Graduate Council Meeting Agenda

Electronic Vote

August 1, 2013

1. **New Course Requests:**
   a. AERO 661 Optical Methods in Aerospace Engineering
   b. ECEN 715 Physical and Economical Operations of Sustainable Energy Systems
   c. HORT 619 Plant-Associated Microorganisms
   d. MEPS 619 Plant-Associated Microorganisms
   e. PLPA 619 Plant-Associated Microorganisms
   f. VTPP 651 Epigenetics & Systems Physiology

2. **Course Change Requests:**
   a. ARCH 657 Advanced Professional Practice and Ethics
   b. MARA 650 Distribution Logistics
   c. MGMT 613 Managerial Macroeconomics
   d. VIZA 693 Professional Study

3. **Special Consideration Items:**
   a. Ecology and Evolutionary Biology Doctoral Program Proposal

4. **Informational Items:**
   a. Request to add PLAN 642 to TAMU at Galveston
New Courses
Texas A&M University

Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Aerospace Engineering

2. Course prefix, number and complete title of course: AERO 661 Optical Methods in Aerospace Engineering

3. Catalog course description (not to exceed 50 words): Analysis and design of imaging and interferometric instruments for flight in and above the atmosphere and ground-based observation of orbiting objects; assessment of optical component and system performance.

4. Prerequisite(s): Graduate classification

5. Is this a variable credit course? □ Yes ☒ No If yes, from _______ to _______

6. Is this a repeatable course? □ Yes ☒ No If yes, this course may be taken _______ times.
   Will this course be repeated within the same semester? □ Yes ☒ No

7. This course will be:
   a. required for students enrolled in the following degree programs(s) (e.g., B.A. in history)
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

8. MS, MEng, PhD in aerospace engineering or related fields

If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

9. Prefix Course # Title (excluding punctuation) AERO 661 OPTICAL METHODS FOR AERO

<table>
<thead>
<tr>
<th>Lect</th>
<th>Lab</th>
<th>SCI</th>
<th>CPR and Unit Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>EIC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Approval recommended by: Rodney D. Bowersox/John E. Hurtado
Department Head - Type Name & Sign 6-7-2013
Date

Char., College Review Committee Scott Miller
Dean of College
Date 6/12/13

Dean of College Scott Miller
Date

Submitted to Coordinating Board by: Scott Miller
Date

Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 5/09
AEROSPACE ENGINEERING

Course title and number     AERO 661 – Optical Methods in Aerospace Engineering
Term                        Fall 2015
Credit/Hours                3.0
Meeting times/location      TR 2:20-3:35 PM / HRBB 134

Course Description and Prerequisites
Analysis and design of imaging and interferometric instruments for flight in and above the atmosphere and ground-based observation of orbiting objects; assessment of optical component and system performance.

Prerequisite: Graduate Classification.

Learning Outcomes or Course Objectives
Students will gain understanding of:
- mathematical modeling of optical devices and systems of varying degrees of complexity,
- mathematical modeling of errors and aberrations in optical components and systems,
- measurement of aberrations and evaluation of optical system performance,
- design and optimization of optical systems for high altitude, high speed and space flight,
- manipulation of imaging and temporal non-imaging data to detect or enhance objects or events,
- detector selection for specific environmental or mission requirements.

Instructor Information
Name                      Thomas C. Pollock
Telephone number          979-845-1686
Email address             pollock@tamu.edu
Office hours              TBA
Office location           HRBB 741B

Textbook and/or Resource Material

Grading Policies
Homework: 33 percent
Mid-term exam: 33 percent
Project: 34 percent
A 90 – 100%
B 80 – 89%
C 70 – 79%
D 60 – 69%
F below 60%
<table>
<thead>
<tr>
<th>Topic</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction and review of imaging optics</td>
<td>Lectures 1 - 4 (Weeks 1 &amp; 2)</td>
</tr>
<tr>
<td>1.1 The E-M spectrum and imaging sensors</td>
<td></td>
</tr>
<tr>
<td>1.2 Image formation: point objects and extended objects</td>
<td></td>
</tr>
<tr>
<td>1.3 Refractive and reflective optical components</td>
<td></td>
</tr>
<tr>
<td>1.4 2D Fourier transforms</td>
<td></td>
</tr>
<tr>
<td>2. Detectors</td>
<td>Lectures 5 - 6 (Week 2)</td>
</tr>
<tr>
<td>2.1 CCD</td>
<td></td>
</tr>
<tr>
<td>2.2 CMOS</td>
<td></td>
</tr>
<tr>
<td>2.3 Light amplification</td>
<td></td>
</tr>
<tr>
<td>2.4 Photon counters</td>
<td></td>
</tr>
<tr>
<td>2.5 Non-imaging</td>
<td></td>
</tr>
<tr>
<td>2.6 Noise</td>
<td></td>
</tr>
<tr>
<td>3. Aberrations and image degradation</td>
<td>Lectures 7 - 14 (Weeks 3 – 5)</td>
</tr>
<tr>
<td>3.1 Seidel and Zernike polynomials</td>
<td></td>
</tr>
<tr>
<td>3.2 Point spread functions</td>
<td></td>
</tr>
<tr>
<td>3.3 Optical transfer functions</td>
<td></td>
</tr>
<tr>
<td>3.4 Optical tolerances and performance</td>
<td></td>
</tr>
<tr>
<td>3.5 Resolution limits</td>
<td></td>
</tr>
<tr>
<td>3.6 Optical model of the atmosphere</td>
<td></td>
</tr>
<tr>
<td>3.7 Thermal, structural and mechanical effects on optical components</td>
<td></td>
</tr>
<tr>
<td>3.8 Control of stray light</td>
<td></td>
</tr>
<tr>
<td>4. Design of imaging optics</td>
<td>Lectures 16 - 22 (Weeks 6 – 8)</td>
</tr>
<tr>
<td>4.1 Achromatic Doublet</td>
<td></td>
</tr>
<tr>
<td>4.2 Apochromatic Triplet</td>
<td></td>
</tr>
<tr>
<td>4.3 Petzval corrector</td>
<td></td>
</tr>
<tr>
<td>4.4 Double Gauss and related camera lenses</td>
<td></td>
</tr>
<tr>
<td>4.5 Single mirror systems</td>
<td></td>
</tr>
<tr>
<td>4.6 Multiple mirror systems</td>
<td></td>
</tr>
<tr>
<td>4.7 Optimization to minimize or manage aberrations</td>
<td></td>
</tr>
<tr>
<td>4.8 Designing for high g, high altitude and space flight</td>
<td></td>
</tr>
<tr>
<td>5. Image analysis, manipulation and enhancement</td>
<td>Lectures 23 - 29 (Weeks 10 - 12)</td>
</tr>
<tr>
<td>5.1 Noise reduction algorithms</td>
<td></td>
</tr>
<tr>
<td>5.2 Filter algorithms - convolution</td>
<td></td>
</tr>
<tr>
<td>5.3 Deconvolution</td>
<td></td>
</tr>
<tr>
<td>5.4 Super-resolution and faint object detection</td>
<td></td>
</tr>
<tr>
<td>5.5 Shape detection and identification</td>
<td></td>
</tr>
<tr>
<td>5.6 Enhancement algorithms</td>
<td></td>
</tr>
<tr>
<td>6. Visible wavelength interferometers</td>
<td>Lectures 30 - 32 (Week 13)</td>
</tr>
<tr>
<td>6.1 Configuration and design</td>
<td></td>
</tr>
<tr>
<td>6.2 Remote data collection and measurement of material properties</td>
<td></td>
</tr>
<tr>
<td>6.3 Spectroscopy of celestial objects</td>
<td></td>
</tr>
<tr>
<td>7. Laboratory Experiments/Demonstrations (during class hours)</td>
<td>Week 4</td>
</tr>
<tr>
<td>7.1. Measurement of the physical parameters of imaging systems</td>
<td>Week 6</td>
</tr>
<tr>
<td>7.2. Measurement of point spread functions and determination of modulation transfer functions of imaging systems.</td>
<td></td>
</tr>
<tr>
<td>7.4. Remote measurement and analysis of reflective surfaces</td>
<td></td>
</tr>
<tr>
<td>7.3. Interferometric measurements</td>
<td></td>
</tr>
<tr>
<td>8. Introduction to project topics</td>
<td>Week 9</td>
</tr>
<tr>
<td>8.1. Design of imaging optics</td>
<td></td>
</tr>
<tr>
<td>8.3. Algorithms for image noise reduction</td>
<td></td>
</tr>
<tr>
<td>8.4. Algorithms for shape detection</td>
<td></td>
</tr>
<tr>
<td>8.5. Observability of objects</td>
<td></td>
</tr>
<tr>
<td>8.6. Other as proposed</td>
<td></td>
</tr>
<tr>
<td>9. Project presentations</td>
<td>Week 14</td>
</tr>
</tbody>
</table>
Other Pertinent Course Information

Students are expected to attend class. For additional information visit the student rules website on attendance: http://student-rules.tamu.edu/rule07 and http://student-rules.tamu.edu/academicrules.

Americans with Disabilities Act (ADA)

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

Academic Integrity

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

"An Aggie does not lie, cheat, or steal, or tolerate those who do."
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

1. This request is submitted by the Department of
   Electrical and Computer Engineering
   ECEN 715 Physical and Economical Operations of Sustainable Energy Systems

2. Course prefix, number and complete title of course:

3. Catalog course description (not to exceed 50 words):
   Operational issues for sustainable electric energy systems. Basic relevant topics in engineering, optimization and economic concepts. Modular view of individual electric energy processing components. Physical and market operations in electricity industry in support of sustainable energy integration. Computer simulations and demonstrations to create and evaluate examples of power systems.

4. Prerequisite(s):
   Stacked with ECEN 415

5. Is this a variable credit course? □ Yes □ No
   If yes, from _____ to _____

6. Is this a repeatable course? □ Yes □ No
   If yes, this course may be taken _____ times.
   Will this course be repeated within the same semester? □ Yes □ No

7. This course will be:
   a. required for students enrolled in the following degree programs(s) (e.g., B.A. in history)

   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
   MEN, MS, Ph.D. in electrical and computer engineering

8. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments.
   Attach approval letters.

9. Prefix Course Title (excluding punctuation)

<table>
<thead>
<tr>
<th>Lec.</th>
<th>Lab</th>
<th>SCH</th>
<th>CR</th>
<th>Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>EIC</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Approval recommended by:

C. Singh
Department Head - Type Name & Sign
Date

Department Head - Type Name & Sign
(if cross-listed course)
Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 3/09
ECEN 715: Physical and Economical Operations of Sustainable Energy Systems

Course Description and Prerequisites

This course aims to introduce graduate students the operational issues for sustainable electric energy systems. The first part of the course will introduce basic engineering, optimization and economic concepts relevant to this course. The second part of the course will discuss the “modular” view of individual electric energy processing components (e.g., variable generation, flexible demands). The third part of this course will present both physical and market operations in today's changing electricity industry. Computer simulations and demos will be available for students to create and evaluate examples of power systems.

Prerequisite: ECEN 214, ECEN 420/460, or permission from the instructor

Learning Outcomes or Course Objectives

We will discuss a broad variety of important engineering and economics issues related to integration of sustainable energy resources. We will introduce the key differences in operations and planning at the system level, as well as at the individual power producers' level. Classroom discussion and final project presentations will prepare the students to understand better how to plan and operate sustainable electric energy systems with many more renewable energy resources.

Instructor Information

Name: Dr. Le Xie
Telephone number: 979-845-7563
Email address: lxie@ece.tamu.edu
Office hours: TBA
Office location: WEB 301H

Textbook and/or Resource Material

2. Published papers assigned by the instructor

Grading Policies for Graduate Students in 689

Homework Assignments (20%) + Mid-term Exam (25%) + Final Exam (25%) + Final Project (25%) + In-class Quiz (5%)

Grading Scale: 90-100 A; 80-89 B; 70-79 C; 60-69 D; 60 or below F

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>#</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Course Motivation and Overview; Syllabus</td>
</tr>
<tr>
<td>#2</td>
<td>Basic Concepts from Economics [1], Ch 2</td>
</tr>
<tr>
<td>#3</td>
<td>Basic Concepts from Economics [1], Ch 2</td>
</tr>
<tr>
<td>#4</td>
<td>Basic Concepts from Optimization</td>
</tr>
<tr>
<td>#5</td>
<td>Basic Concepts from Optimization</td>
</tr>
<tr>
<td>#6</td>
<td>Conventional Generation Resources</td>
</tr>
<tr>
<td>#7</td>
<td>Renewable Variable Energy Resources: Wind</td>
</tr>
<tr>
<td>#8</td>
<td>Renewable Variable Energy Resources: Solar, and others</td>
</tr>
<tr>
<td>#9</td>
<td>Conventional Electricity Demands</td>
</tr>
<tr>
<td>#10</td>
<td>Flexible Electricity Demands in Smart Grids</td>
</tr>
<tr>
<td>#11</td>
<td>Electric Power System Fundamentals: Power Flows</td>
</tr>
<tr>
<td>#12</td>
<td>Balancing Supply and Demand: ED and Optimal Power Flows</td>
</tr>
<tr>
<td>#13</td>
<td>Balancing Supply and Demand with many Variable Generation Resources</td>
</tr>
<tr>
<td>#14</td>
<td>Balancing Supply and Demand in the Regulated Industry and Electricity Markets</td>
</tr>
<tr>
<td>#15</td>
<td>Material Review; Simulations Demonstrations</td>
</tr>
<tr>
<td>#16</td>
<td>Midterm Exam</td>
</tr>
<tr>
<td>#17</td>
<td>Balancing Supply and Demand Deviations from Forecast in the Regulated Industry;</td>
</tr>
<tr>
<td>#18</td>
<td>Ancillary Service Markets as a Means of Balancing Demand Deviations from Forecast in the Changing Industry</td>
</tr>
<tr>
<td>#19</td>
<td>Participating in Markets for Electric Energy [1], Ch 4</td>
</tr>
<tr>
<td>#20</td>
<td>Participating in Markets for Ancillary Services</td>
</tr>
<tr>
<td>#21</td>
<td>Power Delivery under System Constraints in the Regulated Industry (Optimal Power Flow)</td>
</tr>
<tr>
<td>#22</td>
<td>Transmission Networks and Electricity Markets</td>
</tr>
<tr>
<td>#23</td>
<td>Nodal Markets: LMP Fundamentals</td>
</tr>
<tr>
<td>#24</td>
<td>Nodal Markets: LMP Fundamentals</td>
</tr>
<tr>
<td>#25</td>
<td>Financial Transmission Rights</td>
</tr>
<tr>
<td>#26</td>
<td>Guest Lecture on ERCOT Market Operations</td>
</tr>
<tr>
<td>#27</td>
<td>Coordinating Variable Generation Through Flexible Demands</td>
</tr>
<tr>
<td>#28</td>
<td>Summary</td>
</tr>
<tr>
<td>#29</td>
<td>Final Project Presentation</td>
</tr>
</tbody>
</table>

**Makeup Work Policy**

Please refer to [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07)

**Americans with Disabilities Act (ADA)**

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

**Academic Integrity**

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

"An Aggie does not lie, cheat, or steal, or tolerate those who do."
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

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

2. Course prefix, number and complete title of course: HORT, 619, Plant-Associated Microorganisms

3. Catalog course description (not to exceed 50 words):
Basic concepts and current topics in plant-microbe interactions including the diversity of plant-associated microorganisms; the plant as a microbial environment; endophytes; microbial roles in plant nutrition and fitness; uses of microorganisms for improved plant health and sustainable agriculture; microbial roles in food safety and future challenges; discussion of current literature.

4. Prerequisite(s):
Basic plant biology or plant ecology is recommended; microbiology is helpful, but not required.

Cross-listed with: PLPA 619 and MEPS 619

5. Is this a variable credit course? ☑ No
If yes, from _______ to _______

6. Is this a repeatable course? ☑ No
If yes, this course may be taken _______ times.
Will this course be repeated within the same semester? ☑ No

7. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
All majors in the college of Agriculture and Life Sciences

8. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

9. Approval recommended by:
Michael A. Arnold (Assoc. Head)
Department Head or Program Chair (Type Name & Sign) 1/13/13
Date

Chair, College Review Committee 6/19/13
Date

Dean of College 6/19/13
Date

Submitted to Coordinating Board by:
Chair, GC or UCC 6/19/13
Date

Associate Director, Curricular Services 6/19/13
Date

Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 3/10
Syllabus

HORT619 - MEPS619 – PLPA619
Plant-Associated Microorganisms
Spring 2015

Instructor: Elizabeth (Betsy) Pierson, Ph.D.
Office: Room 427 HFSB
Office Phone: 862-1307
Email: EAPierson@tamu.edu
Office hours: By appointment
Class Time: 11:30-12:30 MWF
Class location: HFSB 101

Catalog description (50 words):
Basic concepts and current topics in plant-microbe interactions including the diversity of plant-associated microorganisms; the plant as a microbial environment; endophytes; microbial roles in plant nutrition and fitness; uses of microorganisms for improving plant health and sustainable agriculture; roles in food safety and future challenges; discussion and critique of literature.

Course Description:
HORT/MEPS/PLPA 619 Plant-Associated Microorganisms is a 3-credit lecture course.

Plant health is the net result of complex interactions between the plant and its environment. Essential components of this environment are the microorganisms living on and inside plants. Plant-beneficial microbes contribute to plant nutrition, affect plant herbivory, promote plant growth, and suppress plant disease. Detrimental microbes create food safety and plant disease problems. Understanding and manipulating plant-associated microbes represent key ecological control points for improving plant fitness.

We will explore basic concepts and current topics through lectures, assigned readings, classroom discussion, and presentations. We will cover the diversity of microorganisms associated with plants, the ecology of the plant phyllosphere and rhizosphere, the cryptic world of plant endophytes, the uses of plant-beneficial microorganisms for improving plant health, and the nature of deleterious plant-associated microbes. We will discuss issues as they relate to: sustainable agriculture, the development of commercial products aimed at improving plant fitness, and food safety. Students are expected to actively participate in the discussions, and find, present, and critique recent literature in the field of plant-microbe interactions.

Prerequisites
An undergraduate class in basic plant biology or plant ecology is recommended. A previous course in microbiology is helpful, but not required.

Learning Outcomes or Course Objectives
The goals of this course are to:
• Foster an understanding of the diversity microorganisms associated with plants and the types of interactions between plants and microbes that promote plant heath
• Foster an understanding of the plant as a microbial environment.
• Foster critical thinking and an ability to read, discuss, and write about ideas presented in the published literature
- Introduce students to commercial/agricultural products and applications utilizing plant-associated microbes or directed toward manipulating plant-microbe interactions
- Broaden the students' perspective on how plant-associated microbes contribute to the ecology, physiology, biochemistry and genetics of plants.
- Broaden the students' perspective on how understanding po

**Textbook and resource materials**

There is no textbook associated with the class. Resource materials include lecture notes and assigned readings.

**Grading Policy**

<table>
<thead>
<tr>
<th>Course Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>10%</td>
</tr>
<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm</td>
<td>20%</td>
</tr>
<tr>
<td>Presentation</td>
<td>20%</td>
</tr>
<tr>
<td>Final Paper</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
</tbody>
</table>

**Grading Scale**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Course Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B</td>
</tr>
<tr>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>0-59</td>
<td>F</td>
</tr>
</tbody>
</table>

* I reserve the right to modify grading policy or scale, as needed.

**Additional Grading Policy:**

Participation credit: In order to receive participation credit you need to be present for all sessions and participate in all class discussions (unless you have a University excused absence—see below). If you miss a class session, and have an approved excuse, please contact me within 24 hours via email or give me advanced notice.

Assignments: During the course, you will be asked to submit literature reviews or some other form of written assignment. I will describe each assignment and provide the due date at the time I make the assignment. For literature reviews you should assess (in one paragraph each) the background and objectives, methods and results, discussion and significant findings, and your opinion of the paper. The assignments are due typically at the start of class on Fridays.

Final Paper: The final paper will be an essay aimed at assessment of the graduate student's capacity to review literature and addresses the issues related to understanding and manipulating microbial communities to promote plant health. The final paper should focus on a specific plant-microbe interaction where increased understanding might result in agricultural gains. The paper is required to have three sections: one that describes current knowledge related to the chosen topic (including the biology of the interaction, current applications and their limitations and the desired agricultural gains), a second that describes specific area(s) of research that may lead to the desired agricultural gains (including a description of the specific objectives, treatments and controls, experimental design, response variables, replication and analysis, expected results, and deliverables), and a third section that discusses broader impacts and future studies.
Presentation: Students are required to give a 20 minute presentation to the class covering the three sections of their paper, and defend their research in a 10 minute exchange with class members. Students are graded not only on their prepared oral presentation, but on their ability to defend their ideas during questioning. They also are graded on their ability to critique and discuss other students’ presentations and defenses.

Exams: Exams will consist of brief definitions, short answers, problem solving, and short discussion/opinion questions.

*I absolutely do not tolerate plagiarism. Please make sure you understand what plagiarism is.*

<table>
<thead>
<tr>
<th>Lecture Period</th>
<th>Topics/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1: Lecture 1</td>
<td>Course Overview &amp; Types of Plant-Associated Microbes: Well-studied Eukaryotes</td>
</tr>
<tr>
<td>Week 1: Lecture 2</td>
<td>Types of Plant-Associated Microbes: Well-studied Eukaryotic and Prokaryotic groups continued</td>
</tr>
<tr>
<td>Week 1:</td>
<td>Class activity</td>
</tr>
<tr>
<td>Week 2:</td>
<td>Holiday</td>
</tr>
<tr>
<td>Week 2: Lecture 3</td>
<td>Quorum Sensing</td>
</tr>
<tr>
<td>Week 2:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 3: Lecture 4</td>
<td>Phyllosphere ecology: definition, physical characteristics, diversity of microorganisms</td>
</tr>
<tr>
<td>Week 3: Lecture 5</td>
<td>Rhizosphere Ecology: definition, physical characteristics, diversity of microorganisms</td>
</tr>
<tr>
<td>Week 3: Lecture 6</td>
<td>Special Lecture: Biofilms</td>
</tr>
<tr>
<td>Week 4: Lecture 7</td>
<td>Endophytic environment</td>
</tr>
<tr>
<td>Week 4: Lecture 8</td>
<td>Endophytes: Diversity of culturable microbes, fungal endophytes, alkaloid production and herbivory</td>
</tr>
<tr>
<td>Week 4:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 5: Lecture 9</td>
<td>Biological Nitrogen Fixers: Importance, diversity and distribution (symbiotic vs. associative N-fixers), nitrogen fixation (biochemistry and genetics)</td>
</tr>
<tr>
<td>Week 5: Lecture 10</td>
<td>Nitrogen Fixers: components of the interaction (nodulation and fixation), occurrence of rare but complex symbions, commercial products</td>
</tr>
<tr>
<td>Week 5: Lecture 11</td>
<td>Special Lecture: Rhizobium-Legume Symbioses</td>
</tr>
<tr>
<td>Week 6: Lecture 12</td>
<td>Mycorrhizae, importance in phosphate nutrition, diversity and distribution (ecto vs. endo mycorrhizae)</td>
</tr>
<tr>
<td>Week 6: Lecture 13</td>
<td>Mycorrhizae: arbuscule formation (structure and signals), commercial products</td>
</tr>
<tr>
<td>Week 6: Lecture 14</td>
<td>Special Lecture: comparison of Mycorrhizal and Rhizobial Symbioses</td>
</tr>
<tr>
<td>Week 7:</td>
<td>Review</td>
</tr>
<tr>
<td>Week 7:</td>
<td>Midterm exam</td>
</tr>
<tr>
<td>Week 7: Lecture 15</td>
<td>Biological Control 1: Principles of Biological Control: definition, history, discovery of disease suppressive soils and promise of biological control, goals and role in sustainable agriculture</td>
</tr>
<tr>
<td>Week 8:</td>
<td>Class activity (discuss exam and student project)</td>
</tr>
<tr>
<td>Week 8: Lecture 16</td>
<td>Biological Control 2: Antagonism, Competition, Predation/Parasitism</td>
</tr>
<tr>
<td>Week 8: Lecture 17</td>
<td>Biological Control 3: Induced resistance, Hypovirulence, Cross Protection</td>
</tr>
<tr>
<td>Week 8:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 9</td>
<td>Spring Break!!! Have fun. Be safe.</td>
</tr>
<tr>
<td>Week 10: Lecture 18</td>
<td>Ramping up plant defenses, commercial applications</td>
</tr>
<tr>
<td>Week 10: Lecture 19</td>
<td>Commercialization/Integration of Biological Control: strategy to identify effective biological controls, formulation, production, registration</td>
</tr>
<tr>
<td>Week 10:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Week 11: Lecture 20</td>
<td>The Use of Manure, Compost, Compost Extracts and Teas; Biofumigation and Green Manuring. Solarization and Mulching: benefits/detriments to plant nutrition, roles in disease suppression</td>
</tr>
<tr>
<td>Week 11: Lecture 21</td>
<td>Alternative controls that affect microbial populations</td>
</tr>
<tr>
<td>Week 11:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 12: Lecture 22</td>
<td>Genetically Modified Organisms</td>
</tr>
<tr>
<td>Week 12: Lecture 23</td>
<td>Productions Systems</td>
</tr>
<tr>
<td>Week 12</td>
<td>Group Discussion: GMOs and Organic Agriculture</td>
</tr>
<tr>
<td>Week 13: Lecture 24</td>
<td>Food Safety: diversity of deleterious microbes, ecology and epidemiology of deleterious microbes on plants, GAPs</td>
</tr>
<tr>
<td>Week 13: Lecture 25</td>
<td>Probiotics</td>
</tr>
<tr>
<td>Week 13: Lecture 26</td>
<td>Grand Challenges in Agriculture</td>
</tr>
<tr>
<td>Week 14</td>
<td>Presentations on student paper</td>
</tr>
<tr>
<td>Week 14</td>
<td>Presentations on student paper</td>
</tr>
<tr>
<td>Week 14</td>
<td>Presentations on student paper</td>
</tr>
<tr>
<td>Week 15</td>
<td>Presentations on student paper; FINAL PAPER DUE</td>
</tr>
<tr>
<td>Week 15</td>
<td>Review for Final</td>
</tr>
<tr>
<td>Week 15</td>
<td>Final exam (not comprehensive)</td>
</tr>
</tbody>
</table>

**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](http://disability.tamu.edu).

**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 exclude 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/](http://www.tamu.edu/aggiehonor/).

