surface systems operate. Students also gain an understanding of how earth systems (atmosphere, hydrosphere, biosphere, lithosphere) interact to form the landscapes we observe, and how human societies interact with these natural systems. Human interactions with their environments is a fundamental theme in geography.

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):

GEOG 213 is a one-hour laboratory course in physical geography. Students complete laboratory assignments that entail learning fundamental concepts and applying those concepts to various scenarios. Problem-solving lies at the heart of scientific inquiry; by using a problem-based approach the students gain general insights about how science is conducted, in addition to specific insights about concepts in physical geography. Laboratory activities require problem-solving, creative thinking, analysis, synthesis, concepts, etc.

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

Physical geography is a visual discipline, as it deals with maps and other representations of the earth’s surface (e.g., satellite images, photographs). It also entails graphical characterizations of processes and patterns. Through the laboratory exercises the students learn to interpret and synthesize the information contained in these characterizations. They also conduct their own mapping and graphing, and communicate their interpretations in writing.

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

Empirical observation and quantification lie at the heart of the laboratory experience. Students grapple with linking conceptual models to empirical facts, whether they are conducting climate observations in the field, analyzing maps in the laboratory, or conducting basic statistical analyses.
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):

Teamwork is integrated into many of the laboratory assignments through group exercises, wherein team members collaborate to obtain the data required for analyses relevant to the problems they are asked to solve. For these exercises, the role of each team member is integral to obtaining a complete dataset and/or completing the analyses. Students learn the role and limitations of empirical observations as they relate to problem-solving and to reconciling different points of view about physical geography topics. They also identify and report areas of uncertainty that prevent consensus. The contributions of each student to the process will be assessed by the observations of the Teaching Assistant, by peer review, and by the student’s own reflections.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
GEOG 213 – 500: Planet Earth Lab
Texas A&M University

Instructor: Charles Lafon
TA: Swetha Peteru
Course Time: Thursday 2:20 pm – 4:20 pm
Course Location: CSA 311
Online: http://glearning.tamu.edu/

Email: Speteru@tamu.edu
Office: CSA 203F
Office Hours: Tuesday 10:30 – 11:00 am; Thursday 9:30 – 11:00 am; or by appointment

Course Description

GEOG 213: Planet Earth Lab is intended to give students hands on experience with basic concepts in physical geography. This course covers a variety of topics and tools, including GPS, mapping, climatic analysis, weather maps, surveying, dendroclimatology, and hydrology. A problem-based approach underlies the course.

Learning Outcomes

Students will be able to

- Explain basic earth science concepts
- Solve problems by applying earth science concepts and methods
- Articulate how science impacts society
- Extract important points and synthesize material
- Describe earth surface features and concepts through maps, graphs, text, and quantitative expressions
- Solve problems by collaborating in data collection, analysis, and interpretation

Required Books


The lab manual for this course is mandatory. Each week we will be working on a lab directly from the lab manual, which will be turned in the following week. Photocopies of labs or labs that have already been worked on will not be accepted. Students should come to class having read the lab for the particular week (see lab schedule below) as labs will typically be much easier if there is some prior knowledge of the work we will be doing in class.

There are also good textbooks in the library that cover introductory physical geography and there are online textbooks that are good supplements as well. For example – www.physicalgeography.net. Additionally, students are encouraged to bring calculators capable of computing simple calculations to lab each week (cell phones are NOT acceptable calculators). Basic knowledge of Microsoft Excel (or similar) will be helpful for at least one lab.
<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 27–31</td>
<td>Syllabus and Introductions</td>
</tr>
<tr>
<td>2</td>
<td>Sep 3–7</td>
<td>Lab 1: How do you navigate with a GPS?</td>
</tr>
<tr>
<td>3</td>
<td>Sep 10–14</td>
<td>Lab 2: How do you read a map?</td>
</tr>
<tr>
<td>4</td>
<td>Sep 17–21</td>
<td>Lab 3: How much energy do we get from the sun?</td>
</tr>
<tr>
<td>5</td>
<td>Sep 24–28</td>
<td>Lab 4: How would the climate change if we replaced a grassy field</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with a parking lot?</td>
</tr>
<tr>
<td>6</td>
<td>Oct 1–5</td>
<td>Lab 5: What controls the climate?</td>
</tr>
<tr>
<td>7</td>
<td>Oct 8–12</td>
<td>Lab 6: What is the weather going to be tomorrow?</td>
</tr>
<tr>
<td>8</td>
<td>Oct 15–19</td>
<td>Lab 7: How cold was it in 1816?</td>
</tr>
<tr>
<td>9</td>
<td>Oct 22–26</td>
<td>Lab 8: How will the type of trees in this forest change in the future</td>
</tr>
<tr>
<td>11</td>
<td>Nov 5–9</td>
<td>Lab 10: How do you make a topographic map? Part 2: Creating contour lines</td>
</tr>
<tr>
<td>12</td>
<td>Nov 12–16</td>
<td>Lab 11: Is there enough water</td>
</tr>
<tr>
<td>13</td>
<td>Nov 19–23</td>
<td>Thanksgiving Holiday: No Labs</td>
</tr>
<tr>
<td>14</td>
<td>Nov 26–30</td>
<td>Lab 12: How large is a 10-year flood?</td>
</tr>
</tbody>
</table>

**Grading**

Your grade will consist of 12 lab assignments, assignments regarding current events, a participation grade, and responding to discussion questions posted on E-learning. The grades are broken down as follows:

- 12 lab assignments - 60%
- Current events assignments - 20%
- E-learning posts - 10%
- Participation - 10%

Final grades will be assigned based on the following scales:

- \( \geq 90\% = A \)
- \( 80\% - 89\% = B \)
- \( 70\% - 79\% = C \)
- \( 60\% - 69\% = D \)
- \(< 60\% = F \)
Attendance and Other Policies

*I expect all students to attend every session having done the background reading.* If a student does not attend class and does not have a written university-approved absence (see section 7.1 of the TAMU student rules at [http://student-rules.tamu.edu](http://student-rules.tamu.edu)), the student will receive a zero for that laboratory assignment. If you miss a session for a university-approved reason, you must follow the procedures outlined in section 7.3 of the student rules to have your absence excused. If you missed class with an excused reason, you must make arrangements to meet with your lab instructor as soon as possible to make-up the assignment.

Each lab assignment will be due at the start of your next lab (unless stated otherwise). Late lab assignments will only be accepted with instructor permission. Except in cases of university excused absences, labs turned in more than one week after the due date will not be accepted.

*Cell Phones:* Cell phone use in class is NOT acceptable. All cell phones should be turned off at all times during lab and kept in backpacks, purses, etc. There should be absolutely no texting in class, and certainly no answering the phone while in class. Students should bring a separate calculator, as cell phones will not be allowed. If students fail to abide by this policy, the student will be told to leave class and will only be allowed to return with instructor permission.

Scholastic Dishonesty

It is my hope that academic dishonesty will not be a problem in this class. Texas A&M does, however, have 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 program that handles all cases of academic dishonesty, their website is located at: [http://aggiehonor.tamu.edu/](http://aggiehonor.tamu.edu/).

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; a plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

The 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.

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/](http://student-rules.tamu.edu), under “Scholastic Dishonesty” section.

**Aggie Code of Honor:** “An Aggie does not lie, cheat, or steal or tolerate those who do.”

[http://aggiehonor.tamu.edu/](http://aggiehonor.tamu.edu/)
Student Support
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:

The Department of Student Life: Services for Students with Disabilities
Cain Hall, Room B1.8, 979-845-1637, http://disability.tamu.edu/

There are numerous other student support organizations on campus including:
- Student Learning Center, 118 Hotard Hall, 845-2724; http://slc.tamu.edu/
- Student Counseling Service, Cain Hall, 845-4427; http://www.scs.tamu.edu/
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): Department of Horticultural Sciences

2. Course prefix and number: HORT 201

3. Texas Common Course Number: 1301


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 fall, spring and summer

9. Number of class sections per semester: 1

10. Number of students per semester: 200 to 340

11. Historic annual enrollment: for the last three years: 501 510 556

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: 

   Course Instructor: [Signature]

   Date: 1/29/13

13. Approvals:

   Department Head: [Signature]

   Date: 2/9/13

15. College Dean/Designee

   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 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):  Department of Horticultural Sciences

2. Course prefix and number:  HORT 201  3. Texas Common Course Number:  1301


6. This request is for consideration in the following Foundational Component Area:
   □ Communication  □ Creative Arts
   □ Mathematics    □ American History
   □ Life and Physical Sciences □ Government/Political Science
   □ Language, Philosophy and Culture □ 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 fall, spring and summer

9. Number of class sections per semester:  1

10. Number of students per semester:  200 to 340

11. Historic annual enrollment for the last three years:  501  510  556

   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:
   [Signature]  1/29/13

   Course Instructor  Date

14. Approvals:
   [Signature]  2/7/13

   Department Head  Date

15. College/Dean/Designee:
   [Signature]  2/16/13

   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.

3-4-13 not appr.
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?

**HORT 201** Horticultural Science and Practices surveys the basic biology of plants (anatomy, morphology, physiology, life cycle), environmental sciences (water, light, temperature, soil, atmosphere, nutrient elements) and biotic factors (pests) that impact the growth, development, productivity and aesthetic value of horticultural crops, e.g. fruits, vegetables and ornamental crops. Each topic begins with the fundamental scientific basis of the topic and, where appropriate, explain the scientific method used to develop the conclusions, then progresses to the impacts on plants and/or the environment, then the practical applications on horticultural crops.