**Class Attendance**: Students are expected to attend class unless satisfactory evidence is presented to substantiate the reason for absence [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07).
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

1. Request submitted by (Department or Program Name):
   Molecular and Environmental Plant Sciences

2. Course prefix, number and complete title of course:
   MEPS, 619, Plant-Associated Microorganisms

3. Catalog course description (not to exceed 50 words):
   Basic concepts and current topics in plant-microbe interactions including the diversity of plant-associated microorganisms; the plant as a microbial environment; endophytes; microbial roles in plant nutrition and fitness; uses of microorganisms for improved plant health and sustainable agriculture; microbial roles in food safety and future challenges; discussion of current literature.

4. Prerequisite(s):
   Basic plant biology or plant ecology is recommended; microbiology is helpful, but not required.
   Cross-listed with:
   PLPA 619 and HORT 619
   Stacked with:  

5. Is this a variable credit course?  
   Yes  
   No  
   If yes, from _______ to _______.

6. Is this a repeatable course?  
   Yes  
   No  
   If yes, this course may be taken _______ times.
   Will this course be repeated within the same semester?  
   Yes  
   No  

7. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
   All majors in the college of Agriculture and Life Sciences

8. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

9. Prefix  Course  Title  Credit  Length  SH  CP and Field Code  Admin. Unit  Acad. Year  CRT Code  Approval recommended by:  
   MEPS 619 PLANT-ASSOCIATED MICROBE  0 3 0 0 0 3 0 1 1 1 0 5 0 0 0 5 1 5 2 0 1 4 - 1 5 0 0 3 6 3 2  
   Dirk Hayes (Program Chair)  5/15/13  
   Department Head or Program Chair (Type Name & Sign)  Date  
   Chair, College Review Committee  Date  
   Dean of College  Date  

   (If cross-listed course)  
   Submitted to Coordinating Board by:  
   Chair, GC or UCC  Date  
   Associate Director, Curricular Services  Date  
   Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 3/10
Syllabus
HORT619 - MEPS619 – PLPA619
Plant-Associated Microorganisms
Spring 2015

Instructor: Elizabeth (Betsy) Pierson, Ph.D.
Office: Room 427 HFSB
Office Phone: 862-1307
Email: EAPerson@tamu.edu
Office hours: By appointment
Class Time: 11:30-12:30 MWF
Class Location: HFSB 101

Catalog description (50 words):
Basic concepts and current topics in plant-microbe interactions including the diversity of plant-associated microorganisms; the plant as a microbial environment; endophytes; microbial roles in plant nutrition and fitness; uses of microorganisms for improving plant health and sustainable agriculture; roles in food safety and future challenges; discussion and critique of literature.

Course Description:
HORT/MEPS/PLPA 619 Plant-Associated Microorganisms is a 3-credit lecture course.

Plant health is the net result of complex interactions between the plant and its environment. Essential components of this environment are the microorganisms living on and inside plants. Plant-beneficial microbes contribute to plant nutrition, affect plant herbivory, promote plant growth, and suppress plant disease. Detrimental microbes create food safety and plant disease problems. Understanding and manipulating plant-associated microbes represent key ecological control points for improving plant fitness.

We will explore basic concepts and current topics through lectures, assigned readings, classroom discussion, and presentations. We will cover the diversity of microorganisms associated with plants, the ecology of the plant phyllosphere and rhizosphere, the cryptic world of plant endophytes, the uses of plant-beneficial microorganisms for improving plant health, and the nature of deleterious plant-associated microbes. We will discuss issues as they relate to: sustainable agriculture, the development of commercial products aimed at improving plant fitness, and food safety. Students are expected to actively participate in the discussions, and find, present, and critique recent literature in the field of plant-microbe interactions.

Prerequisites
An undergraduate class in basic plant biology or plant ecology is recommended. A previous course in microbiology is helpful, but not required.

Learning Outcomes or Course Objectives
The goals of this course are to:
- Foster an understanding of the diversity microorganisms associated with plants and the types of interactions between plants and microbes that promote plant health
- Foster an understanding of the plant as a microbial environment.
- Foster critical thinking and an ability to read, discuss, and write about ideas presented in the published literature
• Introduce students to commercial/agricultural products and applications utilizing plant-associated microbes or directed toward manipulating plant-microbe interactions
• Broaden the students' perspective on how plant-associated microbes contribute to the ecology, physiology, biochemistry and genetics of plants.
• Broaden the students' perspective on how understanding po

Textbook and resource materials
There is no textbook associated with the class. Resource materials include lecture notes and assigned readings.

Grading Policy*

<table>
<thead>
<tr>
<th>Course Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>10%</td>
</tr>
<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm</td>
<td>20%</td>
</tr>
<tr>
<td>Presentation</td>
<td>20%</td>
</tr>
<tr>
<td>Final Paper</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
</tbody>
</table>

Grading Scale*

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Course Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B</td>
</tr>
<tr>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>0-59</td>
<td>F</td>
</tr>
</tbody>
</table>

* I reserve the right to modify grading policy or scale, as needed.

Additional Grading Policy:
Participation credit: In order to receive participation credit you need to be present for all sessions and participate in all class discussions (unless you have a University excused absence—see below). If you miss a class session, and have an approved excuse, please contact me within 24 hours via email or give me advanced notice.

Assignments: During the course, you will be asked to submit literature reviews or some other form of written assignment. I will describe each assignment and provide the due date at the time I make the assignment. For literature reviews you should assess (in one paragraph each) the background and objectives, methods and results, discussion and significant findings, and your opinion of the paper. The assignments are due typically at the start of class on Fridays.

Final Paper: The final paper will be an essay aimed at assessment of the graduate student’s capacity to review literature and addresses the issues related to understanding and manipulating microbial communities to promote plant health. The final paper should focuses on a specific plant-microbe interaction where increased understanding might result in agricultural gains. The paper is required to have three sections: one that describes current knowledge related to the chosen topic (including the biology of the interaction, current applications and their limitations and the desired agricultural gains), a second that describes specific area(s) of research that may lead to the desired agricultural gains (including a description of the specific objectives, treatments and controls, experimental design, response variables, replication and analysis, expected results, and deliverables), and a third section that discusses broader impacts and future studies.
Presentation: Students are required to give a 20 minute presentation to the class covering the three sections of their paper, and defend their research in a 10 minute exchange with class members. Students are graded not only on their prepared oral presentation, but on their ability to defend their ideas during questioning. They also are graded on their ability to critique and discuss other students’ presentations and defenses.

Exams: Exams will consist of brief definitions, short answers, problem solving, and short discussion/opinion questions.

*I absolutely do not tolerate plagiarism. Please make sure you understand what plagiarism is.*

<table>
<thead>
<tr>
<th>Lecture Period</th>
<th>Topics/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1: Lecture 1</td>
<td>Course Overview &amp; Types of Plant-Associated Microbes: Well-studied Eukaryotes</td>
</tr>
<tr>
<td>Week 1: Lecture 2</td>
<td>Types of Plant-Associated Microbes: Well-studied Eukaryotic and Prokaryotic groups continued</td>
</tr>
<tr>
<td>Week 1:</td>
<td>Class activity</td>
</tr>
<tr>
<td>Week 2:</td>
<td>Holiday</td>
</tr>
<tr>
<td>Week 2: Lecture 3</td>
<td>Quorum Sensing</td>
</tr>
<tr>
<td>Week 2:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 3: Lecture 4</td>
<td>Phyllosphere ecology: definition, physical characteristics, diversity of microorganisms</td>
</tr>
<tr>
<td>Week 3: Lecture 5</td>
<td>Rhizosphere Ecology: definition, physical characteristics, diversity of microorganisms</td>
</tr>
<tr>
<td>Week 3: Lecture 6</td>
<td>Special Lecture: Biofilms</td>
</tr>
<tr>
<td>Week 4: Lecture 7</td>
<td>Endophytic environment</td>
</tr>
<tr>
<td>Week 4: Lecture 8</td>
<td>Endophytes: Diversity of culturable microbes, fungal endophytes, alkaloid production and herbivory</td>
</tr>
<tr>
<td>Week 4:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 5: Lecture 9</td>
<td>Biological Nitrogen Fixers: Importance, diversity and distribution (symbiotic vs. associative N-fixers), nitrogen fixation (biochemistry and genetics)</td>
</tr>
<tr>
<td>Week 5: Lecture 10</td>
<td>Nitrogen Fixers: components of the interaction (nodulation and fixation) occurrence of rare but complex symbionts, commercial products</td>
</tr>
<tr>
<td>Week 5: Lecture 11</td>
<td>Special Lecture: Rhizobium-Legume Symbioses</td>
</tr>
<tr>
<td>Week 6: Lecture 12</td>
<td>Mycorrhizae, importance in phosphate nutrition, diversity and distribution (ecto vs. endo mycorrhizae)</td>
</tr>
<tr>
<td>Week 6: Lecture 13</td>
<td>Mycorrhizae: arbuscule formation (structure and signals), commercial products</td>
</tr>
<tr>
<td>Week 6: Lecture 14</td>
<td>Special Lecture: comparison of Mycorrhizal and Rhizobial Symbioses</td>
</tr>
<tr>
<td>Week 7:</td>
<td>Review</td>
</tr>
<tr>
<td>Week 7: Lecture 15</td>
<td>Biological Control 1: Principles of Biological Control: definition, history, discovery of disease suppressive soils and promise of biological control, goals and role in sustainable agriculture</td>
</tr>
<tr>
<td>Week 8:</td>
<td>Class activity (discuss exam and student project)</td>
</tr>
<tr>
<td>Week 8: Lecture 16</td>
<td>Biological Control2: Antagonism, Competition, Predation/Parasitism</td>
</tr>
<tr>
<td>Week 8: Lecture 17</td>
<td>Biological Control 3: Induced resistance, Hypovirulence, Cross Protection</td>
</tr>
<tr>
<td>Week 8:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 9</td>
<td>Spring Break!!! Have fun. Be safe.</td>
</tr>
<tr>
<td>Week 10: Lecture 18</td>
<td>Ramping up plant defenses, commercial applications</td>
</tr>
<tr>
<td>Week 10: Lecture 19</td>
<td>Commercialization/Integration of Biological Control: strategy to identify effective biological controls, formulation, production, registration</td>
</tr>
<tr>
<td>Week 10:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Week 11: Lecture 20</td>
<td>The Use of Manure, Compost, Compost Extracts and Teas; Biofumigation and Green Manuring. Solarization and Mulching: benefits/detriments to plant nutrition, roles in disease suppression</td>
</tr>
<tr>
<td>Week 11: Lecture 21</td>
<td>Alternative controls that affect microbial populations</td>
</tr>
<tr>
<td>Week 11:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 12: Lecture 22</td>
<td>Genetically Modified Organisms</td>
</tr>
<tr>
<td>Week 12: Lecture 23</td>
<td>Productions Systems</td>
</tr>
<tr>
<td>Week 12</td>
<td>Group Discussion: GMOs and Organic Agriculture</td>
</tr>
<tr>
<td>Week 13: Lecture 24</td>
<td>Food Safety: diversity of deleterious microbes, ecology and epidemiology of deleterious microbes on plants, GAPs</td>
</tr>
<tr>
<td>Week 13: Lecture 25</td>
<td>Probiotics</td>
</tr>
<tr>
<td>Week 13: Lecture 26</td>
<td>Grand Challenges in Agriculture</td>
</tr>
<tr>
<td>Week 14:</td>
<td>Presentations on student paper</td>
</tr>
<tr>
<td>Week 14:</td>
<td>Presentations on student paper</td>
</tr>
<tr>
<td>Week 14:</td>
<td>Presentations on student paper</td>
</tr>
<tr>
<td>Week 15:</td>
<td>Presentations on student paper; FINAL PAPER DUE</td>
</tr>
<tr>
<td>Week 15:</td>
<td>Review for Final</td>
</tr>
<tr>
<td>Week 15:</td>
<td>Final exam (not comprehensive)</td>
</tr>
</tbody>
</table>

**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](http://disability.tamu.edu).

**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 exclude 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/](http://www.tamu.edu/aggiehonor/).

**Class Attendance:** Students are expected to attend class unless satisfactory evidence is presented to substantiate the reason for absence [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07).
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus. •

1. This request is submitted by the Department of Plant Pathology & Microbiology

2. Course prefix, number and complete title of course: PLPA 619 Plant-Associated Microorganisms

3. Course description (not more than 50 words): Basic concepts and current topics in plant-microbe interactions including the diversity of plant-associated microorganisms; the plant as a microbial environment; endophytes; microbial roles in plant nutrition and fitness; uses of microorganisms for improved plant health and sustainable agriculture; microbial roles in food safety and future challenges; discussion of current literature.

4. Prerequisite(s) Cross-listed with

5. Is this a variable credit course? ☐ Yes ☑ No If yes, from ______ to ______.

6. Is this a repeatable course? ☐ Yes ☑ No If yes, this course may be taken ______ times. Will the course be repeated within the same semester/term? ☐ Yes ☑ No

7. Has this course been taught as a 289/489/689? ☐ Yes ☑ No If yes, how many times? ______ Indicate the number of students enrolled for each academic period it was taught.

8. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

   All Majors in the College of Agriculture and Life Sciences

9. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

10. Prefix Course # Title (excluding punctuation)
   PLPA 619 Plant-Associated Microorganisms

<table>
<thead>
<tr>
<th>Lect.</th>
<th>Lab</th>
<th>SCH</th>
<th>Subject Matter Content Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>FICE Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
<td>030111050005</td>
<td>1520</td>
<td>14-15</td>
<td>003632</td>
</tr>
</tbody>
</table>

   Approval recommended by:
   Charles M. Kennedy
   13 May 2013

   Chair, College Review Committee
   5/11/13

   Head of Department:
   Date

   Head of Department (if cross-listed course)
   Date

   Dean of College
   Date

   Submitted to Coordinating Board by:
   Dean of College
   Date

   Director of Academic Support Services
   Date

   Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8836.
OAR/AS – 04/07
Syllabus
HORT619 - MEPS619 – PLPA619
Plant-Associated Microorganisms
Spring 2015

Instructor: Elizabeth (Betsy) Pierson, Ph.D.
Office: Room 427 HFSB
Office Phone: 862-1307
Email: EAPIerson@tamu.edu
Office hours: By appointment
Class Time: 11:30-12:30 MWF
Class location: HFSB 101

Catalog description (50 words):
Basic concepts and current topics in plant-microbe interactions including the diversity of plant-associated microorganisms; the plant as a microbial environment; endophytes; microbial roles in plant nutrition and fitness; uses of microorganisms for improving plant health and sustainable agriculture; roles in food safety and future challenges; discussion and critique of literature.

Course Description:
HORT/MEPS/PLPA 619 Plant-Associated Microorganisms is a 3-credit lecture course.

Plant health is the net result of complex interactions between the plant and its environment. Essential components of this environment are the microorganisms living on and inside plants. Plant-beneficial microbes contribute to plant nutrition, affect plant herbivory, promote plant growth, and suppress plant disease. Detrimental microbes create food safety and plant disease problems. Understanding and manipulating plant-associated microbes represent key ecological control points for improving plant fitness.

We will explore basic concepts and current topics through lectures, assigned readings, classroom discussion, and presentations. We will cover the diversity of microorganisms associated with plants, the ecology of the plant phyllosphere and rhizosphere, the cryptic world of plant endophytes, the uses of plant-beneficial microorganisms for improving plant health, and the nature of deleterious plant-associated microbes. We will discuss issues as they relate to: sustainable agriculture, the development of commercial products aimed at improving plant fitness, and food safety. Students are expected to actively participate in the discussions, and find, present, and critique recent literature in the field of plant-microbe interactions.

Prerequisites
An undergraduate class in basic plant biology or plant ecology is recommended. A previous course in microbiology is helpful, but not required.

Learning Outcomes or Course Objectives
The goals of this course are to:
- Foster an understanding of the diversity microorganisms associated with plants and the types of interactions between plants and microbes that promote plant health
- Foster an understanding of the plant as a microbial environment.
- Foster critical thinking and an ability to read, discuss, and write about ideas presented in the published literature.
• Introduce students to commercial/agricultural products and applications utilizing plant-associated microbes or directed toward manipulating plant-microbe interactions
• Broaden the students' perspective on how plant-associated microbes contribute to the ecology, physiology, biochemistry and genetics of plants.
• Broaden the students' perspective on how understanding po

Textbook and resource materials
There is no textbook associated with the class. Resource materials include lecture notes and assigned readings.

Grading Policy*

<table>
<thead>
<tr>
<th>Course Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>10%</td>
</tr>
<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm</td>
<td>20%</td>
</tr>
<tr>
<td>Presentation</td>
<td>20%</td>
</tr>
<tr>
<td>Final Paper</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
</tbody>
</table>

Grading Scale*

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Course Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B</td>
</tr>
<tr>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>0-59</td>
<td>F</td>
</tr>
</tbody>
</table>

* I reserve the right to modify grading policy or scale, as needed.

Additional Grading Policy:
Participation credit: In order to receive participation credit you need to be present for all sessions and participate in all class discussions (unless you have a University excused absence—see below). If you miss a class session, and have an approved excuse, please contact me within 24 hours via email or give me advanced notice.

Assignments: During the course, you will be asked to submit literature reviews or some other form of written assignment. I will describe each assignment and provide the due date at the time I make the assignment. For literature reviews you should assess (in one paragraph each) the background and objectives, methods and results, discussion and significant findings, and your opinion of the paper. The assignments are due typically at the start of class on Fridays.

Final Paper: The final paper will be an essay aimed at assessment of the graduate student's capacity to review literature and addresses the issues related to understanding and manipulating microbial communities to promote plant health. The final paper should focuses on a specific plant-microbe interaction where increased understanding might result in agricultural gains. The paper is required to have three sections: one that describes current knowledge related to the chosen topic (including the biology of the interaction, current applications and their limitations and the desired agricultural gains), a second that describes specific area(s) of research that may lead to the desired agricultural gains (including a description of the specific objectives, treatments and controls, experimental design, response variables, replication and analysis, expected results, and deliverables), and a third section that discusses broader impacts and future studies.
Presentation: Students are required to give a 20 minute presentation to the class covering the three sections of their paper, and defend their research in a 10 minute exchange with class members. Students are graded not only on their prepared oral presentation, but on their ability to defend their ideas during questioning. They also are graded on their ability to critique and discuss other students' presentations and defenses.

Exams: Exams will consist of brief definitions, short answers, problem solving, and short discussion/opinion questions.

*I absolutely do not tolerate plagiarism. Please make sure you understand what plagiarism is.*

<table>
<thead>
<tr>
<th>Lecture Period</th>
<th>Topics/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1: Lecture 1</td>
<td>Course Overview &amp; Types of Plant-Associated Microbes: Well-studied Eukaryotes</td>
</tr>
<tr>
<td>Week 1: Lecture 2</td>
<td>Types of Plant-Associated Microbes: Well-studied Eukaryotic and Prokaryotic groups continued</td>
</tr>
<tr>
<td>Week 1:</td>
<td>Class activity</td>
</tr>
<tr>
<td>Week 2:</td>
<td>Holiday</td>
</tr>
<tr>
<td>Week 2: Lecture 3</td>
<td>Quorum Sensing</td>
</tr>
<tr>
<td>Week 2:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 3: Lecture 4</td>
<td>Phyllosphere ecology: definition, physical characteristics, diversity of microorganisms</td>
</tr>
<tr>
<td>Week 3: Lecture 5</td>
<td>Rhizosphere Ecology: definition, physical characteristics, diversity of microorganisms</td>
</tr>
<tr>
<td>Week 3: Lecture 6</td>
<td>Special Lecture: Biofilms</td>
</tr>
<tr>
<td>Week 4: Lecture 7</td>
<td>Endophytic environment</td>
</tr>
<tr>
<td>Week 4: Lecture 8</td>
<td>Endophytes: Diversity of culturable microbes, fungal endophytes, alkaloid production and herbivory</td>
</tr>
<tr>
<td>Week 4:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 5: Lecture 9</td>
<td>Biological Nitrogen Fixers: Importance, diversity and distribution (symbiotic vs. associative N-fixers), nitrogen fixation (biochemistry and genetics)</td>
</tr>
<tr>
<td>Week 5: Lecture 10</td>
<td>Nitrogen Fixers: components of the interaction (nodulation and fixation) occurrence of rare but complex symbionts, commercial products</td>
</tr>
<tr>
<td>Week 5: Lecture 11</td>
<td>Special Lecture: Rhizobium-Legume Symbioses</td>
</tr>
<tr>
<td>Week 6: Lecture 12</td>
<td>Mycorrhizae, importance in phosphate nutrition, diversity and distribution (ecto vs. endo mycorrhizae)</td>
</tr>
<tr>
<td>Week 6: Lecture 13</td>
<td>Mycorrhizae: arbuscule formation (structure and signals), commercial products</td>
</tr>
<tr>
<td>Week 6: Lecture 14</td>
<td>Special Lecture: comparison of Mycorrhizal and Rhizobial Symbioses</td>
</tr>
<tr>
<td>Week 7:</td>
<td>Review</td>
</tr>
<tr>
<td>Week 7: Lecture 15</td>
<td>Biological Control 1: Principles of Biological Control: definition, history, discovery of disease suppressive soils and promise of biological control, goals and role in sustainable agriculture</td>
</tr>
<tr>
<td>Week 8:</td>
<td>Class activity (discuss exam and student project)</td>
</tr>
<tr>
<td>Week 8: Lecture 16</td>
<td>Biological Control 2: Antagonism, Competition, Predation/Parasitism</td>
</tr>
<tr>
<td>Week 8: Lecture 17</td>
<td>Biological Control 3: Induced resistance, Hypovirulence, Cross Protection</td>
</tr>
<tr>
<td>Week 8:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 9:</td>
<td>Spring Break!!! Have fun. Be safe.</td>
</tr>
<tr>
<td>Week 10: Lecture 18</td>
<td>Ramping up plant defenses, commercial applications</td>
</tr>
<tr>
<td>Week 10: Lecture 19</td>
<td>Commercialization/Integration of Biological Control: strategy to identify effective biological controls, formulation, production, registration</td>
</tr>
<tr>
<td>Week 10:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 11: Lecture 20</td>
<td>The Use of Manure, Compost, Compost Extracts and Teas; Biofumigation and Green Manuring. Solarization and Mulching: benefits/detriments to plant nutrition, roles in disease suppression</td>
</tr>
<tr>
<td>Week 11: Lecture 21</td>
<td>Alternative controls that affect microbial populations</td>
</tr>
<tr>
<td>Week 11:</td>
<td>Literature discussion/class activity</td>
</tr>
<tr>
<td>Week 12: Lecture 22</td>
<td>Genetically Modified Organisms</td>
</tr>
<tr>
<td>Week 12: Lecture 23</td>
<td>Productions Systems</td>
</tr>
<tr>
<td>Week 12</td>
<td>Group Discussion: GMOs and Organic Agriculture</td>
</tr>
<tr>
<td>Week 13: Lecture 24</td>
<td>Food Safety: diversity of deleterious microbes, ecology and epidemiology of deleterious microbes on plants, GAPs</td>
</tr>
<tr>
<td>Week 13: Lecture 25</td>
<td>Probiotics</td>
</tr>
<tr>
<td>Week 13: Lecture 26</td>
<td>Grand Challenges in Agriculture</td>
</tr>
<tr>
<td>Week 14:</td>
<td>Presentations on student paper</td>
</tr>
<tr>
<td>Week 14:</td>
<td>Presentations on student paper</td>
</tr>
<tr>
<td>Week 14:</td>
<td>Presentations on student paper</td>
</tr>
<tr>
<td>Week 15:</td>
<td>Presentations on student paper; FINAL PAPER DUE</td>
</tr>
<tr>
<td>Week 15:</td>
<td>Review for Final</td>
</tr>
<tr>
<td>Week 15:</td>
<td>Final exam (not comprehensive)</td>
</tr>
</tbody>
</table>

**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](http://disability.tamu.edu).

**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 exclude 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/aggiethonor/](http://www.tamu.edu/aggiethonor/).