**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):

How Addressed
Students will develop critical thinking skills through integration of “structure-function” relationships, “cellular physiology-whole plant relationships”, “environment-plant” interactions, or deduction of causal effects from symptomology.

Strategies
Each topic will begin with scientific background, followed by how this relates to environmental and/or biologica effects, then practical applications. Examples would be:
Lectures on water would begin with the physical chemistry of water, such as the principle of heat of vaporization, which will be followed by lecture on water movement through plants and out of leaves by transpiration. Then the class would dialogue about how this explains why a plant can does not overheat in full sun in the middle of a hot August day in Texas. Another example would be lecture on the light absorption spectrum of chlorophyll and the light emission spectrum of artificial lights, then question the class “What is the best artificial light source under which to grow plants indoors and why?” In addition, this approach is used to promote critical thinking outside of class by simply ending the photosynthesis and respirations lectures with a take-home question such as: “If you went home tonight, put your ficus in a plastic bag, exhaled into the bag, then sealed the bag with a bread twist tie – would the plant’s photosynthesis increase or not?” The next lecture would start with students discussing the answer. This might be followed with a question such as, “Could you do the same thing and make your salad last longer when stored in your refrigerator?” I call these “Food for Thought” questions to stimulate critical thinking both inside and outside the classroom. As the lectures progress through the semester and each new topic builds on and interrelates to the previous topics, the students would be able to critically evaluate how a certain plant STRUCTURE would impact certain plant FUNCTION(S) relative to control of water loss, increase/decrease of photosynthesis, anatomical basis of asexual propagation, hormonal control of growth, crop productivity, etc.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

How evaluated
Each exam will have questions formulated to test for the ability to answer these “Food for thought” type questions.

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

How addressed
Active learning is used in almost all lectures, which includes extensive question and answer dialogue with students during the class. Students will be given “Food for Thought” questions at the end of most lectures, and the class will verbalize answers/solutions at the beginning of the next lecture.

Strategies
Students will be given “Food for Thought” questions at the end of most lectures, and we will spend the first few minutes of the next lecture verbally discussing the class answers. Or, questions will be raised during the lecture. Questions about controversial issues will be used to stimulate self-reflection then dialogue, such as “We have been cloning plants for centuries without controversy, so why is the recent cloning of animals so controversial?” More often than not, the Food for Thought question would come from a newspaper headline, nightly news or 60 minutes episode on topics such as cloning, climate change, water restrictions, loss of habitat and biodiversity, oil spills, nitrate pollution from agriculture, how will plants repopulate after recent forest fires, etc., especially as these factors relate to the urban and home landscape - the new American farm is your interiorscape and your yard. This is an effective approach to get students to express themselves; the timid student my chime-in on a topic they are passionate about. Also, it applies their education to the real world.

How evaluated
To make sure the student can independently express ideas, exams will be used to test the student’s ability to express concepts, interpretations and personal views in writing. The grade may not be based on whether or not the answer is right or wrong, but rather was the answer to the point, clear and succinct.

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

How addressed
In many of the topics, the scientific basis or horticultural application lends itself to quantitative or qualitative analysis. Examples would be, reasoning to diagnose causal abiotic and biotic stress from visual plant symptoms, deduce quantitative responses or incite trends from graphs, or solve fertilizer problems, etc.

Strategies
Students will develop basic empirical and quantitative skills in areas such as physical chemistry and environmental relations and how the heat of vaporization of water is used to determine the degree evaporative cooling by transpiration. Or practical applications, such as mathematically calculating the lowest cost fertilizer per unit nitrogen given the fertilizer analysis and mass of the bagged fertilizer. Students also will use reasoning to identify nutrient deficiencies from visual symptomology. Many of the relationships are presented in graphic form, thus the students learn how to read and interpret graphs. For example, students will use graphs to determine the light compensation point from plots of photosynthesis and respiration rates, and graphically observe how the light compensation point decreases as plants acclimate to low light interior environments.

How evaluated
Exam questions will be formulated to test the students ability solve problems, reason cause and effect, and interpret trends from graphs.
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):

How addressed
The major pedagogical tool used in lecture is active learning, including active learning exercises with students. Food for Thought questions will be used to stimulate small groups discussions.

Strategies
Students will participate as groups in “active learning” exercises, such as using students to act-out electron and light capture by chlorophyll and resultant ATP synthesis in the electron transport chain of the light reaction of photosynthesis. “Think-Pair Share” or “Think-Group Share” will be used for active class participation on many topics.

How evaluated
I always formulate a question that can only be answered if one participated in or paid attention to the active learning exercise. This assures knowledge was gained from the activity.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
SYLLABUS
HORT 201
Horticultural Science and Practices

Course title and number            HORT 201
Term                               Fall 2013
Meeting times and location         Tuesday and Thursday, 11:10-12:25, KLER 115

Instructor Information
Name                                David Wm. Reed
Work: 979-458-0710                  
Cell: 979-777-2750                  
Home: 979-690-0401                  
Email address                       dwreed@tamu.edu
Office hours                        Anytime as arranged with student
Office location                     AGLS 515W and HFSB 408

COURSE DESCRIPTION AND PREREQUISITES
Survey of the basic biology of plants (anatomy, morphology, physiology, life cycle), environmental sciences (water, light, temperature, soil, atmosphere, nutrient elements) and biotic factors (pests) that impact the growth, development, productivity and aesthetic value of horticultural crops, e.g. fruits, vegetables and ornamental crops. Each topic begins with fundamental scientific basics, then progresses to the impacts on plants and/or the environment, then the practical applications on horticultural crops. Prerequisites: none

LEARNING OUTCOMES AND COURSE OBJECTIVES
Subject Matter Based
- Students will recognize plant "architecture" or "structure" as determined by outer morphology and internal anatomy.
- Students will develop a basic knowledge of plant "function", with a focus on the fundamental principles of photosynthesis, respiration and hormones.
- Students will master fundamental physical and chemical basis of the environmental variables of light, temperature, water, soil, atmosphere, mineral nutrition and how these effect plant growth.
- Students will develop practical skills to "orchestrate" plant growth with hormones, pruning, nutrition, irrigation, manipulation of atmospheric gases and soil modification.

Required Elements
- Critical Thinking: Students will develop critical thinking skills through integration of "structure-function" relationships, "cellular physiology-whole plant relationships", "environment-plant" interactions, or deduction of causal effects from symptomology.
- Empirical and Quantitative Skills: Students will develop basic empirical and quantitative skills in areas such as heat of vaporization and environmental cooling, photosynthetically active radiation (PAR) and plant acclimation to low light, fertilizer analysis and computation of most economical costs, etc.
- Communication Skills: Students will be given "Food for Thought" questions at the end of most lectures, and will verbalize answers/solutions at the beginning of the next lecture, and students will express their understanding of the course concepts in writing.
- Teamwork: Students will participate as groups in "active learning" exercises, such as using students to act-out electron and light capture by chlorophyll and resultant ATP synthesis in the electron transport chain of the light reaction of photosynthesis. "Think-Pair Share" or "Think-Group Share"
will be used for active class participation on many topics.

- Personal Responsibility: Some “Food for Thought” questions posed during lecture or at the end of each lecture will be on topics such that effect individual’s philosophy, decisions and/or actions, such as ethical views of genetic engineering and GMOs, and cloning of animals versus cloning of plants; one’s carbon footprint relative to climate change and the greenhouse effect; diminishing water supplies and one’s reaction to water restriction, etc. Students will be asked to contemplate their personal responsibility relative to these issues.
- Social Responsibility: Some “Food for Thought” questions posed during lecture or at the end of each lecture will be on topics such as climate change and our social responsibility, society’s acceptance of GMOs and the economic consequences, etc., and contemplate one’s social and political responsibilities relative to these controversial topics.

**TEXTBOOK AND RESOURCE MATERIAL**
Web site: hort201.tamu.edu

**GRADING**
Exams and weights
100 points Exam 1 (inclusive)
100 points Exam 2 (inclusive)
100 points Exam 3 (inclusive)
100 points Exam 4 (inclusive)
100 points Final Exam (comprehensive)

**Grading Scale**
10 point scale: A = 90-100, B = 80-89, C = 70-79, D = 60-69, F <=59

**Grade Calculation**
- Drop lowest grade of the five (5) exams
- Therefore, your grade is based on a total of 400 points
- Numerical grade: mathematical average of highest 4 exam grades, rounded to next whole number
- Letter grade: letter grade equivalent (see Grading Scale) of your mathematical average; there is no curve on final grades or outside/extra work for extra credit.