**Class Attendance:** Students are expected to attend class unless satisfactory evidence is presented to substantiate the reason for absence [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07).
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

Form Instructions

1. Request submitted by (Department or Program Name): Department of Veterinary Physiology and Pharmacology

2. Course prefix, number and complete title of course: VTPP 651 Epigenetics & Systems Physiology

3. Catalog course description (not to exceed 50 words): Journal club format focusing on epigenetic regulation of physiological systems; assignment of papers from primary literature and weekly oral presentations detailing opinions on research; emphasis on fundamental concepts in epigenetics, physiology and the molecular techniques employed to address research hypotheses, discussions of scientific ethics and fraud.

4. Prerequisite(s): Graduate Classification

Cross-listed with:

Stacked with:

Cross-listed courses require the signature of both department heads.

5. Is this a variable credit course? □ Yes □ No If yes, from ________ to ________

6. Is this a repeatable course? □ Yes □ No If yes, this course may be taken ________ times.

Will this course be repeated within the same semester? □ Yes □ No

7. This course will be:

a. required for students enrolled in the following degree program(s) (e.g., B.A. in History)

b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

graduate students enrolled in all of the life sciences

8. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

9. Prefix Course # Title (excluding punctuation)

<table>
<thead>
<tr>
<th>VTPP</th>
<th>651</th>
<th>EPIGENETICS &amp; SYSTEMS PHYSIOLOGY</th>
</tr>
</thead>
</table>

Lect. Lab SCH CRIP and Fund Code Admin. Unit Acad. Year HCL Code
0 3 0 0 3 2 6 0 9 0 5 0 0 0 2 2 9 2 0 1 4 - 1 5 0 0 3 6 3 2

Approval recommended by:
Dr. John N Stallone.
Department Head or Program Chair (Type Name & Sign) Date
Chair, College Review Committee Date

Department Head or Program Chair (Type Name & Sign) Date
Dean of College Date

Submitted to Coordinating Board by:

Chair, GC or UCC Date

Associate Director, Curricular Services Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 3/10
Course Description

Epigenetics is an emerging area of research with far-reaching implications into mammalian development and disease. In VTPP 651, students will evaluate and discuss current research examining the epigenetic mechanisms controlling systems physiology. This class will focus on the role of chromatin structure in the regulation of cellular homeostasis and organ function rather than concentrate on specific, isolated nuances of gene transcription. By doing so, students will gain an appreciation for the impact of epigenetic mechanisms upon mammalian development and normal homeostasis. Special emphasis will be paid to current studies applying epigenetic-based therapies to disease contexts and / or examining the disruptive role of teratogens in epigenetic programming.

By using a journal club format, this course will focus on developing skills in deciphering experimental design, critical paper reading, and technical fluency while at the same time, fostering the development of oral presentation skills. Students will be assigned two weekly papers taken from the most current primary literature. Students will be expected to analyze the data and research strategies described in the paper. For each manuscript discussed, one student will be expected to give an oral presentation detailing the research findings while another student will be assigned to lead the discussion of the paper. Each week, two papers will be discussed and marks will be assigned based on the quality of the oral presentations and active group participation.

Learning Outcomes and Course Objectives

The purpose of this course is to provide graduate level students with a journal club style seminar class focusing on the most current research in Epigenetics as it relates to systems physiology and disease. It is essential that graduate education teach students to think independently, access existing information, and acquire new knowledge on their own. This course will focus on "big picture" concepts and require students to focus their presentations on the scientific methods employed, rather than emphasizing an understanding of the specific biological systems being studied.

Learning Objectives

- list the common elements found in all scientific manuscripts
- discuss cases of scientific fraud and examine current procedures for reporting and preventing academic misconduct
- for a given scientific paper, identify the hypothesis being addressed
- break a scientific paper into its component parts and evaluate the methodologies used to address the scientific hypothesis
- use the online search tool PubMed as a resource to obtain background information on a given study
- assimilate information from multiple sources into an oral presentation
- effectively communicate to a large group of people
- define epigenetics and explain the role of chromatin structure in controlling cellular development / homeostasis
- list the major molecular techniques used to examine epigenetic phenomena
- describe how changes in chromatin structure influence gene expression and organism phenotype
- list the current therapeutic strategies that target epigenetic aspects of cellular function
- define the term teratogen and explain the relevance of this term to development
- define epigenetic programming and apply this concept to mammalian development
COLLEGE OF VETERINARY MEDICINE
& BIOMEDICAL SCIENCES
Department of Veterinary Physiology & Pharmacology

Learning Outcomes

By the end of the course, the graduate student will have:
- integrated epigenetic mechanisms into their understanding of systems physiology
- gained a firm understanding of how cellular differentiation contributes to organ development and function
- developed an improved ability to critically evaluate scientific literature
- improved ability to give oral presentations and lead group discussions
- improved their technical fluency in the areas of epigenetics and cellular physiology
- attained a greater understanding of the current techniques used in molecular biology
- developed an appreciation for issues surrounding academic misconduct and scientific fraud
- gained improved critical thinking skills and a greater capacity to evaluate scientific literature

Prerequisites
Graduate Classification

Open to graduate students enrolled in all of the life sciences.

Meeting Times & Important Dates

VTTP 651 will meet once a week in the RSC conference room from 1:00 to 4:00 PM.

Grading policies
Grading scale
A= 85-100
B= 75-84
C= 65-74
Fail  = Less than 65

Course Breakdown
Class Room Participation 10%
Effective Communication and Presentation skills 50%
Performance as Discussion Leader 25%
Writing Assignment (Due November 14th 2013) 15%

Class Room Participation

Students will be evaluated on their participation in the discussion of the papers being presented. Students need to read the assigned papers before class and come ready with a written list of questions and/or comments on the manuscript. Students will be given opportunity to question / comment on the study and will be evaluated on their active participation in this process.

Writing Assignment

Students will be asked to complete one writing assignment during the course of the semester. The purpose of this project is to further familiarize students with a gene of their choice controlling a developmental process discussed in class. Students will submit a “Wikipedia style” entry summarizing what is known about their gene and properly reference the PRIMARY sources they derived this information from. This entry will be uploaded to Wikipedia and the online submission graded by the instructors. This assignment will be due November 14th 2013.
COLLEGE OF VETERINARY MEDICINE
& BIOMEDICAL SCIENCES
Department of Veterinary Physiology & Pharmacology

Course Calendar

Week 1
August 28th 2013
Critically Evaluating the Scientific Literature

Week 2
September 4th 2013
Scientific Misconduct and Academic Fraud

Week 3
September 11th 2013
Delivering Effective Oral Presentations 1 - Speaking Effectively

Week 4
September 18th 2013
Delivering Effective Oral Presentations 2 - Organizing Your Talk

Weeks 5 to 14
September 25th to November 27th 2013 Student Presentations

November 14th - Writing Assignment is Due

Instructor Information

Michael Golding PhD.
Assistant Professor
Department of Veterinary Physiology and Pharmacology
College of Veterinary Medicine and Biomedical Sciences
Texas A&M University
College Station, Texas
77843-4466
979-862-1332
mgolding@cvm.tamu.edu

Beiyan Zhou PhD.
Assistant Professor
Department of Veterinary Physiology and Pharmacology
College of Veterinary Medicine and Biomedical Sciences
Texas A&M University
College Station, Texas
77843-4466
979-845-7175
BZhou@cvm.tamu.edu
Attendance:

Class attendance is expected. Your arrival to the class on time will be appreciated. Should you arrive late, please enter the classroom as quietly as possible and apologize to the students who you may disrupt as you take your seat in the classroom.

"The university views class attendance as an individual student responsibility. Students are expected to attend class and to complete all assignments."

"If the student is seeking an excused absence, the student must notify the instructor as soon as possible after the absence, but no later than the end of the second working day after the last date of absence."

Please see Texas A&M Student Rule #7 - http://student-rules.tamu.edu/rule07 for more information.

Classroom Communication:

The university has established a formal process for handling of student grievances associated with any course. If there are major concerns about the conduct of a course, which cannot be resolved by meeting with the instructor of the course, a Classroom Communication Concerns form should be completed and submitted to the appropriate department head.

For more information on Classroom Policies please visit the official TAMU website by following this link http://student-rules.tamu.edu/
Americans with Disabilities Act:

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 accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall, Rm B118 or call 845-1637. For additional information visit http://disability.tamu.edu

Academic Integrity and Scholastic Dishonesty:

"It is the responsibility of students and instructors to help maintain scholastic integrity at the university by refusing to participate in or tolerate scholastic dishonesty."

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

All examinations in this course are closed book, closed note, and closed neighbor exams. Video recording devices and other technological means may be used to supplement documentation of acts involving Scholastic Dishonesty. The instructors of this course regard Scholastic Dishonesty as a very serious offense and disciplinary action will be taken. Sanctions will include a grade of zero on the examination and a grade of "F" or "F*" in the course. All violations of the Aggie Honor Code in this course will result in a letter of reprimand being made a part of the student's records. Upon appeal of an accusation of Scholastic Dishonesty, the Honors Council can institute additional sanctions including separation from the University.

Folks: do not be confused, these instructors do not tolerate cheating. If you engage in an act of scholastic dishonesty, there is a very high probability that you will be caught. The capabilities and talents of the instructors to identify and verify cheating and their commitment to prosecute cheaters should not be underestimated. Almost every semester, one or more students fail to take this warning seriously. Please do not jeopardize your reputation, academic studies or future professional career.

See Aggie Honor Code at aggiehonor.tamu.edu
Course Changes
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): ARCHITECTURE
2. Course prefix, number and complete title of course: ARCH 657 - Advanced Professional Practice and Ethics

Attach a brief supporting statement for changes made to Items 3a through 5, and 6 below.

3. Change requested
   a. Prerequisite(s): From: ARCH 457 and graduate classification To: Graduate classification or approval of instructor
   b. Withdrawal (reason):
   c. Cross-list with: Cross-listed courses require the signature of both department heads.
   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:

6. Complete proposed course title and proposed catalog course description (not to exceed 50 words):

7. a. As currently in course inventory:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course #</th>
<th>Title (excluding punctuation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH</td>
<td>657</td>
<td>ADV PRO PRACTICE &amp; ETHIC</td>
</tr>
<tr>
<td>Lect.</td>
<td>Lab</td>
<td>SCH CIP and Fund Code Admin. Unit</td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>0 0 0 4 0 2 0 0 1 0 0 0 6 0 2 9 0 0 3 6 3 2 6</td>
</tr>
</tbody>
</table>

b. Change to:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course #</th>
<th>Title (excluding punctuation)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lect.</th>
<th>Lab</th>
<th>SCH CIP and Fund Code Admin. Unit</th>
<th>Acad. Year</th>
<th>FICE Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approval recommended by:
Ward V. Wells
Department Head or Program Chair (Type Name & Sign) Date

Leslie Feigenbaum
Chair, College Review Committee Date

Dean of College
(Date if cross-listed course)

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

Associate Director, Curricular Services Date

Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 02/11
Department Request for a Change in Course
Supporting Statement for the Requested Change

ARCH 657 – Advanced Professional Practice and Ethics

The Department of Architecture would like to request a change in prerequisite from “ARCH 457 and graduate classification” to “Graduate Classification”. ARCH 457 (Ethics and Professional Practice) is currently listed as one of several Directed Electives in the Bachelor of Environmental Design Degree that cover practice and ethics. Thus not all Texas A&M students who matriculate to the Master of Architecture program would have this specific prerequisite. In addition, the International students often have equivalent coursework but not necessarily the ARCH 457. The more advanced content of the ARCH 457 is now included in the course content of ARCH 657.

Dr. Julie Rogers
Associate Department Head for Undergraduate Programs, Architecture
Assistant Director, Center for Heritage Conservation
Department of Architecture
Texas A&M University
College Station, Texas 77843-3137
Tel: 979.847-9479
Email: jrogers@arch.tamu.edu
Fax: 979-862-1571
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): Maritime Administration

2. Course prefix, number and complete title of course: MARA 650 Distribution Logistics

3. Change requested
   a. Prerequisite(s): From: To:
   b. Withdrawal (reason):
   c. Cross-list with: Cross-listed courses require the signature of both department heads.
   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: N/A

5. Complete current course title and current catalog course description:
   Distribution Logistics
   The course discusses contemporary distribution logistics and integrated supply chain management. Emphasis is given to customer service, transportation modes, inventory policies, warehousing, order processing, and optimizing the logistics gross margin.

6. Complete proposed course title and proposed catalog course description (not to exceed 50 words):
   Supply Chain Management
   The course discusses contemporary distribution logistics and integrated supply chain management. Emphasis is given to customer service, transportation modes, inventory policies, warehousing, order processing, and optimizing the logistics gross margin.

7. a. As currently in course inventory:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course #</th>
<th>Title (excluding punctuation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARA</td>
<td>650</td>
<td>DISTRIBUTION LOGISTICS</td>
</tr>
<tr>
<td>Lec.</td>
<td>Lab</td>
<td>STH</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   b. Change to:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course #</th>
<th>Title (excluding punctuation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARA</td>
<td>650</td>
<td>SUPPLY CHAIN MANAGEMENT</td>
</tr>
<tr>
<td>Lec.</td>
<td>Lab</td>
<td>STH</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   Approval recommendation:

   [Signature]
   Date: 5-3-13

   Chair, College Review Committee: 5-20-13

   [Signature]
   Date: 5-20-13

   [Signature]
   Date: 5-20-13

   Chair, GC or UCC

   [Signature]
   Date: 5-20-13

   Effective Date

   Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
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): Department of Management

2. Course prefix, number and complete title of course: MGMT 613 Managerial Macroeconomics

3. Change requested
   a. Prerequisite(s): From: ___________________________ To: ___________________________
   b. Withdrawal (reason): ___________________________
   c. Cross-list with: ___________________________

   Cross-listed courses require the signature of both department heads.

   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: MGMT 613 - Managerial Macroeconomics. (3-0). Credit 3. Analysis of domestic and global macroeconomic issues from a managerial perspective; analysis of current and historical macroeconomic events at the national and global levels; analysis of business cycles and monetary and fiscal policies; managerial decisions in the context of changing macroeconomic environment. Prerequisite: Enrollment is limited to BUAD classification 7.

6. Complete proposed course title and proposed catalog course description (not to exceed 50 words): MGMT 613 - Managerial Macroeconomics (3-0). Credit 1 to 3

7. a. As currently in course inventory:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course #</th>
<th>Title (excluding punctuation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT</td>
<td>613</td>
<td>MANAGEMENT MACROECONOMICS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lect.</th>
<th>Lab</th>
<th>SCH</th>
<th>CIP and Fund Code</th>
<th>Admin. Unit</th>
<th>FICE Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>3</td>
<td>45061001</td>
<td>17800</td>
<td>3632</td>
</tr>
</tbody>
</table>

   b. Change to:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course #</th>
<th>Title (excluding punctuation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT</td>
<td>613</td>
<td>MANAGEMENT MACROECONOMICS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lect.</th>
<th>Lab</th>
<th>SCH</th>
<th>CIP and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>FICE Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>3</td>
<td>45061001</td>
<td>1780</td>
<td>1500</td>
<td>3632</td>
</tr>
</tbody>
</table>

   Approval recommended by: ___________________________ Date: 5-22-13

   Chair, College Review Committee: ___________________________ Date: 6/4/2013

   Chair, GC or UCC: ___________________________ Date: 5/1/13

   Submitted to Coordinating Board by: ___________________________ Date: ___________________________ Effective Date: ___________________________
Course: MGMT 613: Managerial Macroeconomics
Semester: Spring 2014
Professor: Dennis W. Jansen
E-mail: dennisjansen@tamu.edu
Office Phone: 979-845-7375
Office Hours: Via email, phone, and by appointment. Feel free to email at any time and I will try to get back to you in a timely manner.

Course Description:

Analysis of domestic and global macroeconomic issues from a professional perspective; analysis of current and historical macroeconomic events at the national and global levels; analysis of monetary and fiscal policies; managerial decisions in the context of changing macroeconomic environment.

Prerequisites:

Registration is limited to BUAD Classification 7.

Course Learning Objectives:

The course objective is to understand the following topics, their impact on business, and their importance for management:

- Definition and measurement of macroeconomic variables
- Economic growth, capital accumulation, and technological change
- The labor market and unemployment
- International trade and globalization
- Consumption, investment, and the business cycle
- Economic policymaking, both monetary and fiscal
- Sovereign debt and debt crises
- Exchange rate determination
- Currency crises

Required and Supplemental Materials:

A. Required Textbook

B. Readings Posted on E-learning
See below for a list of items posted to e-learning.

C. Supplemental Materials
You may find the following supplements useful

   This link is to an instructional video series on both micro and macro economics.
2. The Wall Street Journal, The Economist, the Financial Times, Business Week, and Bloomberg are all recommended outlets for economics and management articles and information.

3. Other books you might find useful:

Criteria for Performance Evaluation:

Three Team Assignments: 45%
Final Exam: 55%

Grade Determination:

90-100% A; 80-89% B; 70-79% C; 60-69% D; Below 60% F.

Team Assignments:

There will be 3 team assignments which will be posted on 'e-learning'. These assignments will provide students with the opportunity to analyze economic problems outside of the class. Assignments must be typed and turned in as pdf files or Word (.doc) files.

Final Examination:

The final exam will be cumulative, covering all semester materials, and be a take-home exam. This will be an individual exam; no consultation with classmates or any other persons is allowed. The exact timing of the exam will be announced in class and by email at a later date.

Make-up Policy:

Make up exams are allowed following university policy on excused absences. See http://student-rules.tamu.edu/rule07. Students are required to provide written documentation supporting the claim of an official university-excused absence. If you know you will be missing for reasons other than officially excused absences you must contact me at least ONE WEEK in advance of the absence to discuss your proposed absence and request that it be excused.

Special Notes:
1. All class handouts are copyrighted
2. Problems with grades will not be handled in class. If you have concerns please see me during office hours.
3. The instructor will not discuss your NEED for a particular grade. It is up to you to allocate your time and effort across courses and other alternative uses to get the “desired” outcome.
4. Important University links:
   http://admissions.tamu.edu/Registrar/General/Calender.aspx
   http://student-rules.tamu.edu/
   http://dof.tamu.edu/faculty/policies/religiousobservation.php
   http://disability.tamu.edu

**Americans with Disabilities Act (ADA):**

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

**Academic Integrity 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 exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: http://aggiehonor.tamu.edu/

**Required Readings and Other Material:**

Important: The schedule below is tentative. Given the nature of macroeconomic issues including the ongoing difficulties caused by the global financial crisis and the European debt crisis, I might at times ask you to read an article or articles not listed below. I also may have underestimated or overestimated the amount of time it will take to cover the topics listed below. I will try to stay on schedule, and will provide modifications to the schedule on e-learning as we progress through the semester. My goal is to stay on schedule to the extent possible, and to cover all the materials listed below by the end of the semester.

We are scheduled for five meeting times of four hours each during the semester. Below I list five modules that correspond to our five meeting times, and for each module I list a set of topics and readings to be covered.

**Group Assignments Schedule:**

<table>
<thead>
<tr>
<th>Assignment Number</th>
<th>Module/Date Assignment Will Be Announced</th>
<th>Date Assignment Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Module 1, January 18</td>
<td>Feb. 2 (start of class)</td>
</tr>
<tr>
<td>2</td>
<td>Module 2, February 2</td>
<td>Feb. 16 (start of class)</td>
</tr>
<tr>
<td>3</td>
<td>Module 4, February 16</td>
<td>Mar. 29 (start of class)</td>
</tr>
</tbody>
</table>
Module 1: Introduction to Macroeconomics and Growth. (Friday January 18, 6 PM – 10 PM).

Topic 1.1: Macroeconomics and Management
1. Miles et al Chapter 1.

Topic 1.2: Measurement in Macroeconomics: The National Income Accounts
1. Miles et al Chapter 2.

Topic 1.3: Growth, Resources, and Productivity
1. Miles et al Chapter 3, sections 3.1 – 3.4.

Topic 1.4: Capital Accumulation and Economic Growth (to be continued in Module 2)
1. Miles et al Chapter 4.
2. “Corporate Profitability: Profits, but no Jobs” The Economist, Aug 7 2010 (on e-learning)

Module 2 Growth, Productivity, and Unemployment. (Saturday February 2, 9 AM – 1 PM).

Topic 1.4/2.1: Capital Accumulation and Economic Growth (continued from Module 1)
1. Miles et al Chapter 4
2. “Corporate Profitability: Profits, but no Jobs” The Economist Aug 7 2010 (on e-learning)

Topic 2.2: Total Factor Productivity, Human Capital, and Technology
1. Miles et al Chapter 5.

Topic 2.3: Unemployment and the Labor Market
1. Miles et al Chapter 7.
2. “American Unemployment: Lower, not hire,” The Economist, August 14 2010 (on e-learning)
Module 3: Trade, Globalization, and the Business Cycle. (Saturday February 16, 9 AM – 1 PM)

Topic 3.1: International Trade
1. Miles et al Chapter 8.

Topic 3.2: Globalization
1. Miles et al Chapter 9

Topic 3.3: Consumption and Investment
1. Miles et al Chapter 10, sections 10.1 – 10.2; 10.8-10.9; 10.11-10.12.

Topic 3.4: Business Cycles
1. Miles et al Chapter 11.

Module 4: Macroeconomic Policy. (Saturday February 16, 2 PM – 6 PM).

Topic 4.1: Money and Prices
1. Miles et al Chapter 12.
2. “Zimbabwe’s Hyperinflation Poses Unique Challenges” story and audio at NPR website.

Topic 4.2: Monetary Policy
1. Miles et al Chapter 13, sections 13.1; 13.3; 13.6-13.8; 13.10.
3. “The Economist Explains Quantitative Easing” audio link:

Topic 4.3: Fiscal Policy
1. Miles et al Chapter 14.
2. Global corporate tax rates from KPMG.
Module 5: Debt Crises and Currency Crises. (Friday March 29, 6 PM – 10 PM).

Topic 5.1: Sovereign Debt and Default
1. Miles et al Chapter 17.
2. "Sovereign Debt and Default: A History" Interview with Alex Pollock, CoBank, March 2012 (on e-learning).

Topic 5.2: Exchange Rate Determination
2. Miles et al Chapter 20, section 20.1-20.3; 20.8-20.10.
3. “Big Mac Index” The Economist, Jan 14, 2012 (on e-learning).

Topic 5.3 Currency Crises and Exchange Rate Systems
1. Miles et al Chapter 21.
Special Consideration

Items
June 20, 2013

To: Dr. Alan Sams  
Executive Associate Dean  
College of Agriculture and Life Sciences  

Dr. Mark J. Zoran  
Chair, Graduate Council  

From: Dr. David Reed  
Associate Dean for Graduate Programs and Faculty Development  
College of Agriculture and Life Sciences  

Subject: Ecology and Evolutionary Biology (EBB) Doctoral Program Proposal  

The Graduate Program Council met on June 19, 2013 to discuss Ecology and Evolutionary Biology (EBB) new doctoral proposal. By a strong majority vote, the committee voted to approve the proposal.
Texas Higher Education Coordinating Board
New Doctoral Degree Proposal

Directions: An institution shall use this form to propose a new doctoral degree program. In completing the form, the institution should refer to Texas Administrative Code (TAC) 5.46 relating to Criteria for New Doctoral Programs. This form requires signatures of (1) the Chief Executive Officer, certifying adequacy of funding for the new program; (2) a member of the Board of Regents (or designee), certifying Board approval; and (3) if applicable, a member of the Board of Regents (or designee), certifying that criteria have been met for Coordinating Board staff-level approval.

Note: If an institution does not have Preliminary Authority for the proposed doctoral program, it must first submit a separate request for Preliminary Authority. That request shall address criteria set in TAC Section 5.24 (b).

Information: Contact the Division of Academic Affairs and Research at 512/447-6200.