**EXAM DATES:** Exam Dates are posted on the course web site.

**MAKE-UP EXAMS:**
All absences and make-up policies are based on Student Rules (http://student-rules.tamu.edu/). Make-up exams will be given only for acceptable University excuses as per Student Rule: "The student is responsible for providing satisfactory evidence to the instructor to substantiate the reason for absence", which requires some type of written and approved excuse. And, "to be excused the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence if such notification is feasible. In cases where advance notification is not feasible (e.g. accident, or emergency) the student must provide notification by the end of the second working day after the absence. This notification should include an explanation of why notice could not be sent prior to the class." Email is sufficient for notification of an absence, but it is strongly advised that you talk to me directly (in person or a phone call) to inform me of the absence - Why? So I can confirm the validity of the absence and explain your options relative to timing of the make-up exam. If possible, the make-up exam will be tentatively scheduled at the time I verify the excused absence. Arrangements for make-up exams must be done directly (in person or a phone call) - I do not discuss arranging make-up exams via email, texting, leaving voice mails, or other electronic means, unless it is an extraordinary situation. Student Rules require that the make-up is "to be completed within 30 calendar days form the last day of the absence". However, the exact time allowed.
for the make-up depends on the nature of the excused absence. My guidelines are: The student is given the number of days to make-up the exam equal to the number of days of the excused absence, starting with the day of the exam, and the make-up exam must be taken by the end of the next working day. For example, if the student has an illness and an excused absence for 2 days (the day of the exam plus the next day), then the student is allowed two (2) calendar days, and the make-up exam must be taken by the end of the 3rd day (or next working day, if the 3rd day falls on a weekend or holiday). If the excused absence includes days before the exam such that lectures were missed, then see the instructor for a case-by-case decision to allow sufficient time to view the video of the missed lectures. If the excused absence is for a planned event, such as sponsored activity, and no lectures are missed, then the student may take the exam before departure if feasible, or a proctored exam may be administered on the trip, or the exam is taken by the end of the day after return; if the absence causes lectures to be missed, an appropriate amount of time will be allowed for the student to view the video tapes of the lectures missed, plus study time - this is arranged on a case-by-case basis. Notification of missing an exam must by the timeline stated above, but written documentation of the excused absence can be turned-in at the time of the make-up exam. If the make-up exam is taken after the graded exams have been returned in class, then a different, but comparable, make-up exam will be given. Any exam missed without following the Student Rules will result in a grade of 0 (unless there are extraordinary extenuating circumstances, and in such cases you must appeal directly to the instructor). If this is your first 0, then it will automatically be used as your drop grade. If you have already used your drop grade, then the 0 will be averaged as a grade. If all this seems confusing, that is why I want you to call me so I can verify your excuse and explain to you the make-up options.

OTHER PERTINENT COURSE INFORMATION

VIDEO TAPE OF LECTURES:
Every lecture will be digitally videotaped. DVDs of each lecture are placed on 2-hour reserve in the West Campus Library Reserve Desk. The DVDs can be viewed on any computer in any of the student computer labs. The Library may post lectures on Media Matrix.

LATE ARRIVALS AND DEPARTURES:
Lecture: I realize A&M is a very large campus. Therefore, late arrivals and early departures will be tolerated within reason (a few minutes). Enter/exit quietly and sit towards the back of the class. However, lecture will start and end on time.
Exams: Late arrivals are not tolerated for exams; after the first student finishes and leaves the room then no other students are allowed in the room to take the exam, unless there is a reasonable and extraordinary reason for arriving late and it can be verified.

CELLULAR PHONES:
If your cell phone or beeper rings during class repeatedly or if you answer a phone that was on vibrate, you may be asked to leave the classroom.

ATTENDANCE:
I do not take roll, but please make an effort to attend all lectures.

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
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<tr>
<th>Number Lectures</th>
<th>Horticulture Science and Practices, Reed</th>
<th>The Biology of Horticulture, Preece and Read</th>
<th>Topic</th>
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<tr>
<td>1</td>
<td>pages 1-2</td>
<td>Chapter 1</td>
<td>Introduction and Definition of Horticulture</td>
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<tr>
<td>3</td>
<td>pages 3-20</td>
<td>Chapter 3</td>
<td>Plant Anatomy, Morphology &amp; Development Vegetative &amp; Reproductive</td>
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| 3 | pages 21-29 | Chapter 5 | **Plant Metabolism and Functioning**  
Reactions of Photosynthesis & Respiration; Manipulation with light, gases and temperature; Light Saturation Point, Controlled Atmosphere Storage, Fruit Senescence |
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<tr>
<td><strong>1st EXAM</strong></td>
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<td><strong>PART II - ENVIRONMENT IN HORTICULTURE</strong></td>
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| 2 | pages 30-32 | Chapter 11 & 12 | **Hormones and Growth Substances**  
Natural and synthetic hormones (growth substances), sites of synthesis, translocation, Manipulating plant growth and development with hormones; practical applications. |
| 2 | pages 33-49 | Chapter 6 | **Temperature**  
Physical Chemistry of heat and temperature relations, Greenhouse Effect, Global Warming, Climate Change, Climatic Zones, Cardinal Temperatures, Chilling & Freezing Damage & Prevention, Stratification, Vernalization, Temperature induced Dormancy |
| 2 | pages 50-59 | Chapter 5 | **Light**  
Properties of radiation, Photosynthetically Active Radiation (PAR), Effects of Light Quantity & Quality on plants, Light Measurement, Light Compensation Point, Photoperiodic, Light Acclimatization |
| **2nd EXAM** |
| 2 | pages 60-66 | Chapter 7 | **Water**  
Properties of water, Humidity, Precipitation, Soil Water, Irrigation Systems, Absorption, Translocation, and Transpiration |
| 2 | pages 67-73 | Chapter 8 & 10 | **Soil & Growing Medium**  
Soil Types and Components, Chemistry and Physical Properties, Artificial Soil; Growing Medium amendments and Recipes |
| 2 | pages 74-80 | Chapter 9 | **Nutrition and Fertilizers**  
Essential Elements, Functions, Deficiency Symptoms, Fertilizer Analysis, Calculation of fertilizer rates and costs, Fertilizer Sources |
| **3rd EXAM** |
| **PART III- HORTICULTURAL PRINCIPLES AND PRACTICES** |
| 2-3 | pages 81-93 | Chapter 4 & 14 | **Propagation**  
Sexual propagation by Seeds; Life Cycle of Plants, Asexual reproduction (cloning) by Cuttings, Layering, and Grafting; Chimeras |
| 1 | pages 94-96 | Chapter 13 | **Growth Control**  
Pruning, wound healing, Pruning Methods and Terminology, Chemical Pruning, Timing of Pruning |
| 1 | pages 97-100 | Chapter 16 | **Pest and Pest Control**  
Pest Control, Integrated Pest Management (IPM), Biological Control, Pest Types -Insects, Mites, Disease Causing Microbes, Weeds |
| **4th EXAM** |
| **FINAL EXAM - COMPREHENSIVE** |

**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 B113, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu)

**Academic Integrity**

*For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)*

*"An Aggie does not lie, cheat, or steal, or tolerate those who do."*
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): Horticultural Sciences

2. Course prefix and number: Hort 202
   Complete course title: Horticultural Science and Practices Laboratory

3. Texas Common Course Number: 1401

4. Semester credit hours: 01

5. 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

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

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

8. Number of class sections per semester: 5

9. Number of students per semester: 90

10. Historic annual enrollment for the last three years: 180 180 180

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:
    Course Instructor
    
    Date: 3/6/13

14. Approvals:
    Department Head
    
    Date: 3-6-13

15. College Dean/Designee
    
    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.

Approved: 4-1-13
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): Horticultural Sciences

2. Course prefix and number: Hort 202
   Horticultural Science and Practices

3. Texas Common Course Number: 1401

4. Complete course title: Laboratory

5. Semester credit hours: 1 cr hr

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

9. Number of class sections per semester: 5

10. Number of students per semester: 90

11. Historic annual enrollment for the last three years: 180 180 180

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:
   Course Instructor
   [Signature]
   Date 29 Jan 13

13. Approvals:
    Department Head
    [Signature]
    Date 29 Jan 13

14. College Dean/Designee
    [Signature]
    Date 24 Feb 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.

3-4-13 not appr.
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?

Horticultural Science and Practices Lab is designed to provide a broad understanding of Horticulture through basic and applied science. This is achieved through weekly applied laboratory exercises that emphasize teamwork in creating and interpreting qualitative and/or quantitative data sets, and the synthesis of underlying basic science concepts that drive everyday natural plant phenomena reported in group discussion, along with observation and discussion of specimens and technique in the class and on field trips, and individually prepared written in-depth analysis of team-collected experimental results that reflect the scientific method.

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):

1. Students will individually prepare a notebook-format journal, consisting of datasets collected in class. Higher order thinking will be required to answer question sets posed about the experiment at hand and its scientific and sometimes social implications.
2. Student-generated dichotomous keys are used to identify a finite set of plants to develop higher order thinking skills and to help in understanding and retention of biological terminology. Traditional floral keys are also used.
3. In an individual activity, students must synthesize the information at hand to determine the most appropriate technique to propagate student-selected 'attractive' plant materials, and subsequently evaluate the results of their decisions at the termination of the experiment. Students are often motivated to pick the most appropriate techniques, since successfully cloned plant materials go home with the students.

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

1. Student groups are required to post data for class consumption with immediate feedback on format and missing/faulty information.
2. Subjective evaluations of mid-experiment results are often presented to the class orally by groups or individuals.
3. Demonstrations, by instructors and students, of grafting, layering and division serve as a basis of understanding of plant morphology and require exposition during demonstration and explanations in end-of-semester written reports.

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


Texas A&M University

Core Curriculum

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

1. Students learn to calculate fertilizer concentrations in class and have graded problem sets.
2. Students learn Metric and Standard systems interconversions with graded problem sets
3. Results of the experimental application of increasing fertilizers concentration on plants acts as a platform for inquiry into the scientific method and a subsequent discussion of social responsibility in application of agricultural chemicals.

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

Student teams of 2-6 in class:
1. Begin plant experiments (>10 occurrences) by planting transplants, seeds, propagules
2. Harvest experiments, measure quantitative variables (height, weight, branching vigor) and record and share datasets (>10 occurrences)
3. Develop unique keys to identify a finite set of plants, and teams must repeat the key until the instructor judges it appropriate. Subsequently, those student groups must apply standard keys to correctly identify species, variety, & cultivar of several plants.
4. Measure plant photosynthetic light levels that become variables in plant experimental treatments.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
HORTICULTURAL SCIENCE AND PRACTICES LABORATORY
HORT 202
COURSE POLICY AND SYLLABUS
SPRING 2013
Mr. Matthew W Kent