Administrative Information

1. **Institution**: Texas A&M University – College Station

2. **Program Name** – Doctor of Philosophy (Ph.D.) in Ecology & Evolutionary Biology

3. **Proposed CIP Code**: 26.1310.00

4. **Program Description** – The fundamental theme of Ecology and Evolutionary Biology (EEB) is how organisms engage their environment, a question central to our understanding of how living systems work, how human minds and bodies work, and how the Earth works. The overall goal of the program is to provide rigorous disciplinary training in EEB, while taking advantage of the wide interdisciplinary expertise among EEB faculty and their departmental colleagues. All EEB students will be required to take a two-semester, team-taught core course in their first year, as well as a first-semester course focused on writing an NSF predoctoral fellowship application, and to attend a weekly EEB seminar. The remainder of the curriculum will be drawn from existing courses taught by EEB and departmental faculty.

5. **Administrative Unit** – Administrative Council

6. **Proposed Implementation Date** – Fall 2014

7. **Contact Person** – Provide contact information for the person who can answer specific questions about the program.

   Name: Dr. Gil Rosenthal

   Title: Associate Professor of Biology; Chair, Faculty of Ecology & Evolutionary Biology

   **E-mail**: grosenthal@bio.tamu.edu
Program Information

I. Need

A. Job Market Need
Ecology and evolutionary biology is a discipline that scrambles conventional disciplinary boundaries with the purpose of generating students that can provide modern solutions to the most important questions in the life sciences. Today students are confronted with the responsibility of answering questions like: How does the rapid evolution of harmful bacteria and viruses inform drug design and agricultural policy? How are endangered birds, tropical diseases, and crop pests responding to global climate change? How does evolutionary history influence human economic decisions, political behavior, and psychopathology? How do we deal with population growth that far exceeds resource availability? Employers are tasked with finding individuals that can span multiple conventional boundaries to answer such questions. Employment opportunities for EEB students are therefore widespread and include a number of careers in the life sciences that range from biomedical genomics, ecological and evolutionary genetics, neurobiology, conservation and sustainability science, as well as opportunities to specialize in conventional disciplines such as wildlife, fisheries, forestry, and entomology.

According to the Bureau of Labor Statistics, students with a doctoral degree in EEB are needed to fill a number of positions as scientists in the near future. EEB scientists (i.e. life scientists) are projected to increase 26.70%, which is one of the fastest growing occupations in the category of “Professional and Related Occupations” and is increasing at a greater rate than professional jobs as physical scientists (+15.12%), mathematical scientists (+19.79%), engineers (+11.35%), and healthcare practitioners (+21.35%). It is also expected that students with a doctoral degree in EEB from TAMU will be the strongest competitors for environmental positions in fields outside the life sciences. For example, EEB provides the foundation for students to fill positions as “environmental scientists and geoscientists,” the fastest growing occupation (+24.53%) as a physical scientist.

The key feature that makes an EEB degree program appealing to doctoral students and their employers is that it produces individuals that can fill multiple positions and are adaptable to future changes in job requirements. A student can be employed as a conservation scientist yet apply techniques typically used in evolutionary genetics, behavioral ecology, and/or biogeochemistry. Because of their background, that same student can fill a job in biogeochemistry yet apply their work in conservation and management. In contrast, the current academic infrastructure at TAMU relies heavily on conventional disciplinary boundaries, which largely restricts students to a narrow occupational area within the life sciences. One major weakness of such students is that they are poorly equipped to adapt to changes in the job market and work beyond the focus of their specialized training. Considering that the Bureau of Labor Statistics projects technical jobs will slightly decline in wildlife, fisheries, range, and forestry (see Appendix B), doctoral students specializing in these areas at TAMU may be charged with overcoming this weakness if projections are manifested at the level of professional degrees in the not-so-distant future. Subsequently, there is great demand among prospective and current students for broader training in ecology and evolutionary biology at TAMU.
B. **Student Demand**

The current lack of a degree-granting program in EEB is a recurring problem when it comes to recruiting outstanding graduate students. TAMU is unusual in not having such a program. The top 20 EEB programs in the US, according to rankings by the National Research Council, are located at universities in the top 100 of the Academic Ranking of World Universities. While TAMU is ranked #95, it is one of only ten US universities in the top 100 of the Academic Ranking of World Universities that do not offer an EEB program (estimate excludes two medical schools; see Appendix A). Since an EEB degree is consistently featured in the world’s highest ranked universities, outstanding students with an interest in ecology, evolution, and behavior are unlikely to even apply here unless they have been in contact with specific faculty. Faculty members serving on graduate admissions committees frequently see some of the best students opt for other universities because they are concerned that our specialized departmental programs do not fit their career-development needs.

Concerns over the lack of an EEB degree program are echoed by current doctoral students in EEB-affiliated departments at TAMU. Many have voiced that the lack of an EEB program is compromising their ability to compete for faculty positions at top academic institutions. In a recent survey taken by graduate students on the EEB student roster, 66% stated they would prefer an EEB degree over their current degree. As part of this survey, those students that preferred an EEB degree were given the opportunity to briefly outline why they chose an EEB degree over their current one. Two dominant responses were given: (1) EEB is more relevant to their research (66%), and (2) an EEB degree would improve their chances to acquire a job at the university of their choice (32%).

A degree program in EEB is also expected to enhance training of students in non-EEB disciplines. As one example, one of the main criticisms of environmental engineers, the second fastest growing specialization in engineering (+30.62%), is that they lack broader training in fundamental EEB concepts (Mitsch and Jorgensen 2004). The creation of an EEB degree program is expected to facilitate interactions among faculty and students in EEB and the Environmental Engineering Division of Emphasis in Civil Engineering. Many students from Environmental Engineering already enroll in specialized EEB classes and have expressed interest in broader training in EEB. The core course outlined in this proposal will help fill this demand and encourage future growth in this emerging trans-disciplinary field.

**References**


C. **Enrollment Projections** – Use this table to show the estimated cumulative headcount and full-time student equivalent (FTSE) enrollment for the first five years of the program. Provide an explanation of how headcount and FTSE numbers were determined.

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New Students</strong></td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td><strong>Cumulative Headcount</strong></td>
<td>22</td>
<td>31</td>
<td>38</td>
<td>44</td>
<td>47</td>
</tr>
</tbody>
</table>

AS/AP/Updated 04.14.10
New student numbers were obtained by surveying program faculty as to how many EEB students they could support over a five-year period. Transfer students were estimated from responses of the current EEB students who indicated a wish to transfer to EEB, based on their academic qualifications and their expected date of graduation. We conservatively estimated actual numbers as approximately 60% of the self-reported responses.

### II. Resources

#### A. Degree Requirements – Students entering with an undergraduate degree:

<table>
<thead>
<tr>
<th>Category</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTSE</td>
<td>22</td>
</tr>
<tr>
<td>Attrition</td>
<td>31</td>
</tr>
<tr>
<td>Graduates</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>47</td>
</tr>
<tr>
<td>Required Courses</td>
<td>15</td>
</tr>
<tr>
<td>Prescribed Electives</td>
<td>16</td>
</tr>
<tr>
<td>Free Electives</td>
<td>17</td>
</tr>
<tr>
<td>Dissertation</td>
<td>0</td>
</tr>
<tr>
<td>Other (Specify, e.g., internships, clinical work)</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>96</td>
</tr>
</tbody>
</table>

**Students entering with a Master’s degree or equivalent:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses</td>
<td>12</td>
</tr>
<tr>
<td>Prescribed Electives</td>
<td>12</td>
</tr>
<tr>
<td>Free Electives</td>
<td>8</td>
</tr>
<tr>
<td>Dissertation</td>
<td>32</td>
</tr>
<tr>
<td>Other (Specify, e.g., internships, clinical work)</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>64</td>
</tr>
</tbody>
</table>

#### B. Curriculum

i. Describe the proposed educational objectives of the program.

1. Students will acquire a broad understanding of the foundations of Ecology & Evolutionary Biology as a broad interdisciplinary field, with regards to conceptual background, theoretical underpinnings, empirical methodology, and practical application.

2. Students will receive specialized training in order to be able to apply cutting-edge approaches to their chosen dissertation topic.
3. Students will produce a written dissertation based on their original theoretical and/or empirical research, which is expected to result in at least three publications in peer-reviewed journals and multiple presentations at national and international meetings and to the general public.

ii. Use these tables to identify the required courses and prescribed electives of the program. Note with an asterisk (*) courses that would be added if the program is approved.

<table>
<thead>
<tr>
<th>Prefix and Number</th>
<th>Required Courses</th>
<th>SCH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EEB mini-courses (Appendix IV,A)*</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>First-year Graduate Orientation Seminar*</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>EEB Colloquium Seminar*</td>
<td>6 (entering with BS/BA); 3 (entering with MS/MA)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prefix and Number</th>
<th>Prescribed Elective Courses (students entering from BS/BA)</th>
<th>SCH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum of 9 credits total in at least two different</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>departments from the following categories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(complete list in Appendix IV.A): Quantitative,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ecology, and Evolution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Journal clubs</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prefix and Number</th>
<th>Prescribed Elective Courses (students entering from MS/MA)</th>
<th>SCH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum of 6 credits total in at least two different</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>departments from two of the three following</td>
<td></td>
</tr>
<tr>
<td></td>
<td>categories (complete list in Appendix IV.A):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quantitative, Ecology, and Evolution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Journal clubs</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prefix and Number</th>
<th>Free Elective Courses</th>
<th>SCH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students will choose free electives in conjunction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>with their committee chair and subject to approval</td>
<td></td>
</tr>
<tr>
<td></td>
<td>of dissertation committee; free electives may</td>
<td></td>
</tr>
<tr>
<td></td>
<td>include formal courses or dissertation hours.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 (entering with BS/BA); 8 (entering with MS/MA)</td>
<td></td>
</tr>
</tbody>
</table>

C. Faculty – Use these tables to provide information about Core and Support faculty. Add an asterisk (*) before the name of the individual who will have direct administrative responsibilities for the program. Add a pound symbol (#) before the name of any individual who has directed doctoral dissertations or master’s theses. Add and delete rows as needed.
Faculty in this interdisciplinary program will be teaching courses on a rotating basis. Each faculty will contribute approximately 10% of the time to the program. (Core Faculty: Full-time tenured and tenure-track faculty who teach 50 percent or more in the doctoral program or other individuals integral to the doctoral program who can direct dissertation research. Support Faculty: Other full-time or part-time faculty affiliated with the doctoral program.)

<table>
<thead>
<tr>
<th>Name of Core Faculty and Faculty Rank</th>
<th>Highest Degree and Awarding Institution</th>
<th>CoursesAssigned in Program</th>
<th>% Time Assigned to Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>#Alvarado-Bremer, Jaime; Associate Professor</td>
<td>PhD, University of Toronto</td>
<td>EEBX 601</td>
<td>10%</td>
</tr>
<tr>
<td>#Armitage, Anna; Associate Professor</td>
<td>PhD, University of California Los Angeles</td>
<td>EEBX 601</td>
<td>10%</td>
</tr>
<tr>
<td>*#Behmer, Spencer; Associate Professor</td>
<td>PhD, University of Arizona</td>
<td>EEBX 601</td>
<td>10%</td>
</tr>
<tr>
<td>#Boutton, Thomas; Regents Professor</td>
<td>PhD, Brigham Young University</td>
<td>EEBX 601</td>
<td>10%</td>
</tr>
<tr>
<td>#Cai, James; Assistant Professor</td>
<td>PhD, University of Hong Kong</td>
<td>EEBX 605</td>
<td>10%</td>
</tr>
<tr>
<td>#Campbell, Lisa; Professor</td>
<td>PhD, SUNY - Stony Brook</td>
<td>EEBX 605</td>
<td>10%</td>
</tr>
<tr>
<td>#Conway, Kevin; Assistant Professor</td>
<td>PhD, Saint Louis University</td>
<td>EEBX 605</td>
<td>10%</td>
</tr>
<tr>
<td>#Coulson, Robert; Professor</td>
<td>PhD, University of Georgia</td>
<td>EEBX 605</td>
<td>10%</td>
</tr>
<tr>
<td>#Criscone, Charles; Assistant Professor</td>
<td>PhD, Oregon State University</td>
<td>EEBX 605</td>
<td>10%</td>
</tr>
<tr>
<td>#Eubanks, Micky; Professor</td>
<td>PhD, Entomology University of Maryland</td>
<td>EEBX 603</td>
<td>10%</td>
</tr>
<tr>
<td>#Feagin, Rusty; Associate Professor</td>
<td>PhD, Texas A&amp;M University</td>
<td>EEBX 604</td>
<td>10%</td>
</tr>
<tr>
<td>#Fitzgerald, Lee; Professor</td>
<td>PhD, University of New Mexico</td>
<td>EEBX 604</td>
<td>10%</td>
</tr>
<tr>
<td>#Fujiwara, Masami; Assistant Professor</td>
<td>PhD, MIT/WHOI Joint Program</td>
<td>EEBX 602</td>
<td>10%</td>
</tr>
<tr>
<td>#Hamer, Gabriel; Clinical Assistant Professor</td>
<td>PhD, Michigan State University</td>
<td>EEBX 602</td>
<td>10%</td>
</tr>
<tr>
<td>#Hamer, Sarah; Assistant Professor</td>
<td>PhD, DVM, Michigan State University</td>
<td>EEBX 690</td>
<td>10%</td>
</tr>
<tr>
<td>#Hurtado, Luis; Assistant Professor</td>
<td>PhD, Rutgers University</td>
<td>EEBX 690</td>
<td>10%</td>
</tr>
<tr>
<td>#Jones, Adam; Associate Professor</td>
<td>PhD, University of Georgia</td>
<td>EEBX 607</td>
<td>10%</td>
</tr>
<tr>
<td>#Light, Jessica; Assistant Professor</td>
<td>PhD, Louisiana State University</td>
<td>EEBX 607</td>
<td>10%</td>
</tr>
<tr>
<td>#Marshall, Christopher; Associate Professor</td>
<td>PhD, University of Florida</td>
<td>EEBX 607</td>
<td>10%</td>
</tr>
<tr>
<td>#Mateos, Mariana; Assistant Professor</td>
<td>PhD, Rutgers University</td>
<td>EEBX 606</td>
<td>10%</td>
</tr>
<tr>
<td>#Medina, Raul; Assistant Professor</td>
<td>PhD, University of Maryland</td>
<td>EEBX 681</td>
<td>10%</td>
</tr>
<tr>
<td>#Moore, Georgianne; Associate Professor</td>
<td>PhD, Oregon State University</td>
<td>EEBX 681</td>
<td>10%</td>
</tr>
<tr>
<td>#Murphy, William; Associate Professor</td>
<td>PhD Tulsa University</td>
<td>EEBX 607</td>
<td>10%</td>
</tr>
<tr>
<td>#Olszewski, Thomas; Associate Professor</td>
<td>PhD, Pennsylvania State University</td>
<td>EEBX 606</td>
<td>10%</td>
</tr>
<tr>
<td>#Peterson, Markus; Associate Professor</td>
<td>PhD, Texas A&amp;M University</td>
<td>EEBX 606</td>
<td>10%</td>
</tr>
<tr>
<td>#Quigg, Antonietta; Associate Professor</td>
<td>PhD, Monash University, Australia</td>
<td>EEBX 606</td>
<td>10%</td>
</tr>
<tr>
<td>#Raymond, Anne; Professor</td>
<td>PhD, University of Chicago</td>
<td>EEBX 606</td>
<td>10%</td>
</tr>
</tbody>
</table>

AS/AP/Updated 04.14.10
<table>
<thead>
<tr>
<th>Name</th>
<th>Highest Degree and Awarding Institution</th>
<th>Courses or Other Support Activity (e.g., Research Supervision) Assigned in Program</th>
<th>% Time Assigned To Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. **Student Recruitment** – Describe general recruitment efforts, including plans to recruit and retain students from underrepresented groups. We will recruit via our website (eeb.tamu.edu), announcements to professional society listservs, and distribution of electronic and print recruiting materials to EEB and life sciences programs nationwide. We will send representatives to the annual Pathways to the Doctorate symposium and will sponsor student and faculty recruiting visits to minority-serving institutions throughout the region. Outstanding applicants will be invited for a spring recruiting visit. Immediate association with a faculty sponsor and a “leveling” core course sequence will facilitate student retention.

E. **Student Financial Assistance** – Identify the number of full-time and part-time students who would be funded (e.g., teaching assistantships, research assistantships, scholarships, etc.) and the anticipated amount of the stipends for the first five years. *(These costs should be reflected in the cost sheet as well.) Department heads have indicated that interdisciplinary EEB students with departmental faculty as committee chairs will have access to*
departmental teaching assistantships (see letters of support). Figures are based on surveys of EEB core faculty. Anticipated amounts will vary and depend on department and type of fellowship.

<table>
<thead>
<tr>
<th></th>
<th>20XX</th>
<th>20XX</th>
<th>20XX</th>
<th>20XX</th>
<th>20XX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teaching</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistantships</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of students</td>
<td>7</td>
<td>10</td>
<td>13</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Amount per student</td>
<td>$24,000</td>
<td>$24,000</td>
<td>$24,000</td>
<td>$24,000</td>
<td>$24,000</td>
</tr>
<tr>
<td><strong>Research</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistantships</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of students</td>
<td>10</td>
<td>13</td>
<td>16</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Amount per student</td>
<td>$24,000</td>
<td>$24,000</td>
<td>$24,000</td>
<td>$24,000</td>
<td>$24,000</td>
</tr>
<tr>
<td><strong>Scholarships</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of students</td>
<td>5</td>
<td>8</td>
<td>9</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Amount per student</td>
<td>$24,000</td>
<td>$24,000</td>
<td>$24,000</td>
<td>$24,000</td>
<td>$24,000</td>
</tr>
</tbody>
</table>

F. **Admissions Standards**

Prospective students may apply to the Interdisciplinary Graduate Program in Ecology & Evolutionary Biology through the TAMU Office of Graduate Studies. The overall graduate admission criteria are based on the entire record of the applicant and availability of departmental resources. Admission to the Interdisciplinary Graduate Program in EEB will be based upon the following criteria:

1) Hold a four-year baccalaureate degree from a college or university of recognized standing (i.e., a degree recognized as equivalent to a baccalaureate degree from an accredited institution in the U.S.),

2) Show promise of intellectual and academic ability, as evidenced by a minimum of three letters of recommendation from persons capable of judging the applicant’s capabilities, a Statement of Purpose essay, an overall evaluation of the student’s transcript, and the grade point average in the last 60 hours of coursework.

3) Submit, with application, scores on the General Test of the Graduate Record Examination (GRE), which will be evaluated in a manner that complies with House Bill 1641.

4) Demonstrate research aptitude in the form of prior research experience, presentations at professional meetings, and/or publications in the scientific literature.

5) An applicant from another country seeking admission to graduate studies must demonstrate the ability to read, write, speak, and understand the English language. Prospective students whose native language is not English must take the Test of English as a Foreign Language (TOEFL), which is administered by the Educational Testing Service in over 200 centers around the world. All applicants from non-English-speaking countries must present a computer-based TOEFL score of at least 213 to be admitted to graduate studies at the University.
6) Importantly, each EEB applicant must identify a prospective faculty sponsor who must provide a letter of support. Students will only be admitted if an EEB core faculty member agrees to serve as committee chair for the student.

EEB at TAMU is structured to attract and train top students who otherwise would enroll in EEB programs at other elite institutions. Accordingly, admissions standards will be more stringent than those for existing departmental programs. The EEB GRAC (Graduate Recruiting and Admissions Committee) will evaluate each application. Funding will be allocated to invite the top 10 candidates each year will for in-person interviews on campus.

G. **Teaching Load** – Indicate the targeted teaching load for core faculty supporting the program. *(Teaching load: Total number of semester credit hours in organized teaching courses taught per academic year by core faculty divided by the number of core faculty in the prior year.) As an Interdisciplinary Degree Program, EEB will incur only modest additional teaching load for participating faculty, who will teach on a rotating basis. On average, 15 credit hours per year/44 faculty = .34 credit hours/faculty/year.*

H. **Candidacy/Dissertation:**

**Schedule and Requirements.**

EEB students will be expected to fulfill the following requirements:

1) Successfully complete the two-semester **EEB Core Course** sequence in the first year.
2) Successfully complete a **Graduate Research Seminar** in the first year.
3) Pass the **EEB Qualifying Examination** at the end of the first academic year.
4) Establish a **Dissertation Advisory Committee** and file a graduate degree plan by the end of the third semester.
5) Pass the **Preliminary Exam** to be administered by the advisory committee plus an EEB "rover" by the end of the fifth semester. *(This is an exam of knowledge as well as a formal defense of the proposed PhD dissertation research).*
6) Register for a journal club or the weekly EEB seminar while in residence in College Station.
7) Continued participation in EEB seminars and related events (e.g., EIS) throughout the student’s tenure on campus.
8) Submission of annual progress reports and annual meeting with Dissertation Advisory Committee.

**Qualifying Examination.** At the end of their first year, after completing the Core Course and Graduate Research Seminar, all EEB students will be required to participate in a Qualifying Examination. The Qualifying Examination is intended to: 1. Determine whether a student has the preparation, intellectual capacity, and professional attitude to complete a Ph.D. program successfully; 2. Explore deficiencies in the student's background and training in order to plan additional course work that may be needed; 3. Assess the student's verbal and written English competency. The examination will consist of written and oral components to be evaluated by a committee to be assigned by the EEB curriculum committee representing a cross-section of departments. The committee can mandate additional coursework that must be completed before the student can defend the dissertation proposal.

**Dissertation Advisory Committee.** The dissertation advisory committee should conform to the general requirements of Texas A&M University (page 163 of the 2010-2011 TAMJ Graduate Catalog). At least one half of a student’s committee must be EEB faculty or associates.

**Proposal defense.** The Preliminary Examination should conform to the general requirements of Texas A&M University (page 165 of the 2010-2011 TAMU Graduate Catalog). The Preliminary Exam is
administered after the student has essentially completed his/her course work and after successfully passing the Qualifying Exam. The exam will include both a defense of the proposed PhD research and questioning that enables the committee to assess the student’s mastery of the field. The examination of knowledge is intended to determine the student’s understanding of his/her chosen field of specialization ("depth") as well as general knowledge across Ecology and Evolutionary Biology ("breadth").

The exam shall be composed of a written thesis proposal and an oral exam. Student preparation of proposals can and should be guided by their committee members, and the proposal’s content should be discussed in earlier committee meetings. The proposal should be in a standard format (i.e., appropriate for submission to a funding agency) ~5-15 pages of text, abstract, references, and figures. Students will submit their proposal to committee members five working days prior to the oral exam, and one copy of the proposal will reside in the official student file. Individual members of the advisory committee may request that the student prepare answers to written questions; such written questions should be administered through the student’s primary advisor in accordance with instructions from the committee member (open versus closed book, time limit, etc.). Written questions should be provided to the primary advisor no less than ten working days before the scheduled oral exam and answers should be returned to the committee member no less than five working days before the scheduled oral exam. Committee members opting not to apply a written question should inform the student’s primary advisor.

The oral exam will include both a defense of the proposal and questioning that enables the committee to assess the student’s mastery of their field and EEB breadth. At the discretion of the advisor and committee members, students may present the key elements of their thesis proposal in a short (10-15 minute) oral presentation.

Annual Progress Report: All EEB students are required to submit an annual progress report at the end of the spring semester. The report should consist of course taken (and grades earned), papers published, talks presented, proposals submitted and funded (including both scholarships and research), courses taught or TA’d, and any other activities relevant to good standing in the EEB program (e.g., serving on the organizing committee of the annual TAMU Ecological Integration Symposium). The report will be filed as part of the student’s record and used to track progress as well as serve as a basis for information for scholarships and other such opportunities. Failure to submit a report will result in dismissal from the EEB program. After a student’s Dissertation Advisory Committee has been approved by the University, the student is required to meet with that committee to present progress at least once per year. The Preliminary Exam may be counted as the annual meeting.

I. Use of Distance Technologies: The majority of required EEB core courses will be available for distance learning with TAMUG. Major courses (the EEB core, the first-year seminar, and the research seminar) will be provided through distance learning technology (e.g., TTVN interactive video, Saba Centra web conferencing, or Camtasia Relay lecture capture system). To share the diversity of courses offered at the participating entities (TAMU and TAMUG), EEB students will be able to take additional distance education courses available from TAMU or TAMUG. Distance education will also be available in smaller journal clubs though Skype sessions between TAMU and TAMUG.

J. Library Resources – Provide the library director’s assessment of both paper and electronic library resources for the program. Describe plans to build the library holdings to support the program. A letter of support from the library director is attached. TAMU has outstanding holdings in EEB.
<table>
<thead>
<tr>
<th>Subject</th>
<th>Subsubject</th>
<th>Call number range</th>
<th>Last 3 years Evans</th>
<th>Last 3 years MSL</th>
<th>Shelf count Evans</th>
<th>Shelf count MSL</th>
<th>Shelf count total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental sciences</td>
<td></td>
<td>GE 1-350</td>
<td>616 0</td>
<td>1924 1</td>
<td>2802 0</td>
<td>2802</td>
<td>1925</td>
</tr>
<tr>
<td>Human ecology</td>
<td></td>
<td>GF 1-900</td>
<td>285 0</td>
<td>1818 3</td>
<td>2802 0</td>
<td>2802</td>
<td>1821</td>
</tr>
<tr>
<td>Geology</td>
<td>Paleontology</td>
<td>QE701-760</td>
<td>84 0</td>
<td>2802 0</td>
<td>2802 0</td>
<td>2802</td>
<td>2802</td>
</tr>
<tr>
<td></td>
<td>Paleozoology</td>
<td>QE760-8-899.2</td>
<td>76 1</td>
<td>1422 0</td>
<td>1422 0</td>
<td>1422</td>
<td>1422</td>
</tr>
<tr>
<td></td>
<td>Paleobotany</td>
<td>QE901-996.5</td>
<td>15 0</td>
<td>594 0</td>
<td>594 0</td>
<td>594</td>
<td>594</td>
</tr>
<tr>
<td>Natural history-biology</td>
<td>Evolution</td>
<td>QH359-425</td>
<td>174 3</td>
<td>1571 27</td>
<td>1598</td>
<td>1598</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ecology</td>
<td>QHS40-549.5</td>
<td>487 4</td>
<td>6240 99</td>
<td>6339</td>
<td>6339</td>
<td></td>
</tr>
<tr>
<td>Botany</td>
<td></td>
<td>QK1-989</td>
<td>919 33</td>
<td>21808 147</td>
<td>21955</td>
<td>21955</td>
<td></td>
</tr>
<tr>
<td>Zoology</td>
<td></td>
<td>QL1-991</td>
<td>1918 208</td>
<td>45299 2495</td>
<td>47794</td>
<td>47794</td>
<td></td>
</tr>
<tr>
<td>Physiology</td>
<td>General physiology</td>
<td>QP1-345</td>
<td>450 49</td>
<td>11517 203</td>
<td>11720</td>
<td>11720</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Microbial ecology</td>
<td>QR100-130</td>
<td>69 8</td>
<td>762 29</td>
<td>791</td>
<td>791</td>
<td></td>
</tr>
<tr>
<td>Microbiology</td>
<td>Microorganisms in the animal body</td>
<td>QRL1-171</td>
<td>8 0 29 0</td>
<td>29</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiology</td>
<td>Human physiology</td>
<td>QT104-172</td>
<td>0 36</td>
<td>250 250</td>
<td>250</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Microbiology, Immunology</td>
<td>Microbiology</td>
<td>QWL 1-300</td>
<td>0 164</td>
<td>1480 1480</td>
<td>1480</td>
<td>1480</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HOLDINGS</strong></td>
<td></td>
<td><strong>5101</strong></td>
<td><strong>506</strong></td>
<td><strong>95786</strong></td>
<td><strong>4734</strong></td>
<td><strong>100520</strong></td>
<td></td>
</tr>
</tbody>
</table>

K. **Facilities and Equipment** – Texas A&M has world-class natural history collections, including the Texas Cooperative Wildlife Collection, the Entomology insect collection, and the Tracy Herbarium. EEB will facilitate coordination and communication among these collections. TAMU has marine laboratory facilities at TAMU-Galveston as well as greenhouses, experimental agricultural plots, and vivarium facilities in College Station. The Borlaug Center has state-of-the-art facilities for evolutionary and ecological genomics, and additional resources are available in the Biology Core facility, the Molecular Phylogenetics facility, and the Texas Institute for Preclinical Studies. International facilities include the Soltis Center in Costa Rica and the Amazon Field School in Peru. The Stable Isotopes for Biosphere Science Laboratory conducts isotopic analysis of organic and inorganic materials in terrestrial, aquatic, and marine ecosystems.

L. **Accreditation** – No accreditation procedures exist for EEB.

M. **Program Evaluation** – The Administrative Council will develop an appropriate annual review process to evaluate the program’s impact. This assessment will likely include annual reviews by the internal advisory council and the executive committee, conducted in conjunction with annual university reports on interdisciplinary programs. This review will include evaluations of graduate recruitment, retention, curriculum, and faculty. Regarding faculty teaching, research, and service to the EEB program, results of the review will be shared with related department heads to incorporate into tenure, promotion, recognition, and annual report deliberations.

Annual evaluations of the program will be conducted in a timely fashion to assure proper assessment of the previous year’s activities and to ensure adequate funding for future activities. An annual report will be compiled that includes all of the information addressed.
above, as well as assessment of education, community, outreach, and diversity goals of the program.

Annual reviews of the interdisciplinary program will involve assessment of the Interdisciplinary Program in Ecology & Evolutionary Biology. Results will be presented to the Administrative Council. We anticipate an external review of the program every 5 years, as is mandated for all TAMU graduate programs. During this review, a panel of 3-5 internationally recognized ecologists and evolutionary biologists, each associated with an EEB training program, will assess the quality of the educational and scientific products of the program. They will then site-visit TAMU in order to evaluate the program in person. This external review board will be asked to provide a report of the program’s progress and recommendations as to whether the program should continue and, if so, what changes should be made to improve it.

N. Related and Supporting Programs – Use this table to list all undergraduate and graduate programs within the same 2-digit CIP code that would undergird the proposed program. Include enrollment, number of graduates, graduation rate, and average time to degree for the last five years. Calculate the program graduation rate starting at the time a student takes the first course in his or her major outside the core curriculum. (Add and delete rows as needed.)

<table>
<thead>
<tr>
<th>Program Type</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS in Entomology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment</td>
<td>26</td>
<td>32</td>
<td>38</td>
<td>38</td>
<td>42</td>
</tr>
<tr>
<td># of Graduates</td>
<td>21</td>
<td>41</td>
<td>20</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Graduation Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No initial cohort</td>
<td>100%</td>
<td>100%</td>
<td>37.5%</td>
<td>66.7%</td>
<td></td>
</tr>
<tr>
<td>BS in Biology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment</td>
<td>1027</td>
<td>1134</td>
<td>1112</td>
<td>1043</td>
<td>1092</td>
</tr>
<tr>
<td># of Graduates</td>
<td>220</td>
<td>203</td>
<td>235</td>
<td>260</td>
<td>186</td>
</tr>
<tr>
<td>Graduation Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.4%</td>
<td>31.6%</td>
<td>34.8%</td>
<td>34.3%</td>
<td>29.6%</td>
<td></td>
</tr>
<tr>
<td>BS in WL &amp; FS-Vertebrate Zoology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment</td>
<td>32</td>
<td>26</td>
<td>40</td>
<td>54</td>
<td>59</td>
</tr>
<tr>
<td># of Graduates</td>
<td>10</td>
<td>14</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Graduation Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56.4%</td>
<td>46.3%</td>
<td>33.3%</td>
<td>56.4%</td>
<td>57.8%</td>
<td></td>
</tr>
<tr>
<td>BS in Zoology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment</td>
<td>99</td>
<td>117</td>
<td>102</td>
<td>87</td>
<td>83</td>
</tr>
<tr>
<td># of Graduates</td>
<td>15</td>
<td>17</td>
<td>18</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Graduation Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.7%</td>
<td>21.4%</td>
<td>27.8%</td>
<td>30.0%</td>
<td>No graduates in cohort</td>
<td></td>
</tr>
<tr>
<td>PhD in Biology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment</td>
<td>41</td>
<td>47</td>
<td>63</td>
<td>74</td>
<td>69</td>
</tr>
<tr>
<td># of Graduates</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>PhD in Entomology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment</td>
<td>26</td>
<td>32</td>
<td>38</td>
<td>38</td>
<td>42</td>
</tr>
<tr>
<td># of Graduates</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>PhD in Zoology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment</td>
<td>17</td>
<td>19</td>
<td>18</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td># of Graduates</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
O. **Graduation Rates** – Use this table to show the institution’s total number of graduates and comprehensive graduation rates from undergraduate and graduate programs in each of the last five years.

<table>
<thead>
<tr>
<th>University Graduation rate data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Degree year</strong></td>
</tr>
<tr>
<td><strong>All Undergraduate Programs</strong>(^{(1)})</td>
</tr>
<tr>
<td># Graduates</td>
</tr>
<tr>
<td>Graduation rate: 4-year</td>
</tr>
<tr>
<td>(cohort year)</td>
</tr>
<tr>
<td>Graduation rate: 6-year</td>
</tr>
<tr>
<td>(cohort year)</td>
</tr>
<tr>
<td><strong>All Masters Programs</strong>(^{(2)})</td>
</tr>
<tr>
<td># Graduates</td>
</tr>
<tr>
<td>Grad rate: 4-year</td>
</tr>
<tr>
<td><strong>All Doctoral Programs</strong>(^{(2)})</td>
</tr>
<tr>
<td># Graduates</td>
</tr>
<tr>
<td>Graduation rate: 6-year</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Source: DARS studies from published website data  
\(^{(2)}\) Source: internal DARS studies

P. **Existing Doctoral Programs** –  
(a) The *18 Characteristics of Doctoral Programs* for TAMU are available at [http://ogs.tamu.edu/prospective-students/programs-and-degrees/doctoralprogramcharacteristics/](http://ogs.tamu.edu/prospective-students/programs-and-degrees/doctoralprogramcharacteristics/).  
(b) Describe how the data represent the current quality of the institution's existing doctoral programs. TAMU is a Tier 1 research university with over 10,000 graduate students enrolled. As described above, the lack of an EEB program represents a major gap in what is otherwise a very robust set of graduate programs in the sciences.  
(c) Describe how existing closely-related doctoral programs would enhance and complement the proposed program. The existing doctoral programs in Wildlife & Fisheries Science, Entomology, Rangeland Ecology & Management, Biology, and Genetics all offer courses that are relevant to EEB. One of the factors that will greatly facilitate the establishment of a successful EEB PhD is that most of the major components are in place, in doctoral programs that have a different academic focus.

Q. Describe how the proposed doctoral program fits into the institution’s overall strategic plan, and provide the Web link to the institution’s strategic plan.

The Texas A&M strategic plan is available at: [http://provost.tamu.edu/strategic-planning-2010](http://provost.tamu.edu/strategic-planning-2010).

The Texas A&M strategic plan, known as "Vision 2020", is designed to elevate TAMU to one of the country's top 20 public universities within the next twelve years. Our EEB group is already in this league, but we need a nationally-recognized, formal identity in order to be perceived as such. The integrative nature of EEB means that increased prestige and increased quality of students is likely to have a ripple effect, and increase the overall quality of the life sciences at TAMU.
In order to achieve Vision 2020, 12 overarching ideas, known as “The twelve imperatives” have been defined. Our proposed EEB degree program would greatly strengthen Texas A&M in a several of these crucial areas:

**Elevate our Faculty and their Teaching, Research and Scholarship:**

“We need to increase drastically the size of our faculty, and we must attract and retain many more top scholars, teachers and researchers”

Our Texas A&M faculty is elevated through the recruitment of the most promising (young) scholars in their field. The lack of an EEB program is a concern for new faculty recruits, who are also choosing between TAMU and institutions with degree-granting programs in their area of research. A degree program in EEB would instantly put our faculty on the international radar and make us seriously competitive with top-20 institutions. Faculty recruitment and retention in EEB is also negatively affected by our inability to compete for the best and brightest graduate students in the field because we lack an EEB degree program (see below).

**Strengthen our Graduate Program:**

“We must create a dynamic, exciting, discovery-driven intellectual environment that will draw superior graduate students, comparable to those in the nation’s best graduate programs”

The current lack of a degree-granting program in EEB is a recurring problem when it comes to recruiting these outstanding graduate students. TAMU is unusual in not having such a program, and students with an interest in EEB are unlikely to even apply here unless they have been in contact with specific faculty. Those of us who serve on graduate admissions committees frequently see some of the best students opt for another university because they are concerned that a departmental program doesn’t fit their career-development needs.

A degree granting program in EEB would greatly improve the quality of the education graduate students in this field would receive at Texas A&M. This would occur both through offering courses specifically designed for the EEB students, as well as through the integration of the EEB graduate student body into a single unit, with greatly increased interaction of students with their peers and faculty with related interests.

**Build the Letters, Arts and Sciences Core:**

“It is abundantly clear that we will never be seen as a premier institution nationally without a far stronger letters, arts and sciences core”

EEB is a core research area within the life sciences. As amply argued in E.O. Wilson’s “Consilience” (1998), EEB is in a very real sense the intellectual “glue” that holds the life sciences together and connects them with the social sciences. The vast majority of the top 100 research universities in the US have either EEB departments, or offer an EEB graduate degree, and our national reputation is seriously undermined by our lack of one. An EEB degree program would strengthen both this core research area as well as greatly improve the reputation and visibility of Texas A&M within the entire life sciences field.

**Diversify and Globalize the A&M Community**

“The ability to succeed is increasingly linked to the development of a more pluralistic, diverse and globally aware environment. It is essential that faculty, students and larger campus community embrace this more cosmopolitan environment”

EEB members do field work all over the world and engage in intellectual collaborations with colleagues worldwide; further, they interact with governments and NGO to implement policies relevant to conservation, agriculture, and natural research management. EEB faculty are often TAMU’s face to the world, and offer graduate and undergraduate students a full spectrum of cultural experiences in places where tourists seldom tread. TAMU’s position a short drive away from the Latin American tropics has made us an international center of research in tropical biology. Twenty of us base a substantial portion of our research there, and we have recruited numerous graduate students and postdocs from Latin America. Hence to strengthen the EEB program is to strengthen TAMU’s global network of research and collaboration.

**III. Costs and Funding**
Five-Year Costs and Funding Sources – On the attached forms, provide estimates of new costs to the institution related to the proposed program and provide information regarding sources of the funding that would defray those costs.

IV. Required Appendices

A. Course Descriptions and Prescribed Sequence of Courses
B. Curricula Vitae for Core Faculty
C. Curricula Vitae for Support Faculty – N/A
D. Five-Year Faculty Recruitment Plan/Hiring Schedule
E. Institution’s Policy on Faculty Teaching Load
F. Itemized List of Capital Equipment Purchases during the past five years
G. Librarian’s Statement of Adequate Resources

V. Recommended Appendices

A. Letters of Support
Signature Page

1. **Adequacy of Funding** – The chief executive officer shall sign the following statement:

   *I certify that the institution has adequate funds to cover the costs of the new program. Furthermore, the new program will not reduce the effectiveness or quality of existing programs at the institution.*

   _______________          _______________
   Chief Executive Officer      Date

2. **Board of Regents Approval** – A member of the Board of Regents or designee shall sign the following statement:

   *On behalf of the Board of Regents, I certify that the Board of Regents has approved the program.*

   _______________          _______________
   Board of Regents (Designee)      Date of Approval

3. **Board of Regents Certification of Criteria for Commissioner or Assistant Commissioner Approval** – For a program to be approved by the Commissioner or the Assistant Commissioner for Academic Affairs and Research, the Board of Regents or designee must certify that the new program meets the criteria under Texas Administrative Code (TAC) Section 5.50 (b) and (c). The criteria are:

   **TAC §5.50(b):**

   (1) be within the institution’s current Table of Programs;
   (2) have a curriculum, faculty, resources, support services, and other components of a degree program that are comparable to those of high quality programs in the same or similar disciplines at other institutions;
   (3) have sufficient clinical or in-service sites, if applicable, to support the program;
   (4) be consistent with the standards of the Commission of Colleges of the Southern Association of Colleges and Schools and, if applicable, with the standards or discipline-specific accrediting agencies and licensing agencies;
   (5) attract students on a long-term basis and produce graduates who would have opportunities for employment; or the program is appropriate for the development of a well-rounded array of basic baccalaureate degree programs at the institution;
   (6) not unnecessarily duplicate existing programs at other institutions;
   (7) not be dependent on future Special Item funding;
   (8) have new five-year costs that would not exceed $2 million;

   **TAC §5.50 (c)**

   (1-2) be in a closely related discipline to an already existing doctoral program(s) which is productive and of high quality;
   (3) have core faculty that are already active and productive in an existing doctoral program;
   (4) have received no objections from other institutions during the 30-day comment period; and
   (5) have a strong link with workforce needs or the economic development of the state.

   *On behalf of the Board of Regents, I certify that the new program meets the criteria specified under TAC Section 5.50 (a and b).*

   _______________          _______________
   Board of Regents (Designee)      Date
COSTS TO THE INSTITUTION OF THE PROGRAM/ADMINISTRATIVE CHANGE

Note: Use this chart to indicate the dollar costs to the institution that are anticipated from the change requested.

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Cost Sub-Category</th>
<th>Before Approval Year*</th>
<th>1st Year</th>
<th>2nd Year</th>
<th>3rd Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty Salaries</td>
<td>(New)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(Reallocated)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Program Administration</td>
<td>(New)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(Reassignments)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Graduate Assistants</td>
<td>(New)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(Reallocated)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Clerical/Staff</td>
<td>(New)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(Reallocated)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Supplies &amp; Materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Library &amp; IT Resources*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (Identify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Include costs incurred for three years before the proposal is approved by the Board (e.g., new faculty, library resources, equipment, facilities remodeling, etc.).
** IT = Instructional Technology

Explanations:

AS/AP/Updated 10.14.09
## Anticipated Sources of Funding

Note: Use this chart to indicate the dollar amounts anticipated from various sources. Use the reverse side of this form to specify as completely as possible each non-formula funding source.

<table>
<thead>
<tr>
<th>Funding Category</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Year</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Year</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Year</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; Year</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; Year</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Formula Income*</td>
<td></td>
<td></td>
<td>$529,022.02</td>
<td>$670,094.55</td>
<td>$740,630.82</td>
<td>$1,939,747.39</td>
</tr>
<tr>
<td>II. Other State Funding*</td>
<td>$130,000 (TOP grant; allocations from participating Colleges)</td>
<td>$130,000 (TOP grant; allocations from participating Colleges)</td>
<td>$30,000 (allocations from participating colleges)</td>
<td>$30,000 (allocations from participating colleges)</td>
<td>$30,000 (allocations from participating colleges)</td>
<td>$350,000</td>
</tr>
<tr>
<td>III. Reallocation of Existing Resources*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV. Federal Funding* (In-hand only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V. Other Funding*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>$130,000</td>
<td>$130,000</td>
<td>$559,022.02</td>
<td>$700,094.55</td>
<td>$770,630.82</td>
<td>$2,289,747.39</td>
</tr>
</tbody>
</table>

*For more information, please refer to the accompanying Anticipated Sources of Funding: Explanatory Notes and Examples.
## NON-FORMULA SOURCES OF FUNDING

*Note: Use this form to specify as completely as possible each of the non-formula funding sources for the dollar amounts listed on the reverse side of this form.*

<table>
<thead>
<tr>
<th>Funding Category</th>
<th>Non-Formula Funding Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>II. Other State Funding*</td>
<td>#1 TOP grant (years 1 and 2)</td>
</tr>
<tr>
<td></td>
<td>#2 allocations from participating Colleges</td>
</tr>
<tr>
<td>III. Reallocation of Existing Resources*</td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
<tr>
<td>IV. Federal Funding*</td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
<tr>
<td>V. Other Funding*</td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
</tbody>
</table>

*For more information, please refer to the accompanying *Anticipated Sources of Funding: Explanatory Notes and Examples.*

Explanations:
ANTICIPATED SOURCES OF FUNDING: EXPLANATORY NOTES AND EXAMPLES

I. Formula Income
A. The first two years of any new program should not draw upon formula income to pay for the program.
B. For each of years three through five, enter the smaller of:
   1. the new formula income you estimate the program would generate, based on projected enrollments and formula funding rates; or
   2. half of the estimated program cost for that year.
C. Because enrollments are uncertain and programs need institutional support during their start-up phase, it is the Coordinating Board’s policy to require institutions to demonstrate that they can provide:
   1. sufficient funds to support all the costs of the proposed program for the first two years (when no new formula funding will be generated); and
   2. half of the costs of the new program during years three through five from sources other than state formula funding.
D. When estimating new formula income, institutions should take into account the fact that students switching programs do not generate additional formula funding to the institution. For example, if a new master’s program has ten students, but five of them switched into the program from existing master’s programs at the institution, only five of the students will generate new formula income to help defray the costs of the program.

II. Other State Funding
This category could include special item funding appropriated by the legislature, or other sources of funding from the state that do not include formula-generated funds (e.g., HEAF, PUF, etc.).

III. Reallocation of Existing Resources:
If faculty in existing, previously budgeted positions are to be partially or wholly reallocated to the new program, you should explain in the text of your proposal how the institution will fulfill the current teaching obligations of those faculty and include any faculty replacement costs as program costs in the budget.

IV. Federal Funding
Only federal monies from grants or other sources currently in hand may be included. Do not include federal funding sought but not secured. If anticipated federal funding is obtained, at that time it can be substituted for funds designated in other funding categories. Make note within the text of the proposal of any anticipated federal funding.

V. Other Funding
This category could include Auxiliary Enterprises, special endowment income, or other extramural funding.
Annual program budget for base operations. Income above this amount in subsequent years will go towards salary increases for administrative assistant and student fellowship/assistantship support.

Student travel awards $15,000
Ecological Integration Symposium $7,000
Seminar speakers $6,000
EEB fall symposium $7,000

These items continue and extend the scholarly activities of the existing IRG in EEB. We will increase the amount of money available for travel to meetings and complement the current EIS with a fall symposium focused on evolution. We are increasing our seminar budget to accommodate weekly speakers.

Graduate student recruiting weekend $12,000
Other recruiting materials $2,000

The EEB GRAC will select 10-12 outstanding applicants each year to invite for an EEB recruiting event in January or February. Other expenses will include advertising the program to appropriate institutions.

Administrative assistant/website $50,000
Benefits for above $12,500
Computer, office supplies $5,000
Miscellaneous expenses $5,500

A full-time coordinator will send out announcements, handle arrangements for seminar speakers, manage award applications and admissions, and coordinate administrative requirements and financial matters with participating departmental staff.

Total expenses $122,000
Appendix IV.A.
Course Descriptions and Prescribed Sequence of Courses

Syllabi are presented on the following pages. The new proposed courses are:

First-year core sequence (01 credits each)

Fall
EEBX 601. Physiological Ecology
EEBX 602. Population Ecology
EEBX 603. Community Ecology
EEBX 604. Ecosystems Ecology

Spring
EEBX 605. Population and Quantitative Genetics
EEBX 606. Phylogenetics and Comparative Biology
EEBX 607. Evolutionary Genomics
EEBX 608. Behavioral Ecology

EEBX 681. Colloquium (may be repeated for credit; students are required to register for six
semesters; 01 credits)
EEBX 690. First-year graduate seminar (01 credits)

Journal clubs may be drawn from existing journal clubs in appropriate area in consultation
with the dissertation committee.