Lab Hours:
Monday sec 501: 2:00pm - 4:50pm
Tuesday sec 502: 12:45pm - 3:35pm
Wednesday sec 503: 9:10am - 12:00pm
Wednesday sec 504: 2:00pm - 4:50 pm
Thursday sec 505: 12:45pm - 3:35pm

All lab sections are held in HFSB 112

Course Objectives (Learning Outcomes)
Horticultural Science and Practices Lab is designed to provide a broad understanding of Horticulture through basic and applied science. This is achieved through weekly quizzes over concepts, applied laboratory exercises that emphasize teamwork in creating and interpreting qualitative and quantitative data and synthesis of underlying concepts in group discussion, observation and discussion of specimens and technique on field trips, and written individually prepared in-depth analysis of team-collected experimental results.

- Botany
  - Learn scientific terminology to describe plant structures
  - Understand basic taxonomic relationships of plants

- Plant Biochemistry & Physiology
  - Understand the basic phenology of plant materials and the scientific means to manipulate the underlying plant physiology for practical purposes
  - Application of chemical growth regulators to illustrate the junction of biochemistry and economic horticulture
  - Introduction to plant essential elements
  - Experimentation with fertilizer application levels as a means of demonstrating physiological response, and as a platform for the discussion of environmental responsibility

- Soil Science
  - Provide a working knowledge of basic soil components
  - Introduction to soil conservation and use of sustainable materials for plant husbandry
  - Understanding of introductory soil chemistry and its impact on plant growth

- Entomology
  - Understanding of basic economic entomology of horticultural crops
  - Rediscovery of the utility of scientific terminology, as applied to insects

- Horticulture
  - Basic understanding of asexual and sexual plant propagation techniques
  - Basic understanding of the care of landscape plant materials
  - Introduction to basic Horticultural mathematical calculations

Prerequisite: HORT 201 or registration therein.

Required Text
General Horticulture Laboratory Manual; Second Edition; David Wm. Reed
ISBN 0-8087-9470-1
Instructor Information

<table>
<thead>
<tr>
<th>Matthew Kent, Lecturer</th>
<th>Tulle Alexander, TA</th>
<th>Paige Graves, TA</th>
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<td><a href="mailto:mkent@tamu.edu">mkent@tamu.edu</a></td>
<td><a href="mailto:tulle5586@neo.tamu.edu">tulle5586@neo.tamu.edu</a></td>
<td><a href="mailto:paige_g_08@neo.tamu.edu">paige_g_08@neo.tamu.edu</a></td>
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Office Hours
Each instructor will inform you of his/her office hours during lab. If you need one of us, phone and office numbers as well as e-mail addresses are provided above.

Attendance and Make-up Labs
- Attendance is mandatory and you must attend each lab in its entirety. A late arrival (after the quiz is over) and/or early departure (before the entire class is dismissed) will result in a zero on the weekly quiz.
- We realize that emergencies may prevent you from attending lab. If this occurs, you are allowed to attend another lab section. However, you must get permission from both your instructor and the instructor who teaches the lab you wish to attend in advance.
- All make-up labs must occur the same week as the missed lab. It is not possible to make up a lab after the missed week, whether the absence is excused or unexcused, due to the changing lab setup.
- Make-up labs are only allowed for university acceptable excuses or with permission of the instructor. Excused absences are defined in the Student Rules (see http://student-rules.tamu.edu/rule7.htm). Labs change every week, so make-up labs can only occur during the week they are missed. If the missed lab cannot be made up during that week, your quiz grade for that week will be a 0.
- You may only miss 3 labs. If you have 4 or more excused absences, you will receive a grade of “I” (incomplete). If the majority of your absences (3) are unexcused, you will receive a grade of “F” in the course.

Grading
HORT 202 is a separate course from HORT 201 and will have a separate 1 hour grade. Grades are determined as follows:
- Weekly quiz grades = 50%
- Lab report = 50%

A. Weekly Quizzes:
Weekly quizzes will be given. You will be allowed to drop a maximum of 2 quizzes, with your grade being determined from a minimum of 9 quizzes. Each quiz will be worth 10 points. 80% or 8 points of each quiz will be based on the previous week’s lab material. 20% or 2 points of each quiz will be based on the current week’s lab material. Therefore, you are required to read each week’s lab material BEFORE coming to class. Each quiz will be 10 minutes long and start 5 minutes after class time. If you arrive while a quiz is in progress, you may take the quiz but you must complete it by the standard completion time (i.e., you will not be given an extension). If you arrive after the quiz has been completed, you will receive a grade of 0 for that quiz. Any student departing from lab early will have his/her quiz invalidated (a grade of 0) and will be considered absent for that lab. Clarification:
This policy dictates that there will be no make-up quizzes given whether the absence is excused or unexcused. Two quiz grades will be dropped to compensate.