Prescribed electives

The following table lists courses central to EEB according to whether they fit into the Ecology,
Evolution, or Quantitative categories. Students entering with an undergraduate degree will be
required to take one course from each of the three categories; students with a master's degree
will be required to take courses from two out of the three categories. These courses will
typically be taken in the second year of studies.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ecology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013 Spring</td>
<td>ENTO</td>
<td>614</td>
<td>Insect Comm Ecology</td>
<td>Eubanks</td>
</tr>
<tr>
<td>2012 Fall, 2013 Fall</td>
<td>ENTO</td>
<td>625</td>
<td>Landscape Ecology</td>
<td>Coulson</td>
</tr>
<tr>
<td>2012 Fall, 2013 Fall</td>
<td>ESSM</td>
<td>621</td>
<td>Physiological Plant Ecol</td>
<td>West</td>
</tr>
<tr>
<td>2012 Spring</td>
<td>WFSC</td>
<td>611</td>
<td>Estuarine Ecology</td>
<td>Roelke</td>
</tr>
<tr>
<td>2012 Spring, 2013 Spring</td>
<td>WFSC</td>
<td>624</td>
<td>Dynamics of Population</td>
<td>Fujiwara</td>
</tr>
<tr>
<td>2012 Fall, 2013 Fall</td>
<td>WFSC</td>
<td>689</td>
<td>SPTP: Community Ecology</td>
<td>Winemiller</td>
</tr>
<tr>
<td><strong>Evolution</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013 Spring</td>
<td>BIOL</td>
<td>610</td>
<td>Evolution</td>
<td>Jones</td>
</tr>
<tr>
<td>2012 Fall, 2013 Fall</td>
<td>BIOL</td>
<td>698</td>
<td>Behavior Genes Evolution</td>
<td>Rosenthal</td>
</tr>
<tr>
<td>2013 Fall</td>
<td>ENTO</td>
<td>601</td>
<td>Pmcpl of Systmc Enzo</td>
<td>Woolley</td>
</tr>
<tr>
<td>2012 Spring</td>
<td>ENTO</td>
<td>606</td>
<td>Quantitative Phylogenetics</td>
<td>Mateos/Woolley</td>
</tr>
<tr>
<td>2013 Fall</td>
<td>MARB</td>
<td>668</td>
<td>Evolutionary Biology</td>
<td>Alvarado-Bremer</td>
</tr>
<tr>
<td>Year</td>
<td>Course Code</td>
<td>Course Title</td>
<td>Instructor</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>--------------------------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>2012 Spring</td>
<td>WFSC 633</td>
<td>Conservation Genetics</td>
<td>Hurtado</td>
<td></td>
</tr>
<tr>
<td>2012 Spring</td>
<td>WFSC 646</td>
<td>Quantitative Phylogenetics</td>
<td>Mateos/Woolley</td>
<td></td>
</tr>
<tr>
<td>2013 Spring</td>
<td>WFSC 648</td>
<td>Molecular Evolution</td>
<td>Mateos</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ESSM 651</td>
<td>Geographic Info Systems</td>
<td>Feagin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ESSM 660</td>
<td>Landscape Analysis</td>
<td>Wu</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEOL 651</td>
<td>Paleocommunity Analysis</td>
<td>Olszewski</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STAT 651</td>
<td>Statistics in Research I</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>STAT 652</td>
<td>Statistics in Research II</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPTP: Evolutionary</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VIBS 689</td>
<td>Bioinformatics</td>
<td>Cai</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WFSC 670</td>
<td>Excel Biometry</td>
<td>DeWitt</td>
<td></td>
</tr>
</tbody>
</table>

**Free electives and dissertation hours**

Depending on individual student needs, students will, in consultation with their dissertation committee, choose additional courses and/or dissertation hours to complete their degree requirements.
EEBX 601 Physiological Ecology

Day: TR  Time: TBD (75 min.)  Location: TBD  Number of Credits: 01 Credit

Instructors:

(odd years)
Dr. Spencer T. Behmer
Department of Entomology
Room 509, Heep Building
Phone: 979-845-3411 (office)
Email: s-behmer@tamu.edu
http://behmerlab.tamu.edu
Office hours: by appointment

(even years)
Dr. Jason B. West
Dept. of Ecosystem Science & Management
Room 413, Animal Industries Bldg.
Phone: 979-845-3772
Email: jbwest@tamu.edu
http://goo.gl/fwhm3
Office hours: by appointment

E-mail will be the primary means of communication for the course. Check your email often and keep your mailbox below quota! Go to elearning.tamu.edu for course materials.

Course prerequisites: Graduate classification.

Course description: This first component of the Core Sequence in Ecology & Evolutionary Biology examines how physiological systems respond, over different timescales, to variation in physical and biological environments. This course has two primary goals: (1) to understand how the interaction of organism and environment determines characteristics that are relevant to ecology, and (2) to understand how these individual characteristics affect population and interspecific dynamics. Readings will be drawn from book chapters, contemporary reviews and the primary literature.

Course requirements:
- Attend all lectures. Absences for previously scheduled activities will only be excused if they are communicated well in advance. If you have not discussed an absence with the instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See http://student-rules.tamu.edu/rule07.
- Read all required material (textbook chapters, reviews, and original papers).
- Participate actively in discussions.
- Early in the class, complete a homework assignment on searching and referencing scholarly articles.
- A short, take-home, open-book exam to be submitted the day after the last lecture; answer four questions clearly and concisely in about 20 min each. Late exams will be downgraded a letter grade for each day late.

Course goals: The goal of this course is to provide an introduction to the key issues central to the field of physiological ecology. Examples will be drawn from studies involving plants and animals, as well as the interactions between these organisms.

Grading: Letter grades will be assigned based as follows: participation related to in-class discussion: 20%; homework assignments: 20%; a short, take-home essay exam: 60%.

Grade scale: 90-100 A; 80-89 B; 70-79 C; 60-69 D; < 60 F
Americans with Disabilities Act (ADA): The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

Academic Integrity: For additional information please visit: http://aggiehonor.tamu.edu. Please pay close attention to guidelines on avoiding plagiarism: http://aggiehonor.tamu.edu/Descriptions/Plagiarism.aspx.

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

SUGGESTED TEXTBOOK READINGS


LECTURES

1. Overview: Plant and Animal Physiology
2. Nutrition
3. Growth processes and Size
4. Temperature
5. Water
6. Effects of Global Change

Take-home essay exam due by email at 4 pm the day after lecture 6. One letter grade will be deducted for each day past the deadline!
EEBX 602 Population Ecology

Day: TR
Time: TBD (75 min.)
Location: TBD
Number of Credits: 01 Credit

Instructors:

(odd years) TBD
(even years)
Masami Fujiwara
Wildlife and Fisheries Sciences
Room 0012B, Nagle Hall
Phone: 979-845-9841
Email: fujiwara@tamu.edu
http://fujiwara.us
Office hours: by appointment

E-mail will be the primary means of communication for the course. Check your email often and keep your mailbox below quota! Go to elearning.tamu.edu for course materials.

Course prerequisites: Graduate classification.

Course description: This second component of the Core Sequence in Ecology & Evolutionary Biology examines the fundamental concepts in population dynamics. The main focus of the course will be birth, death, immigration, and emigration processes, how these processes are affected by internal and external factors, and the ways they affect population abundance.

Course requirements:

- Attend all lectures. Absences for previously scheduled activities will only be excused if they are communicated well in advance. If you have not discussed an absence with the instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See http://student-rules.tamu.edu/rule07.
- Read all required material.
- Participate actively in discussions.
- Complete the final take-home exam. Late exams will be downgraded a letter grade for each day late.

Course goals: The goal of this course is to provide the understanding of the fundamental concepts in population biology. By the end of this course, students are expected to be able to identify general causes of changes in birth, death, immigration, and death processes and to gain clear understanding of how these changes can affect the population abundance over time and space.

Grading: Letter grades will be assigned based as follows: active participation: 50%; short, take-home essay exam: 50%.

Grade scale: 90-100 A; 80-89 B; 70-79 C; 60-69 D; < 60 F
Americans with Disabilities Act (ADA): The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

Academic Integrity: For additional information please visit: http://aggiehonor.tamu.edu. Please pay close attention to guidelines on avoiding plagiarism: http://aggiehonor.tamu.edu/Descriptions/Plagiarism.aspx.

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

REQUIRED TEXTBOOK

SUGGESTED READING

LECTURES
1. Fundamental theorem of population biology
2. Population structure: Age, size, and developmental stages
3. Temporal fluctuation: Environmental stochasticity, demographic stochasticity, and non-stochastic fluctuation
4. Density dependence: Compensation, over-compensation, and depensation
5. Spatial movement: Immigration, emigration, and invasion
6. Evolutionary population dynamics and evolutionary stable strategy

Take-home essay exam due by email at 4 pm the day after lecture 6. One letter grade will be deducted for each day past the deadline!
EEBX 603 Community Ecology

Day: TR  Location: TBD
Time: TBD (75 min.)  Number of Credits: 01 Credit

Instructors:

(odd years)  (even years)
Micky Eubanks  Kirk Winemiller
Department of Entomology  Wildlife and Fisheries Sciences
Room 115, Biological Control Facility (BCC)  Room 110D, Heep Labs
Phone: 979-862-7847  Phone: 979- 862-4020
Email: m-eubanks@tamu.edu  Email: kwinemiller@tamu.edu
http://eubankslab.tamu.edu  http://aquaticecology.tamu.edu/
Office hours: by appointment  Office hours: by appointment

E-mail will be the primary means of communication for the course. Check your email often.

Course prerequisites: Graduate classification.

Course description: This third component of the Core Sequence in Ecology & Evolutionary Biology examines the fundamental concepts in community ecology. The main focus of the course will be conceptual development of the subdiscipline; spatial and temporal patterns of community structure; processes that determine community structure and dynamics; the interface of population, community and ecosystem ecology; and applications of community ecology for natural resource management, agriculture, and health.

Course requirements:
- Attend all lectures. Absences for previously scheduled activities will only be excused if they are communicated well in advance. If you have not discussed an absence with the instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See http://student-rules.tamu.edu/rule07.
- Read all required material.
- Participate actively in discussions.
- Complete the final take-home exam. Late exams will be downgraded a letter grade for each day late.

Course goals: The goal of this course is for students to achieve a basic understanding of fundamental concepts and analytical methods in community ecology. By the end of this course, students are expected to know the basic vocabulary, concepts, and classic literature of community ecology; and be able to collect community-level data, perform quantitative analyses, and interpret findings in the context of current theories.

Grading: Letter grades will be assigned based as follows: active participation: 50%; short, take-home essay exam: 50%.

Grade scale: 90-100 A; 80-89 B; 70-79 C; 60-69 D; < 60 F
Americans with Disabilities Act (ADA): The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

Academic Integrity: For additional information please visit: http://aggiehonor.tamu.edu. Please pay close attention to guidelines on avoiding plagiarism: http://aggiehonor.tamu.edu/Descriptions/Plagiarism.aspx.

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

REQUIRED TEXTBOOK

There is no required textbook

SUGGESTED READING

The instructor will distribute reprinted articles for discussion. For additional information, students may consult the following textbooks that deal with community ecology: Community Ecology by Peter J. Morin; Population Ecology and Community Ecology: Processes, Models, and Applications edited by Herman A. Verhoeff and Peter J. Morin; and Community Ecology by Gary G. Mittelbach.

LECTURES

1. Historical Biogeography and Macroecology: speciation, extinction, energy, productivity, biomass, environmental gradients, species distribution models, island biogeography
2. Species Interactions: competition, niche overlap, diffuse competition, niche complementarity, predation/parasitism, plant defenses, mutualism, commensalism, coevolutionary mosaic
3. Metacommunities and Assembly Rules: neutral model, patch dynamics, species sorting, mass effects, intermediate disturbance, functional traits, life history strategies, supply-side ecology
4. Food Webs and Other Network Perspectives: food web concepts, food web dynamics, top-down and bottom-up controls, food web subsidies, stability-diversity-complexity-productivity relationships, network models, regime shifts
5. The Challenge of Integrating Perspectives: spatial scales, temporal scales, natural vs. anthropogenic disturbances, life history variation and population regulation, alternative modeling perspectives (equilibrium, non-equilibrium, quasi-equilibrium), hierarchy and complexity
6. Applications of Community Ecology: integrated pest management, epidemiology, invasive species and biotic homogenization, extinction vortex, fisheries, habitat fragmentation, biotic indices

Take-home essay exam due by email at 4 pm the day after lecture 6. One letter grade will be deducted for each day past the deadline!
EEBX 604 Ecosystem Ecology

Day: TR
Time: TBD (75 min.)
Location: TBD
Number of Credits: 01 Credit

Instructors:
(even years)
Dr. Rusty A. Feagin
Department of Ecosystem Science & Mgmt.
221C Centeq
Phone: 979-862-2612
Email: feaginr@tamu.edu
http://ssl.tamu.edu/people/r-feagin
Office hours: by appointment

(odd years)
Dr. Brad Wilcox
Department of Ecosystem Science & Mgmt.
Room 207 Animal Industries
Phone: 979-458-1899
Email: bwilcox@tamu.edu
http://agrilife.org/wilcox/
Office hours: by appointment

E-mail will be the primary means of communication for the course. Go to ecampus.tamu.edu for course materials.

Course prerequisites: Graduate classification.

Course description: This final component of the fall semester portion of the Core Sequence in Ecology & Evolutionary Biology examines the flow of materials, energy, and information between ecosystems, and the geographic structure in which ecosystems are embedded globally. The major focus of the course will be the integrative nature of spatial and temporal processes acting across ecosystem units. Readings will be drawn from contemporary reviews and the primary literature.

Course requirements:
- Attend all lectures. Absences for previously scheduled activities will only be excused if they are communicated well in advance, and are a university-authorized excuse. If you have not discussed an absence with the instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See the Graduate Student Handbook for more details on university-authorized excuses.
- Read all required material and participate actively in discussions. Each day, one or more students will be responsible for leading discussion on the day’s topic and should come prepared with pertinent points.
- A short, take-home, open-book exam to be submitted the day after the last lecture; answer four questions clearly and concisely in about 20 min each. Late exams will not be accepted.

Course goals: The goal of this course is to provide a sophisticated understanding of ecosystem flow and structure, from landscape to global scales.

Grading: Letter grades will be assigned based as follows: leading in-class discussion: 25%; active participation: 25%; short, take-home essay exam: 50%.

Grade scale: 90-100 A; 80-89 B; 70-79 C; 60-69 D; < 60 F
LECTURES AND REQUIRED READINGS

1. Biogeochemical Cycles: Water
   (Reading: Durack et al. 2012)
2. Biogeochemical Cycles: Carbon and Nitrogen
   (Reading: Trumper et al. 2009; Galloway et al. 2005)
3. Trophic Interactions
   (Reading: Estes et al. 2011)
4. Landscape Ecology
   (Reading: Forman 1995)
5. Macroecology and Biogeography
   (Reading: Rosenzweig 1995, Brown & Maurer 1989)
6. Global Ecology
   (Reading: Lovelock et al. 1973)

Take-home essay exam due by email at 4 pm the day after lecture 6.

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

Academic Integrity: For additional information please visit: http://aggiehonor.tamu.edu and http://aggiehonor.tamu.edu/Descriptions/Plagiarism.aspx.

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

Readings List:

Rosenzweig, M.L. Species diversity in space and time. Chapter 1. Cambridge U Press.
EEBX 605 Population and Quantitative Genetics

Day: TR  
Time: TBD (75 min.)  
Location: TBD  
Number of Credits: 01 Credit

Instructors:
Dr. Michel Slotman  
Dept of Entomology  
Heep Center 413  
Phone: 979 845 7556  
Email: maslotman@tamu.edu
Office hours: by appointment

Dr. James Cai  
Dept of Veterinary Integrative Biosciences  
VRB 384  
Phone: 458 5482  
Email: jcai@tamu.edu
Office hours: by appointment

E-mail will be the primary means of communication for the course. Check your email often and keep your mailbox below quota! Go to elearning.tamu.edu for course materials.

Course prerequisites: Graduate classification.

Course description: This component of the Core Sequence in Ecology & Evolutionary Biology will provide a basic overview of the fields of population and quantitative genetics. The focus will be on fundamental concepts and their applications in the research of natural populations.

Course requirements:

- Attend all lectures. Absences for previously scheduled activities will only be excused if they are communicated well in advance. If you have not discussed an absence with the instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See http://student-rules.tamu.edu/rule07.
- Read all required material (original papers, review papers, and textbook chapters).
- A take-home, open-book exam

Grading: Letter grades will be assigned based as follows: leading in-class discussion: 25%; active participation: 25%; short, take-home essay exam: 50%.

Grade scale: 90-100 A; 80-89 B; 70-79 C; 60-69 D; < 60 F

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

Academic Integrity: For additional information please visit: http://aggiehonor.tamu.edu. Please pay close attention to guidelines on avoiding plagiarism: http://aggiehonor.tamu.edu/Descriptions/Plagiarism.aspx.

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


REQUIRED READINGS

Several research articles will be part of the required reading of this course. These articles will illustrate the application of current, widely used methodologies in the field of population and quantitative genetics. Readings remain to be determined.

LECTURES

1. Genetic Variation
2. The Causes of Evolution 1
3. The Causes of Evolution 2
4. Molecular Population Genetics 1
5. Molecular Population Genetics 2
6. Genetic Architecture of Complex Traits
EEBX 606 Phylogenetics and Comparative Biology

Day: TR  
Time: TBD (75 min.)  
Location: TBD  
Number of Credits: 01 Credit

Instructors:

Dr. Thomas Olszewski  
Department of Geology and Geophysics  
Room 263, Halfbauty Bldg.  
Phone: 979-845-2465  
Email: olszewski@geos.tamu.edu  
http://geoweb.tamu.edu/profile/TOlszewski  
Office hours: by appointment

Dr. Mariana Mateos  
Department of Wildlife and Fisheries Sciences  
Room 3208, Heep Laboratory Bldg. (Old Heep)  
Phone: 979-847-9463  
Email: mmateos@tamu.edu  
http://people.tamu.edu/~mmateos  
Office hours: by appointment

E-mail will be the primary means of communication for the course. Check your email often and keep your mailbox below quota! Go to elearning.tamu.edu for course materials.

Course prerequisites: Graduate classification.

Course description: This sixth component of the Core Sequence in Ecology & Evolutionary Biology examines Phylogenetics and Comparative Biology. Readings will be drawn from contemporary reviews and the primary literature.

Course requirements:

- Attend all lectures. Absences for previously scheduled activities will only be excused if they are communicated well in advance. If you have not discussed an absence with the instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See http://student-rules.tamu.edu/rule07.
- Read all required material (original papers, review papers, and textbook chapters).
- Participate actively in discussions. Each day, one or more students will be responsible for leading discussion on the day’s topic and should come prepared with pertinent points.
- A short, take-home, open-book exam to be submitted the day after the last lecture; answer four questions clearly and concisely in about 20 min each. Late exams will be downgraded a letter grade for each day late.

Course goals: One of the major implications of evolution is that all living organisms are the cumulative product of variation and selection – i.e., life in the present day (and at any time in the history of Earth) is the result of evolutionary processes acting on what was available at earlier times. There are two main sources of information on this cumulative history of life: phylogenies (derived from the organisms themselves) and fossils (derived from the remains of ancient organisms). The goal of this course is to introduce students to the fundamental concepts that allow evolutionary biologists to pose and test evolutionary hypotheses and to use evolutionary and historical relationships to understand life in the present day.
Grading: Letter grades will be assigned based as follows: leading in-class discussion: 25%; active participation: 25%; short, take-home essay exam: 50%.

Grade scale: 90-100 A; 80-89 B; 70-79 C; 60-69 D; < 60 F

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

Academic Integrity: For additional information please visit: http://aggiehoror.tamu.edu. Please pay close attention to guidelines on avoiding plagiarism:

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

REQUIRED TEXTBOOK
No required text. Required papers and chapters will be made available through eCampus.

SUGGESTED READINGS


LECTURES
1. Homology: the Central Concept in Comparative Biology
2. The Origin of Animals and the Radiation of Animal Phyla: Fossil Homologies and Stem Groups
3. Interpreting and Inferring Phylogenies
4. Microbes and the Three Domains of Life: Making Use of Phylogenies to Understand Metabolic Evolution
5. The Comparative Method
6. The Quaternary: Using the Comparative Method to Understand How Present-Day Organisms Reflect the World Their Ancestors Lived In

Take-home essay exam due by email at 4 pm the day after lecture 6. One letter grade will be deducted for each day past the deadline!
EEBX 607 Evolutionary Genomics

Day: TR
Time: TBD (75 min.)
Location: TBD
Number of Credits: 01 Credit

Instructors:
Dr. Adam Jones
Department of Biology
Room 118C, BSBE
Phone: 979-845-7774
Email: ajones@bio.tamu.edu
Office hours: by appointment

Dr. Bill Murphy
Dept. of Veterinary Integrative Biosciences
Room 103, VMRB Bldg.
Phone: 979-458-0906
Email: wmurphy@cvr.tamu.edu
Office hours: by appointment

E-mail will be the primary means of communication for the course. Check your email often and keep your mailbox below quota! Go to elearning.tamu.edu for course materials.

Course prerequisites: Graduate classification.

Course description: This seventh component of the Core Sequence in Ecology & Evolutionary Biology examines the field of evolutionary genomics. The students will be exposed to new techniques for generating large amounts of genetic data, including thousands of single-nucleotide polymorphisms and whole-genome sequence data. The course will then discuss how whole-genome data can transform the study of evolutionary biology and the interpretation of evolutionary phenomena. Main areas of focus include population genomics, the study of adaptation, phylogenomics and speciation.

Course requirements:
- Attend all lectures. Absences for previously scheduled activities will only be excused if they are communicated well in advance. If you have not discussed an absence with the instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See http://student-rules.tamu.edu/rule07.
- Read all required material.
- Participate actively in discussions.
- A take-home exam to be submitted by email the day after the last lecture. Late exams will be downgraded a letter grade for each day late.

Course goals: The goal of this course is to provide an understanding of the application of next-generation sequencing approaches to the study of evolutionary phenomena. The students will be expected to understand the molecular techniques involved, the statistical issues associated with these large datasets, and the implications of these datasets with respect to the evolutionary process.

Grading: Letter grades will be assigned based as follows: active participation: 50%; take-home essay exam: 50%.

Grade scale: 90-100 A; 80-89 B; 70-79 C; 60-69 D; < 60 F
Americans with Disabilities Act (ADA): The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

Academic Integrity: For additional information please visit: http://aggiehonor.tamu.edu. Please pay close attention to guidelines on avoiding plagiarism: http://aggiehonor.tamu.edu/Descriptions/Plagiarism.aspx.

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

REQUIRED READINGS
Required readings will originate from the primary literature and will be assigned by email or during class.

LECTURES
1. Comparative genomics and methods.
4. Phylogenomics.
5. Genome structure and evolution.

Take-home essay exam due by email at 4 pm the day after lecture 6. One letter grade will be deducted for each day past the deadline!
EEBX 608 Integrative Animal Behavior

Day: TR
Time: TBD (75 min.)
Location: TBD
Number of Credits: 01 Credit

Instructors:
(odd years)
Prof. Gil Rosenthal
Department of Biology
Room 203A, Butler Hall
Phone: 979-255-6119 (cell)
Email: grosenthal@bio.tamu.edu
http://swordtail.tamu.edu
Office hours: by appointment

(even years)
Prof. Gregory Sword
Department of Entomology
Room 114C, Entomology Research Lab
Phone: 979-862-1702
Email: gasword@tamu.edu
http://swordlab.tamu.edu
Office hours: by appointment

E-mail will be the primary means of communication for the course. Check your email often and keep your mailbox below quota! Go to elearning.tamu.edu for course materials.

Course prerequisites: Graduate classification.

Course description: This final component of the Core Sequence in Ecology & Evolutionary Biology examines how behavior contributes to survival and reproduction, and in turn how evolutionary history and ecological circumstance interact to shape the expression of behavior. The major focus of the course will be the integrative nature of behavior: the interaction of evolutionary processes, mechanistic constraints, and ecological demands involved in selecting for a set of behavioral strategies.

Course requirements:
- Attend all lectures. Absences for previously scheduled activities will only be excused if they are communicated well in advance. If you have not discussed an absence with the instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See http://student-rules.tamu.edu/rule07.
- Read all required material (original papers, review papers, and textbook chapters).
- Participate actively in discussions. Each day, one or more students will be responsible for leading discussion on the day’s topic and should come prepared with pertinent points.
- Complete two problem sets featuring short, quantitative questions related to the course material. A short, take-home, open-book exam to be submitted the day after the last lecture; answer four questions clearly and concisely in about 20 min each. Late exams will be downgraded a letter grade for each day late.

Course goals: The goal of this course is to provide a sophisticated understanding of animal behavior from both mechanistic and evolutionary perspectives, and more generally to encourage thinking about ecology and evolutionary biology as a conceptually unified discipline.

Grading: Letter grades will be assigned based as follows: leading in-class discussion: 25%; active participation: 15%; problem sets: 15% each; short, take-home essay exam: 30%.

Grade scale: 90-100 A; 80-89 B; 70-79 C; 60-69 D; < 60 F
**Americans with Disabilities Act (ADA):** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

**Academic Integrity:** For additional information please visit: http://aggiehonor.tamu.edu. Please pay close attention to guidelines on avoiding plagiarism: http://aggiehonor.tamu.edu/Descriptions/Plagiarism.aspx.

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

**REQUIRED TEXTBOOK**

**SUGGESTED READINGS**

**LECTURES**
1. Mechanisms of behavior. **Readings:** Westneat & Fox (W&F) chapters 1, 5, 6.
2. Foraging and cognitive ecology. **Readings:** W&F chapters 8, 9, 11-13
5. Mate choice and mating systems. **Readings:** W&F chapters 20, 22-25.

**Take-home essay exam** due by email at 4 pm the day after lecture 6. *One letter grade will be deducted for each day past the deadline!*
EEBX 681. Colloquium

Day: W
Time: 4 pm (60 min.)
Location: TBD
Number of Credits: 01 Credit

Instructor:
Dr. Raul Medina
Assistant Professor
Department of Entomology
Phone: 979-845-8304
Email: rmedina@tamu.edu

insects.tamu.edu/medinalab
Office hours: by appointment

E-mail will be the primary means of communication for the course. Check your email often and keep your mailbox below quota! Go to elearning.tamu.edu for course materials.

Course prerequisites: Graduate classification.

Course description: Students attend and actively participate in the weekly EEB colloquium, featuring guest speakers invited by students and faculty.

Course requirements:
- Attend all lectures. Absences for previously scheduled activities will only be excused if they are communicated well in advance. If you have not discussed an absence with instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See http://student-rules.tamu.edu/rule07.
- Familiarize yourself with the speaker’s recent papers in advance of the seminar.
- Ask pertinent questions.