B. Lab Report:
- We will be conducting a series of lab exercises throughout the semester. Most exercises will produce data. Your lab report grade will be based on data collected and questions answered about each exercise. Data will be collected as a group and shared in class. If you are absent, you are responsible for obtaining missing data from the TA.
- Answers to questions in your lab report must be your own and may not be shared.
- You are not allowed to work in groups to develop answers to the questions. Any duplicated/plagiarized answers that are found between lab reports will be considered academic misconduct. If it is determined that you worked with others in developing answers, this will be handled as academic misconduct (see http://www.tamu.edu/aggichonor).
- If physical assistance is needed to fill out the lab report due to a temporary disability (I can’t fill out my lab exercises by myself because my wrist is broken!), permission must be requested from the instructor.
- Lab reports will be due as experiments are finished. These will occur throughout the semester, however, a large number of these will occur towards the end of the semester. Your lab TA will remind you of the exact dates during the semester. For lab reports turned in after the due date, the grade for that report will be reduced by 10% per day late.
Americans with Disabilities Act (ADA) Policy Statement
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.

Copyrights
Please note that all handouts and supplements used in this course are copyrighted. This includes all materials generated for this class, including but not limited to syllabi, exams, in-class materials, review sheets, and lecture outlines. Materials may be downloaded or photocopied for personal use only, and may not be given or sold to other individuals.

Academic Integrity Statement and Policy
No form of academic misconduct will be tolerated in HORT 202 lab. Be aware that copying answers during lab quizzes, any copied or plagiarized answers, or any answers developed in discussion with others in lab reports are forms of academic misconduct. Please refer to Student Rules (http://student-rules.tamu.edu/) and the Honor Council Rules and Procedures (http://www.tamu.edu/aggiehonor). It is the student's duty to read, understand and comply with these policies.

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

Hazardous Materials Statement
Do not perform any procedure until all risks are understood and all actions can be performed in a safe, informed manner. When in doubt, ask for help.

- Hazards in the Hort 202 laboratory include:
  - Chemicals
    - fertilizer solutions (Lab 10)
    - plant growth regulators (Lab 6)
    - rooting compounds (Lab 8)
    - cleaning solutions (Lab 9)
    - concentrated sulfuric acid (Lab 9)
    - Chemicals will be handled with gloves, and with protective clothing when appropriate. Students will be strictly monitored. Any improper exposure to these chemicals should be reported to the instructor immediately.
  - Air-borne Irritants (Labs 4-10)
    - perlite
    - vermiculite
    - Particulate masks will be issued to students when appropriate. Students with respiratory problems may be exempt from primary contact with these components with a doctor's excuse, or by permission of the instructor.
  - Mechanical Hazards (Lab 8 & 9)
    - The use of sharp instruments in lab is required, and students should exercise caution. The best way to avoid injury is to proceed slowly and follow instructions.
**Syllabus**

Your lab book is divided into sections: Laboratory 1 through Laboratory 14. We will cover 1 laboratory section per week, except week 4. We will be covering these laboratory sections in the order presented in the notebook, except the final two labs, which are switched. A tentative schedule follows:

<table>
<thead>
<tr>
<th>Calendar Week</th>
<th>Laboratory Exercise</th>
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<tbody>
<tr>
<td>Week 1, Jan 14-17</td>
<td>Lab 1, Orientation to the Laboratory</td>
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<td>Week 2, Jan 21-24</td>
<td>Lab 2, Recognition of Plant Structures</td>
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<td>Week 3, Jan 28-31</td>
<td>Lab 3, Plant Identification &amp; Taxonomy</td>
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<td>Week 4, Feb 4-7</td>
<td>Lab 4 &amp; 5, Temperature &amp; Light</td>
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<td>Week 5, Feb 11-14</td>
<td>Lab 6, Growth Control</td>
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<td>Week 6, Feb 18-21</td>
<td>Lab 7, Growing Media &amp; Soils</td>
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<td>Week 7, Feb 25-28</td>
<td>Lab 8, Asexual Propagation</td>
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<td>Week 8, Mar 4-7</td>
<td>Lab 9, Sexual Propagation</td>
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<tr>
<td>Week 9, Mar 11-14</td>
<td><strong>Spring Break</strong></td>
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<tr>
<td>Week 10, Mar 18-21</td>
<td>Lab 10, Nutrition &amp; Fertilizers</td>
</tr>
<tr>
<td>Week 11, Mar 25-28</td>
<td>Lab 11, Pest Identification &amp; Control</td>
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<tr>
<td>Week 12, Apr 1-4</td>
<td>Lab 12, Landscape Plants (field trip)</td>
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<tr>
<td>Week 13, Apr 8-11</td>
<td>Lab 14, Overview of Turfgrasses (field trip)</td>
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<tr>
<td>Week 14, Apr 15-18</td>
<td>Lab 13, Overview of Vegetables and Gardening (field trip)</td>
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<td>Week 15, Apr 22-25</td>
<td>Help Week, Remaining Lab Reports Due</td>
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