Course goals: The goal of this course is to keep students current with contemporary research in EEB being conducted regionally, nationally, and internationally, and to enhance professionalization via collegial interactions with colleagues at other institutions.

Grading: Pass/fail based on attendance. Three or more unexcused absences will be grounds for failure.

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

Academic Integrity: For additional information please visit: http://aggiehonor.tamu.edu. Please pay close attention to guidelines on avoiding plagiarism:

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

Lecture schedule to be determined by the start of each semester.
EEBX 690. First-year graduate seminar

Day: W  
Time: 6:30 pm (60 min.)  
Location: TBD  
Number of Credits: 01 Credit

Instructors:  
(odd years)  
Dr. Sarah Hamer  
Department of Veterinary Integrative Biosciences  
Phone: 979-847-5693  
Email: shamer@cvm.tamu.edu  
http://vetmed.tamu.edu/faculty/hamer-lab  
Office hours: by appointment

(even years)  
Dr. Jessica Light  
Department of Wildlife & Fisheries Science  
210 Nagle Hall  
Phone: 979-458-4357  
Email: jlight2@tamu.edu  
http://people.tamu.edu/~jlight2/People.html  
Office hours: by appointment

E-mail will be the primary means of communication for the course. Check your email often and keep your mailbox below quota! Go to elearning.tamu.edu for course materials.

Course prerequisites: Graduate classification.

Course description: Students attend and actively participate in a weekly dinnertime conversation on doing a PhD and career planning with EEB core faculty and others. EEB faculty and colleagues provide feedback on applications for fellowship support (e.g. NSF-GRFP).

Course requirements:
- Attend all sessions. Absences for previously scheduled activities will only be excused if they are communicated well in advance. If you have not discussed an absence with instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See http://student-rules.tamu.edu/rule07.
- Participate actively in discussions among students and discussion leaders.
- Prepare an NSF-GRFP, EPA-STAR or comparable proposal for critique by your faculty sponsor and other colleagues.

Course goals: The goal of this course is to familiarize students with procedures and expectations for graduate school and with the opportunities available to them for research, education, and collegial interactions at TAMU; to foster collegial interaction among EEB students and faculty campus-wide; and to advise and inform students on career options, career strategies, and funding opportunities. This course will also facilitate and require preparation of competitive extramural fellowship applications like NSF-GRFPs.

Grading: Pass/fail based on attendance and proposal submission. Three or more unexcused absences or failure to submit a timely proposal to faculty sponsor will be grounds for failure.

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

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

---

**Weekly schedule**

**Part 1: Welcome to Aggieland**
- **Lecture 1**  Behmer/Rosenthal  Welcome to grad school; living and working in Aggieland
- **Lecture 2**  EEBISO president  EEB student organization; panel discussion with grads
- **Lecture 3**  Moore  Summer field course opportunities
- **Lecture 4**  Armitage  TAMU@Galveston and exchange opportunities

**Part 2: Navigating graduate school**
- **Lecture 5**  University staff  Library resources and University Writing Center
- **Lecture 6**  Slotman  Grant opportunities and how to write grants
- **Lecture 7**  Light  Plagiarism; work-life balance
- **Lecture 8**  Medina  International collaborations; maximizing efficiency
- **Lecture 9**  Conway  Collections-based research
- **Lecture 10**  Wicksten  Procedural issues (IACUC, permits, lab safety)

**Part 3: Career options and career planning**
- **Lecture 11**  Raymond  Academic/research careers
- **Lecture 12**  Peterson  Government agency careers
- **Lecture 13**  Fitzgerald  ABS program and conservation careers
- **Lecture 14**  Campbell  Scientific publishing and reviewing
Appendix IV.B.
Curricula Vitae for Core Faculty

The 903 pages of full curricula vitae for core faculty, as requested by the Coordinating Board, are omitted from this draft of the proposal. The full list of core faculty is presented in the main body of the proposal; links to curricula vitae are available at http://eeb.tamu.edu/faculty/core_faculty.cfm.

Appendix IV.C.
Curricula Vitae for Support Faculty

With 44 core faculty, the EEB faculty is already the second-largest in the nation after Michigan State University. An additional 42 faculty are associated with the current interdisciplinary research faculty in EEB; a full list with links to curricula vitae is available at http://eeb.tamu.edu/faculty/.

Appendix IV.D.
Five-Year Faculty Recruitment Plan/Hiring Schedule

Hiring is done within individual departments. As indicated in Appendix B, all the participating departments have a vigorous commitment to EEB. This commitment is perhaps best demonstrated by the fact that of the 44 core faculty in EEB, 34 have come to TAMU within the past ten years. Among the participating departments with more than a handful of faculty, all have made significant hires within EEB over the past few years.
Appendix IV.E.
Institution’s Policy on Faculty Teaching Load
UNIVERSITY RULE

12.03.99.M1 Faculty Teaching Workload Reporting

Approved July 31, 2006
Supplements System Policy 12.03

1. GENERAL

Faculty workload reporting is required for any individual assigned to teach a course for resident credit, or any individual whose salary is paid in full or part from Faculty Salaries.

2. DEFINITION OF TERMS

2.1 FACULTY SALARIES

Faculty Salaries are defined as salaries or wages of those engaged in the teaching function. Those paid from faculty salaries include heads of teaching departments and faculty.

2.2 WORKLOAD DEFINITION

Individuals paid from faculty salaries receive faculty workload credit from two areas: Classroom Teaching Credit and Equivalent Teaching Credits.

2.2.1 Classroom Teaching Credit: Classroom Teaching Credits are generally assigned to resident-credit courses. To ensure accuracy in workload reporting, each course should be assigned to the person primarily responsible for course instruction. For team taught courses, the teaching credit may be proportioned to the faculty members teaching the course.

2.2.2 Equivalent Teaching Credits: Certain non classroom academic duties performed by faculty that enhance the teaching/learning process may be funded from Faculty Salaries. Equivalent teaching credits may be assigned for these duties. Once the faculty member is in compliance, no further assignment or equivalent credits is required. The listing of allowable equivalent teaching credits for direct instructional or administrative activities is included in the “Faculty Workload Policy Statement – Texas A&M University” which is available at: http://www.tamu.edu/opir/workload_policy.pdf.

3. MINIMUM WORKLOAD REQUIREMENT
3.1 The minimum workload requirement for faculty members paid 100% from Faculty Salaries is nine (9) teaching credits, counting classroom and equivalent teaching credits.

3.2 For Graduate Assistant appointments that are reported in the faculty workload report the minimum workload standard is set by the academic unit reporting the workload.

3.3 For faculty members with less than full-time appointments, the minimum workload standard is proportionately less.

4. REPORTING

Every semester each academic department must prepare a Faculty Workload Compliance Report. The report must include each individual who:

4.1 is primarily responsible for course instruction for resident credit; or

4.2 is paid any part of his or her salary from FACULTY SALARIES (see definition above).

5. SPECIAL CONDITIONS REGARDING COMPLIANCE

5.1 Payment of FACULTY SALARIES to exhaust accumulated leave time: Faculty members fall into this category if they terminate employment, become ill, or die during any part of the year and the payment of salary to exhaust accumulated leave carries them into a fall or spring semester. These faculty members cannot be assigned teaching responsibilities and therefore cannot be in compliance with the minimum workload requirement. The department head must provide a written explanation to the dean of the college for each faculty member not in compliance.

5.2 Faculty who are unable to complete teaching assignment during a long semester: Faculty members fall into this category if they terminate employment, become ill, or die during a long semester and their courses are reassigned to other faculty members in the department. The compliance status of the faculty member will be the same as their compliance status before the disabling condition or termination took place.

5.3 Other reason for non-compliance: Occasionally faculty members may be non-compliant for reasons not covered in 5.1 or 5.2 above. For example, a faculty member may have been placed on administrative leave
or there may have been another circumstance that prevents a faculty member from teaching courses in a given semester.

5.4 Faculty members not in compliance: The reason for any faculty member not being in compliance with the minimum teaching requirement must be explained. For regular faculty (those not covered by 5.1 or 5.2 above) who are not in compliance, the department head must initiate an appropriate Employee Payroll Action Form to adjust the individual's teaching salary percentage.

6. RESPONSIBILITY FOR MONITORING WORKLOAD

6.1 Department Head

6.1.1 Assigns and monitors the workloads of individuals within his or her department to ensure compliance with the workload requirement

6.1.2 Approves equivalent teaching credits based on direct instruction or administrative activities as listed in the “Faculty Workload Policy Statement – Texas A&M University” (http://www.tamu.edu/opir/workload_policy.pcf.)

6.1.3 Ensures that other academic duties are assigned equitably within the department.

6.1.4 Provides notice to the college dean of all faculty members not in compliance.

6.2 College Dean

The college dean is responsible for monitoring the workload of individual faculty in his or her college as reported by the department head.

6.3 University Administration

The Office of Institutional Studies and Planning (OISP) will consolidate the reports from the colleges to generate the final Faculty Workload Compliance Report and shall prepare a list of faculty not in compliance with the minimum workload requirement. This report shall be sent to the Provost and Executive Vice President for Academics for review and approval prior to submission to the President.

The President is responsible for verifying institutional compliance with the minimum workload requirement and for reporting this information through the Chancellor, to the Board of Regents.
7. INSTRUCTIONS FOR COMPLETING FACULTY WORKLOAD COMPLIANCE REPORT

Each department head and dean will be notified by the OISP when the Faculty Workload Report has been placed on the web for updating and correcting.

OFFICE OF RESPONSIBILITY: Dean of Faculties
Appendix IV.F.
Itemized List of Capital Equipment Purchases during the past five years
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Purchase Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>-30 WALK-IN FREEZER</td>
<td>$14,500.00</td>
</tr>
<tr>
<td>-80 FREEZER</td>
<td>$8,300.00</td>
</tr>
<tr>
<td>-80 FREEZER</td>
<td>$8,300.00</td>
</tr>
<tr>
<td>16 MICROSCOPE W/ ACCESS</td>
<td>$19,900.00</td>
</tr>
<tr>
<td>ANALYZER</td>
<td>$61,245.00</td>
</tr>
<tr>
<td>ANALYZER</td>
<td>$61,245.00</td>
</tr>
<tr>
<td>ANALYZER</td>
<td>$36,310.68</td>
</tr>
<tr>
<td>ANALYZER</td>
<td>$36,310.68</td>
</tr>
<tr>
<td>ANALYZER</td>
<td>$34,627.00</td>
</tr>
<tr>
<td>ANALYZER</td>
<td>$8,480.00</td>
</tr>
<tr>
<td>ANALYZER SYSTEM</td>
<td>$16,484.00</td>
</tr>
<tr>
<td>AREA METER 3RD GENERATION</td>
<td>$8,659.51</td>
</tr>
<tr>
<td>AREA METER 3RD GENERATION</td>
<td>$8,659.51</td>
</tr>
<tr>
<td>ATV</td>
<td>$10,231.16</td>
</tr>
<tr>
<td>AUTOCLAVE</td>
<td>$5,034.36</td>
</tr>
<tr>
<td>AUTOCLAVE</td>
<td>$5,034.36</td>
</tr>
<tr>
<td>AUTOCLAVE W/AUTO STEAM EXHAUST AND</td>
<td>$5,610.16</td>
</tr>
<tr>
<td>AUTOCLAVE W/AUTO STEAM EXHAUST AND</td>
<td>$5,610.16</td>
</tr>
<tr>
<td>AUTOCLAVE W/PRINTER M002021</td>
<td>$20,236.00</td>
</tr>
<tr>
<td>BACKPACK ELECTROSHOCKER</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>BALANCE</td>
<td>$16,579.03</td>
</tr>
<tr>
<td>BALANCE</td>
<td>$12,128.16</td>
</tr>
<tr>
<td>BOAT - SEA PRO 1</td>
<td>$36,000.00</td>
</tr>
<tr>
<td>BOAT - SEA PRO 2</td>
<td>$40,000.00</td>
</tr>
<tr>
<td>BOAT - SKI BARGE</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>BOAT - V-HULL BUILT FOR ELECTROFISHING</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>CAMERA DIGITAL</td>
<td>$5,632.25</td>
</tr>
<tr>
<td>CAMERA DIGITAL</td>
<td>$5,632.25</td>
</tr>
<tr>
<td>CAMERA DIGITAL</td>
<td>$5,550.00</td>
</tr>
<tr>
<td>CAMERA DIGITAL</td>
<td>$5,550.00</td>
</tr>
<tr>
<td>CAMERA SYSTEM FOR MICROSCOPE</td>
<td>$6,466.46</td>
</tr>
<tr>
<td>CAMERA SYSTEM FOR MICROSCOPE</td>
<td>$6,466.46</td>
</tr>
<tr>
<td>CENTRIFUGAL EVAPORATOR SYSTEM W/ACC</td>
<td>$5,791.00</td>
</tr>
<tr>
<td>CENTRIFUGE</td>
<td>$12,562.36</td>
</tr>
<tr>
<td>CENTRIFUGE</td>
<td>$12,562.36</td>
</tr>
<tr>
<td>CENTRIFUGE</td>
<td>$8,099.24</td>
</tr>
<tr>
<td>CENTRIFUGE</td>
<td>$7,981.28</td>
</tr>
<tr>
<td>CENTRIFUGE J2-21 60HZ BECKMAN</td>
<td>$11,533.60</td>
</tr>
<tr>
<td>CENTRIFUGE J2-21 60HZ BECKMAN</td>
<td>$11,533.60</td>
</tr>
<tr>
<td>Item Description</td>
<td>Price</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>CENTRIFUGE J-2-21 W/ROTOR</td>
<td>$12,500.00</td>
</tr>
<tr>
<td>CENTRIFUGE J2-21 W/ROTORS</td>
<td>$17,280.00</td>
</tr>
<tr>
<td>CENTRIFUGE J-6B</td>
<td>$13,246.88</td>
</tr>
<tr>
<td>CENTRIFUGE L8-80</td>
<td>$56,918.62</td>
</tr>
<tr>
<td>CENTRIFUGE REFRIG RC-5B</td>
<td>$8,260.00</td>
</tr>
<tr>
<td>CENTRIFUGE REFRIGERATED</td>
<td>$8,889.00</td>
</tr>
<tr>
<td>CENTRIFUGE TL-100</td>
<td>$19,590.00</td>
</tr>
<tr>
<td>CHAMBER PLANT GROWTH</td>
<td>$6,195.00</td>
</tr>
<tr>
<td>CHAMBER PLANT GROWTH</td>
<td>$6,195.00</td>
</tr>
<tr>
<td>CHRYSLER JEEP 1998 CHEROKEE</td>
<td>$19,202.00</td>
</tr>
<tr>
<td>COMBUSTION SYSTEM W/AUTOSAMPLER</td>
<td>$33,004.54</td>
</tr>
<tr>
<td>COMBUSTION SYSTEM W/AUTOSAMPLER</td>
<td>$33,004.54</td>
</tr>
<tr>
<td>COMPARATOR MASS</td>
<td>$24,194.16</td>
</tr>
<tr>
<td>COMPUTER</td>
<td>$9,040.00</td>
</tr>
<tr>
<td>COMPUTER</td>
<td>$5,072.95</td>
</tr>
<tr>
<td>COMPUTER, SPARX X</td>
<td>$32,972.00</td>
</tr>
<tr>
<td>CONCENTRATOR VACUFUGE</td>
<td>$5,661.14</td>
</tr>
<tr>
<td>DATAFLOW UNIT 1</td>
<td>$35,000.00</td>
</tr>
<tr>
<td>DATAFLOW UNIT 2</td>
<td>$40,000.00</td>
</tr>
<tr>
<td>DEMONSTRATOR THERMO AS2000 AUTOSAMP</td>
<td>$12,633.00</td>
</tr>
<tr>
<td>DEMONSTRATOR THERMO AS2000 AUTOSAMP</td>
<td>$12,633.00</td>
</tr>
<tr>
<td>DNA ENGINE CHASSIS</td>
<td>$7,080.50</td>
</tr>
<tr>
<td>DROSOPHILA INCUBATOR</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>DROSOPHILA INCUBATOR</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>ENVIRONMENT GROWTH CHAMBER</td>
<td>$31,395.26</td>
</tr>
<tr>
<td>ENVIRONMENT GROWTH CHAMBER</td>
<td>$29,362.34</td>
</tr>
<tr>
<td>ENVIRONMENT GROWTH CHAMBER</td>
<td>$29,362.33</td>
</tr>
<tr>
<td>ENVIRONMENTAL GROWTH CHAMBER</td>
<td>$60,922.19</td>
</tr>
<tr>
<td>ENVIRONMENTAL GROWTH CHAMBER</td>
<td>$60,922.19</td>
</tr>
<tr>
<td>ENVIRONMENTAL ROOM QUEUE #1220</td>
<td>$7,561.00</td>
</tr>
<tr>
<td>EXTRACTION SYSTEM</td>
<td>$42,500.00</td>
</tr>
<tr>
<td>FLUOROMETER</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>FORD 2010 F150 EXT CAB</td>
<td>$21,631.22</td>
</tr>
<tr>
<td>FREEZER</td>
<td>$10,084.14</td>
</tr>
<tr>
<td>FREEZER</td>
<td>$6,220.24</td>
</tr>
<tr>
<td>FREEZER CH 20CF 86C 115V</td>
<td>$7,110.40</td>
</tr>
<tr>
<td>FREEZER ULTRA LOW</td>
<td>$6,279.71</td>
</tr>
<tr>
<td>FREEZER ULTRA LOW THERMO FISHER</td>
<td>$10,055.40</td>
</tr>
<tr>
<td>FREEZER UPRIGHT DELUXE</td>
<td>$5,990.00</td>
</tr>
<tr>
<td>FREEZER, CASCADE CONSOLE</td>
<td>$11,921.59</td>
</tr>
<tr>
<td>FREEZER, HARRIS CHST HFC</td>
<td>$5,120.00</td>
</tr>
<tr>
<td>Item</td>
<td>Price</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Freezer. Harris Custom HFC</td>
<td>$5,120.00</td>
</tr>
<tr>
<td>Fume Hood W/ Stand</td>
<td>$5,761.18</td>
</tr>
<tr>
<td>Gas Analyzer System Li-6250U S/N</td>
<td>$21,240.18</td>
</tr>
<tr>
<td>Gas Analyzer System Li-6250U S/N</td>
<td>$21,240.18</td>
</tr>
<tr>
<td>Gel Documentation System</td>
<td>$8,127.00</td>
</tr>
<tr>
<td>Gel Imaging System</td>
<td>$7,729.00</td>
</tr>
<tr>
<td>Glassware Washer Model HN 2 Hein</td>
<td>$7,711.05</td>
</tr>
<tr>
<td>GPS Unit Satellite Differential</td>
<td>$10,115.00</td>
</tr>
<tr>
<td>Growth Chamber</td>
<td>$17,455.15</td>
</tr>
<tr>
<td>Growth Chamber</td>
<td>$10,372.47</td>
</tr>
<tr>
<td>Growth Chamber</td>
<td>$10,372.46</td>
</tr>
<tr>
<td>High-Performance Liquid Chromatograph</td>
<td>$35,000.00</td>
</tr>
<tr>
<td>High-Speed Video Camera System</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>Imaging System-Macroptics</td>
<td>$38,450.25</td>
</tr>
<tr>
<td>Incubator</td>
<td>$11,342.48</td>
</tr>
<tr>
<td>Incubator- General</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>Incubator Biological</td>
<td>$11,342.48</td>
</tr>
<tr>
<td>Incubator Biological</td>
<td>$7,798.80</td>
</tr>
<tr>
<td>Incubator Biological</td>
<td>$7,798.80</td>
</tr>
<tr>
<td>Incubator Pericival Biological</td>
<td>$19,080.81</td>
</tr>
<tr>
<td>Incubator Pericival Biological</td>
<td>$19,080.81</td>
</tr>
<tr>
<td>Incubator Pericival Biological</td>
<td>$11,475.81</td>
</tr>
<tr>
<td>Incubator Pericival Biological</td>
<td>$11,475.81</td>
</tr>
<tr>
<td>Incubator Pericival Biological</td>
<td>$11,475.81</td>
</tr>
<tr>
<td>Incubator Pericival Drosophila</td>
<td>$7,250.80</td>
</tr>
<tr>
<td>Incubator Shaker Refurbished Bench</td>
<td>$6,127.20</td>
</tr>
<tr>
<td>Incubator With Intellus Control</td>
<td>$6,055.00</td>
</tr>
<tr>
<td>Incubator With Intellus Control</td>
<td>$6,055.00</td>
</tr>
<tr>
<td>Intermittent Flow Respirometer</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>Inverted Phase-Contrast Microscope</td>
<td>$11,000.00</td>
</tr>
<tr>
<td>Jeep 2001 Cherokee</td>
<td>$22,354.00</td>
</tr>
<tr>
<td>Leaf Gas Exchange System</td>
<td>$31,443.71</td>
</tr>
<tr>
<td>Leaf Gas Exchange System</td>
<td>$31,443.71</td>
</tr>
<tr>
<td>Meter Leaf Area</td>
<td>$7,115.00</td>
</tr>
<tr>
<td>Microbalance</td>
<td>$15,172.50</td>
</tr>
<tr>
<td>Microbalance</td>
<td>$15,172.50</td>
</tr>
<tr>
<td>Microbalance Cahn C-30 S/N 75082</td>
<td>$5,878.73</td>
</tr>
<tr>
<td>Microbalance Cahn C-30 S/N 75082</td>
<td>$5,878.73</td>
</tr>
<tr>
<td>Microscope Stereo Trinocular Body</td>
<td>$14,136.98</td>
</tr>
<tr>
<td>Microplate Reader</td>
<td>$6,137.73</td>
</tr>
<tr>
<td>Microscope</td>
<td>$6,066.70</td>
</tr>
<tr>
<td>Item Description</td>
<td>Price</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>MICROSCOPE - AXIOCAM MR C5</td>
<td>$6,750.00</td>
</tr>
<tr>
<td>MICROSCOPE UPRIGHT PACKAGE</td>
<td>$9,844.38</td>
</tr>
<tr>
<td>MICROSCOPE UPRIGHT PACKAGE</td>
<td>$9,844.38</td>
</tr>
<tr>
<td>MICROSCOPE W/ ACCESS</td>
<td>$13,993.00</td>
</tr>
<tr>
<td>MICROSCOPE W/ ACCESS</td>
<td>$13,688.58</td>
</tr>
<tr>
<td>MICROSCOPE W/ ACCESS</td>
<td>$10,719.10</td>
</tr>
<tr>
<td>MICROSCOPE W/ COMPUTER</td>
<td>$34,410.90</td>
</tr>
<tr>
<td>MICROSCOPE WITH ATTACHMENTS</td>
<td>$83,979.00</td>
</tr>
<tr>
<td>MINITRASE KIT (WITH MUX).</td>
<td>$11,236.39</td>
</tr>
<tr>
<td>MINITRASE KIT (WITH MUX).</td>
<td>$11,236.39</td>
</tr>
<tr>
<td>MULTI-SPECTRAL PROFILER</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>NA-1500 AUTO NITROGEN ANALYZER S/N</td>
<td>$18,905.66</td>
</tr>
<tr>
<td>NA-1500 AUTO NITROGEN ANALYZER S/N</td>
<td>$18,905.66</td>
</tr>
<tr>
<td>NEURAL IMPLANT SYSTEM</td>
<td>$20,950.00</td>
</tr>
<tr>
<td>NUTRIENT AUTOANALYZER</td>
<td>$35,000.00</td>
</tr>
<tr>
<td>PCR SYSTEM</td>
<td>$54,783.27</td>
</tr>
<tr>
<td>PCR SYSTEM</td>
<td>$5,864.75</td>
</tr>
<tr>
<td>PCR SYSTEM</td>
<td>$5,864.75</td>
</tr>
<tr>
<td>PHOTOSYNTHESIS SYSTEM PORTABLE</td>
<td>$21,300.60</td>
</tr>
<tr>
<td>PHOTOSYNTHESIS SYSTEM PORTABLE</td>
<td>$21,300.60</td>
</tr>
<tr>
<td>PHYTOPLANKTON INCUBATOR ARRAY</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>PIPETTE PULLER HORIZONTAL</td>
<td>$6,566.00</td>
</tr>
<tr>
<td>PORTABLE BOAT ELECTROSHOCKER</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>PORTABLE PHOTOSYNTHESIS SYSTEM</td>
<td>$20,369.57</td>
</tr>
<tr>
<td>PORTABLE PHOTOSYNTHESIS SYSTEM</td>
<td>$20,369.57</td>
</tr>
<tr>
<td>POWER SUPPLY FOR LAB EQUIPMENT</td>
<td>$5,010.00</td>
</tr>
<tr>
<td>POWER SUPPLY FOR LAB EQUIPMENT</td>
<td>$5,010.00</td>
</tr>
<tr>
<td>PULSE FIELD ELECTROPHORESIS APPARATUS</td>
<td>$12,000.00</td>
</tr>
<tr>
<td>PULVERIZER RING</td>
<td>$8,550.00</td>
</tr>
<tr>
<td>PULVERIZER RING</td>
<td>$8,550.00</td>
</tr>
<tr>
<td>QUANTA MULTIPROBE 1</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>QUANTA MULTIPROBE 2</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>QUANTA WATER PARAMETER INSTRUMENT</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>REAL-TIME PCR(BIORAD CFX100)</td>
<td>$38,000.00</td>
</tr>
<tr>
<td>REFLECTOMETER SYSTEM MINI-TRACE</td>
<td>$8,581.75</td>
</tr>
<tr>
<td>REFLECTOMETER SYSTEM MINI-TRACE</td>
<td>$8,581.75</td>
</tr>
<tr>
<td>ROLLER GRINDER INCLUDING PARTS, MAT</td>
<td>$5,859.23</td>
</tr>
<tr>
<td>ROLLER GRINDER INCLUDING PARTS, MAT</td>
<td>$5,859.23</td>
</tr>
<tr>
<td>ROTOR TLU-100</td>
<td>$5,860.00</td>
</tr>
<tr>
<td>ROTOR VERT TUBE VTI 80</td>
<td>$5,959.28</td>
</tr>
<tr>
<td>ROTOR VTI-80</td>
<td>$6,820.00</td>
</tr>
</tbody>
</table>
SAMDRI-790 CRITICAL POINT DRYER $ 5,629.00
SCANNING SPECTROPHOTOMETER $ 20,000.00
SMITH ROOT BACKPACK SHOCKER MODEL 12B POW $ 5,000.00
SPECIMEN CASES AND TRAYS $ 158,000.00
SPECTROMETER ATOMIC $ 40,168.50
SPECTROMETER AUTOSAMPLER $ 22,798.00
SPECTROMETER AUTOSAMPLER $ 22,798.00
SPECTROMETER CONFLO $ 17,733.00
SPECTROMETER CONFLO $ 17,733.00
SPECTROMETER ISOTOPE RATIO $ 168,474.00
SPECTROMETER ISOTOPE RATIO $ 168,474.00
SPECTROMETER MASS $ 100,000.00
SPECTROMETER MASS $ 100,000.00
SPECTROMETER TC/EA $ 26,723.00
SPECTROMETER TC/EA $ 26,723.00
SPECTROPHOTOMETER $ 7,985.00
SPECTROPHOTOMETER (INCLUDES $ 7,535.00
SPECTROPHOTOMETER SCANNING DOUBLE $ 8,175.00
SPECTROPHOTOMETER(INCLUDED $ 7,535.00
SPECTRORADIOMETR LICOR 1800/22 $ 17,441.20
SPECTRORADIOMETR LICOR 1800/22 $ 17,441.20
STANDALONE SYSTEM $ 6,730.00
STANDALONE SYSTEM $ 6,730.00
STEADY STATE POROMETER SSP901-8607 $ 5,865.73
STEADY STATE POROMETER SSP901-8607 $ 5,865.73
STEAM KETTLE FOR FLY MEDIA $ 6,027.00
STEREO AUDITORY NEUROPHYSIOLOGY $ 21,255.00
STEREO MICROSCOPE WILD MODEL M5A $ 5,885.00
STEREOMICROSCOPE W/ ACCESS $ 18,386.00
STEREOMICROSCOPE ZEISS SR W/ATT $ 5,725.00
STERILIZER -LAB 20X20X36 $ 5,111.00
STEROMICROSCOPE W/ ACCESS $ 13,285.20
SUV, 2004 TOYOTA SEQUOIA 4 WD STAND $ 30,070.05
TANK FISH TRACKING SETUP CUSTOMIZED $ 21,000.00
THERM CYCLER 384W $ 8,197.86
THERM CYCLER 96W WITH REAGENT $ 8,197.87
THERMAL CYCLER (MYCYCLER FROM BIORAD) $ 5,000.00
THERMAL CYCLER (S1000 FROM BIORAD) $ 7,000.00
THERMAL CYCLER 1 (MYCYCLER FROM BIORAD) $ 5,000.00
THERMAL CYCLER 2 (MYCYCLER FROM BIORAD) $ 5,000.00
THERMAL CYCLER 3 (MYCYCLER FROM BIORAD) $ 5,000.00
<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>THERMAL CYCLER 48/48</td>
<td>$5,695.00</td>
</tr>
<tr>
<td>THERMAL CYCLER 96W SYSTEM</td>
<td>$35,135.96</td>
</tr>
<tr>
<td>THERMAL CYCLER PTC-200</td>
<td>$5,495.00</td>
</tr>
<tr>
<td>THERMAL CYCLER W/ 2 CYCLERS</td>
<td>$12,449.00</td>
</tr>
<tr>
<td>THERMOCYCLER</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>THERMOCYCLER</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>TOTAL ORGANIC CARBON ANALYZER</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>TRUCK - CHEVY 3/4 TON</td>
<td>$25,000.00</td>
</tr>
<tr>
<td>TRUCK - F150</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>TRUCK - GMC 4X4 1993 -CLUBCAB&amp;WINCH</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>ULTRA CENTRIFUGE 6DHZ BECKMAN L8</td>
<td>$33,709.90</td>
</tr>
<tr>
<td>ULTRA CENTRIFUGE 6DHZ BECKMAN L8</td>
<td>$32,509.90</td>
</tr>
<tr>
<td>ULTRACENTRIFUGE WITH ACCESSORIES</td>
<td>$24,185.00</td>
</tr>
<tr>
<td>ULTRACENTRIFUGE M-L-80 OPTIMA</td>
<td>$29,675.00</td>
</tr>
<tr>
<td>ULTRACENTRIFUGE L8-5SM W/2ROTORS</td>
<td>$35,500.00</td>
</tr>
<tr>
<td>ULTRACENTRIFUGE ROTOR &amp; ETC</td>
<td>$38,411.17</td>
</tr>
<tr>
<td>ULTRALOW FREEZER</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>ULTRALOW FREEZER</td>
<td>$6,000.00</td>
</tr>
<tr>
<td>VICTOR V WITH 5-TECHS</td>
<td>$32,883.00</td>
</tr>
<tr>
<td>VICTOR V WITH 5-TECHS</td>
<td>$32,883.00</td>
</tr>
<tr>
<td>VIDEO TRACKING SYSTEM</td>
<td>$26,975.00</td>
</tr>
<tr>
<td>VWR FREEZER UPRIGHT</td>
<td>$7,868.69</td>
</tr>
<tr>
<td>WATER MONTIORING SYSTEM, MULTIPARAM</td>
<td>$9,170.88</td>
</tr>
<tr>
<td>WATER MONTIORING SYSTEM, MULTIPARAM</td>
<td>$9,170.88</td>
</tr>
<tr>
<td>WATER UNIT W/ ACCESSORIES</td>
<td>$6,759.00</td>
</tr>
<tr>
<td>WEATHER EQUIPMENT</td>
<td>$8,814.25</td>
</tr>
<tr>
<td>WEATHER EQUIPMENT</td>
<td>$8,814.25</td>
</tr>
<tr>
<td>WEATHER EQUIPMENT</td>
<td>$8,814.25</td>
</tr>
<tr>
<td>WEATHER EQUIPMENT</td>
<td>$8,814.25</td>
</tr>
<tr>
<td>WILD MS STEREOMICROSCOPE</td>
<td>$5,058.90</td>
</tr>
</tbody>
</table>
Appendix IV.G.
Librarian’s Statement of Adequate Resources
July 27, 2011

MEMORANDUM

TO: Gil G. Rosenthal  
Chair, Ecology and Evolutionary Biology  
Department of Biology

FROM: Charles L. Gilreath  
Interim Dean  
University Libraries

SUBJECT: Library support for new PhD degree in Ecology and Evolutionary Biology

University Libraries can support the new proposed PhD degree in Ecology and Evolutionary Biology. The classes and researchers are already being supported by the collection. The new classes proposed should not require additional materials. Areas of interest are collected at a research level. The Libraries will continue to collect in these areas and enhance the collection as money allows. We support InterLibrary Loan for articles not available in the TAMU Libraries.
Appendix V.A.
Letters of Support
April 18, 2013

Dr. Gil Rosenthal
Chair, Faculty of Ecology and Evolutionary Biology
3258 TAMU
College Station, TX 77843-3258

Dear Dr. Rosenthal;

The College of Agriculture and Life Sciences is pleased to support the proposal to establish a new doctoral degree program in Ecology and Evolutionary Biology (EEB). It is an established degree program at our peer institutions and recognized by the National Science Foundation. EEB is a degree program for which the highest quality students look when selecting a university for graduate study. It is also a degree program that many funding organizations, including the NSF, look for when determining the credibility of an organization and when awarding certain fellowship funding. Thus, we feel this new program will allow us to better compete for the best graduate students and will give us access to a larger and broader range of graduate funding opportunities. This will draw these top students and their funding to the State of Texas to better meet its needs.

We have studied and discussed this concept over the past two years with interested faculty, their department heads and our College administrative team. We have devised a plan which capitalizes on leverage from our existing courses and faculty while providing an EEB program that will be among the top in the nation. Through coordination with existing programs this plan will minimize potential negative impact on our current programs. Having an EEB degree program will strengthen the interdisciplinary ties existing from research collaborations and extend that interdisciplinary research into the classroom and training laboratories.

Our College endorses the creation of this new doctoral degree program and will support it as needed.

[Signature]
Alan Sams
Executive Associate Dean

Agriculture and Life Sciences Building, Suite 515
2402 TAMU
College Station, TX 77843-2402

Tel. 979.845.3712
AgLifeSciences.tamu.edu
April 15, 2013

Dr. Gil Rosenthal  
Chair, Faculty of Ecology and Evolutionary Biology  
3258 TAMU  
College Station, TX 77843-3258

Dear Dr. Rosenthal:

The College of Science is eager to promote the establishment of a new doctoral degree program in Ecology and Evolutionary Biology (EEB) at Texas A&M University. The adoption of this program would greatly benefit the College, Texas A&M University, the State of Texas, and the nation.

The interdisciplinary design of this program will bring together high quality laboratory facilities, faculty, and students from the College of Science and other colleges involved in the broad EEB area to enable research and education in a wide variety of areas. To further the advancement of these materials, the most recent cutting-edge interdisciplinary approaches will be needed; and the success of these efforts will critically impact industry competitiveness in the state and the country in the coming decades.

The College of Science is committed to providing educational opportunities for the residents of Texas, and this program will provide a new opportunity to recruit Texas students to remain in Texas for graduate school. In addition, by bringing more well-qualified students from other states and internationally to Texas, the proposed program will provide industry in the state with a larger materials workforce.

In conclusion, the College of Science would like to whole-heartedly encourage the adoption of the new graduate degree program. The College is committed to the new program and will help to provide the resources and support needed to launch and establish the program. If I can be of any further assistance, please do not hesitate to contact me.

Sincerely,

H. Joseph Newton, Dean  
College of Science
May 3, 2013

Dr. Gil Rosenthal  
Chairperson, Faculty of Ecology and Evolutionary Biology  
Texas A&M University  
3258 TAMU  
College Station, TX 77843-3258

Dear Dr. Rosenthal:

The College of Veterinary Medicine and Biomedical Sciences [CVM] is supportive of the establishment of a new doctoral degree-granting program in Ecology and Evolutionary Biology [EEB]. The creation of this program is vital to the success of a large number of faculty within the CVM and across campus in obtaining NSF graduate fellowships, while further enabling our program to recruit high-caliber graduate students from Texas and across the country. We recognize that the establishment of an EEB doctoral program will broaden the national visibility of Texas A&M University’s research programs in these critical life science areas, and further increase our competitiveness with peer institutions in Texas and nationwide.

In summary, our College endorses the establishment of an Ecology and Evolutionary Biology doctoral program at Texas A&M University and pledges to support this academic initiative for the purpose of enhancing educational and research opportunities for our faculty and students.

Sincerely,

Eleanor M. Green, DVM, DACVIM, DABVP  
The Carl B. King Dean of Veterinary Medicine
May 7, 2013

Dr. Gil Rosenthal
Chair, Faculty of Ecology and Evolutionary Biology
MS 3258 TAMU
College Station, Texas 77843-3258

Dear Dr. Rosenthal:

The College of Geosciences strongly supports the proposal to establish a doctoral program in Ecology and Evolutionary Biology (EEB). Texas A&M University will benefit from the development of a high quality and prominent program in this exciting and important area of research by attracting the very best students seeking a strong interdisciplinary degree; by positioning us better with external funding entities such as the National Science Foundation and industry; and by capitalizing on existing resources and facilities.

The College of Geosciences will benefit directly by connecting the bio-geoscientists in the Departments of Geology and Geophysics, Geography, and Oceanography with the broader campus community with similar research and education interests. It will be an important vehicle to break the isolation our bio-oriented faculty and students feel, to attract excellent students, to strengthen cross-campus linkages, and to leverage expertise and resources.

The College of Geosciences is enthusiastic in its support of this most worthwhile degree program.

Best Regards,

Kate C. Miller
Dean and Professor of Geology and Geophysics

O&M Building, Room 202
3148 TAMU
College Station, TX 77843-3148

Tel. 979.845.3651 Fax 979.845.0056
kcmiller@tamu.edu
geosciences.tamu.edu
20 November 2012

To: Gil Rosenthal

From: David Ragsdale
Professor and Head
Department of Entomology

Re: Ecology and Evolutionary Biology (EEB) PhD degree

This letter confirms that the Department of Entomology is supportive of the development of the Ecology and Evolutionary Biology (EEB) PhD degree program. Entomology faculty who are active members of the current EEB Interdisciplinary Research Program met in July 2012 to discuss the creation of a PhD degree in EEB and any ramifications it would have on the Entomology graduate degree programs. There are a number of faculty members in Entomology who have been actively involved in the EEB Interdisciplinary Research Program for many years and several faculty have served or are currently serving on the EEB Executive Committee. To move from the current Interdisciplinary Research Program to an Interdisciplinary Degree program (IDP) in EEB implies an even higher level of commitment from faculty. Such commitments may include teaching additional courses under an EEB course designator, yet it was agreed that Entomology faculty will maintain their full complement of teaching in the Entomology program. In addition to a small increase in their teaching effort, perhaps no more than 1 credit every 2 years, EEB faculty will need to take on additional service roles. Examples would be serving on an EEB admission committee or other committees created by the EEB Executive Committee, and advising graduate students seeking an EEB degree. The Entomology faculty unanimously agreed to maintain a strong commitment to the Entomology MS/PhD degree program.

If asked the Department of Entomology will serve as the lead department for the EEB program. This commitment will allow students to be administratively located in a single department when they are initially admitted to the EEB program. This greatly aids a student who is perhaps unfamiliar with Texas A&M to have a departmental home while they file their degree program (due before the end of the first semester) and complete other such administrative tasks. Once their degree program is approved, they their records and administrative functions will transfer to their advisor's home department. It is my understanding that the EEB program will hire their own staff person from funds allocated to IDPs and that this staff person will help with all aspects of the EEB program which includes tasks such as admission, report generation, weave online for EEB courses, maintenance of websites and other such tasks. Entomology highly supportive of faculty effort to create the IDP in EEB however, the EEB program is expected to cover any costs incurred for program administration.

I look forward to working with you and the EEB faculty in the future to help you in any way we can to launch what I know will be a very successful EEB PhD degree granting interdisciplinary degree program.
December 17, 2012

To: Gil Rosenthal

From: Michael P. Masse
Professor and Head
Wildlife and Fisheries Sciences

Subject: Ecology and Evolutionary Biology (EEB) Ph.D. program

This memo serves to confirm that the Department of Wildlife and Fisheries Sciences (WFSC) supports the development of the Ecology and Evolutionary Biology (EEB) Ph.D. degree program. WFSC faculty have been involved in the formation of the EEB program and have been leaders in its development. WFSC faculty perceive the interdisciplinary EEB program as an opportunity to attract high quality graduate students and develop formal interactions with colleagues in other Departments and Colleges.

WFSC faculty have discussed the EEB program and its implications to our own programs and unanimously agree that the EEB program will not adversely impact their departmental teaching efforts or our Ph.D. degree programs. Please do not hesitate to contact me for assistance as this process moves forward. I look forward to working with you and EEB faculty to make this a highly successful interdisciplinary degree program.
December 6, 2012

Memorandum

TO: Gil Rosenthal  
Associate Professor  
Department of Biology

FROM: David Baltensperger  
Professor and Interim Department Head  
Department of Ecosystem Science and Management

RE: Ecology and Evolutionary Biology (EEB) PhD Degree

This letter confirms that the Department of Ecosystem Science and Management (ESSM) is supportive of the development of the Ecology and Evolutionary Biology (EEB) PhD degree program. EEB students sponsored by faculty in ESSM will file a degree plan, within their first semester in the program, listing ESSM as their home department and designating their sponsor as their committee chair. Students will register for research hours in ESSM, have access to departmental resources and be administratively housed in ESSM.

There are a number of faculty members in ESSM who have been actively involved in the EEB Interdisciplinary Research Program for many years and faculty members have served or are currently serving on the EEB Executive Committee. To move from the current Interdisciplinary Research Program to an Interdisciplinary Degree program (IDP) in EEB implies an even higher level of commitment from faculty. Such commitments may include teaching additional courses under an EEB course designator, yet it was agreed that ESSM faculty will maintain their full complement of teaching in the ESSM program. In addition to a small increase in their teaching effort, perhaps no more than 1 three-credit course every 2 years, EEB faculty will need to take on additional service roles. Examples would be serving on an EEB admission committee or other committees created by the EEB Executive Committee, and advising graduate students seeking an EEB degree. The ESSM faculty agreed to maintain a strong commitment to the ESSM MS/PhD degree program.

If asked the Department of Ecosystem Science and Management will serve as the lead department for the EEB program. This commitment will allow students to be administratively located in a single department when they are initially admitted to the EEB program. This greatly aids a student who is perhaps unfamiliar with Texas A&M University to have a departmental home while they file their degree program (due before the end of the first semester) and complete other such administrative tasks. Once their degree program is approved, then their records and administrative functions will transfer to their advisor’s home department. It is my understanding that the EEB program will hire their own staff person from funds allocated to IDPs and that this staff person will help with all aspects of the EEB program which includes tasks such as admission, report generation, WEAVE online for EEB courses, maintenance of websites and other such tasks. ESSM is highly supportive of faculty effort to create the IDP in EEB however, the program is expected to cover any costs incurred for program administration.

I look forward to working with you and the EEB faculty in the future to help you in any way we can to launch what I know will be a very successful EEB PhD degree granting interdisciplinary degree.

xc: Dr. Alan Sams  
305 Horticulture/Forest Science Building  
2138 TAMU  
College Station, Texas 77843-2138  
Tel. 979.845.5033  
Fax. 979.845.6049  
http://essm.tamu.edu
February 28, 2013

MEMORANDUM

TO: Dr. Gil Rosenthal
    Chair, Faculty of Ecology & Evolutionary Biology

FROM: Dr. Thomas D. McKnight
       Professor and Interim Department Head

The Department of Biology at Texas A&M University supports the creation of a new doctoral degree program in Ecology & Evolutionary Biology (EEB). Qualified EEB students with a major professor on the Biology faculty will be treated the same as students from any of the other Interdepartmental Programs that the Department of Biology participates in. Therefore, EEB students will have access to departmental physical resources, and they will be housed within the laboratory and office space assigned to their major professor. EEB students pursuing a Ph.D. degree (but not an M.S) with a Biology professor will have access to departmental teaching assistantships.

Similar to students in other IDPs, EEB students will not be eligible for travel grants, awards, or other types of recognition that are provided by the Department of Biology. As with all IDPs, these arrangements are dependent on departmental budgetary constraints and may be revised, if necessary.
MEMORANDUM

TO: Dr. Gil G. Rosenthal
Texas A&M University
College of Science
Department of Biology
College Station, Texas 77843-3258

FROM: John R. Giardino
Professor and Department Head
Department of Geology and Geophysics

SUBJECT: Ecology and Evolutionary Biology (EEB) PhD Degree

The Department of Geology and Geophysics offers our strong support for the development of the Ecology and Evolutionary Biology (EEB) PhD degree program.

Department faculty members believe that this would be an excellent vehicle to formalize both student and faculty associations with the bio-oriented side of faculty in the Department of Geology and Geophysics.

I am, personally, a big supporter of the interdisciplinary degrees; I especially offer my personal endorsement for the degree in Ecology and Evolutionary Biology. I look forward to working with you and EEB faculty to make this a successful degree program. Please do not hesitate to contact me if you believe that I might be of assistance in the future, as you move forward with your proposal for the degree program.
28 March 2013

Dear Dr. Rosenthal,

Department of Oceanography support for an EEB graduate program

The Department of Oceanography supports the development of an Ecology and Evolutionary Biology (EEB) graduate degree program. Several faculty in the Department of Oceanography have been active in EEB since its inception. The EEB helps to integrate ecological and evolutionary research on campus, which is currently located in many different Departments across Texas A&M University. The EEB is playing an important role in facilitating collaborations between researchers in this field.

Given the expertise in ecology and evolutionary biology on campus, we believe that the EEB graduate program has the potential to be a high-quality and high-profile interdisciplinary program. It is very likely that the proposed EEB Ph.D. program will attract high-quality students to the university who may not have otherwise selected Texas A&M University for their graduate studies. We do not see the EEB program as competition for our existing graduate programs in Oceanography and Marine Biology.

Yours Sincerely,

Piers Chapman,
Head of Department,
Department of Oceanography.
March 28, 2013

To: Dr. Gil Rosenthal

From: Dr. John Schwarz
Regents Professor and Head
Department of Marine Biology

Subject: Ecology and Evolutionary Biology (EEB) Ph.D. program

This memo serves to confirm that the Department of Marine Biology (MARB) supports the development of the Ecology and Evolutionary Biology (EEB) Ph.D. interdisciplinary degree program (IDP). Five MARB faculty members, Jaime Alvarado-Bremer, Anna Armitage, Christopher Marshall, Antonietta Quigg, and Anja Schulze, have been actively involved in the formation of the EEB program. MARB faculty perceive the interdisciplinary EEB program as an opportunity to attract high quality graduate students and develop formal interactions with colleagues in other Departments and Colleges.

MARB faculty have discussed the EEB program and its implications to our own programs and unanimously agree that the EEB program will not adversely impact their departmental teaching efforts or our Ph.D. degree programs. EEB students with a major professor in MARB will have access to departmental physical resources, and they will be housed within the laboratory and office space assigned to their major professor. EEB doctoral students will be eligible for departmental teaching assistantships.

The MARB department has a strong history of working with interdisciplinary degree programs, and is looking forward to working with the EEB Executive Committee to make this another successful IDP.
Informational Items
To: Professor Forster Ndubisi, Head, Department of Landscape Architecture and Urban Planning (LAUP), TAMU

From: Dr. Patrick Louchouarn, Interim Vice President and Chief Academic Office Texas A&M University at Galveston

Subject: Request to add PLAN 642 to the inventory of courses at Texas A&M University at Galveston

Date: 17 May, 2013

Dear Professor Ndubisi,

We are seeking your approval to add PLAN 642 (Coastal Resiliency and Sustainability) to the TAMUG course inventory. Dr. Sam Brody teaches this course and since he has a double appointment between our two departments, I was hoping that we could add the course to our inventory here to simplify the procedures for offering it. Our course will follow the guidelines and scope of the class taught in College Station.

I look forward to work with you in this matter and include yet another course to our offerings.

Sincerely,

[Signature]

Patrick Louchouarn,
Interim Vice President and Chief Academic Officer
Dear Patrick:

Greeting from College Station. I hope all is well.

Through this mail, I authorize for PLAN 642 be placed in the inventory of courses for TAMUG. Let me know if there is anything else I need to do.

Best,

Forster

-----Original Message-----
From: Patrick Louchouarn [mailto:louchoup@tamug.edu]
Sent: Friday, May 17, 2013 6:02 PM
To: Ndubisi, Forster
Cc: Melanie Lesko
Subject: FW: plan 642
Importance: High

Dear Forster,

I hope you that this email finds you well. Would you mind if we added PLAN 642 to our inventory of courses? I've attached a formal memo requesting this addition as well as the syllabus from Sam Brody.

Let me know if you have any question regarding the course or the addition to our inventory.

I thank you for the consideration and look forward to see you soon

Cheers

Pat

==================================
Patrick Louchouarn, Ph.D.
Interim Vice-President and Chief Academic Officer Texas A&M University at Galveston

Professor
Head, Dept. of Marine Sciences, Texas A&M University at Galveston Dept. of Oceanography, Texas A&M University,
College Station
1001 Texas Clipper Rd, Bldg 3029, OCSB 383 Galveston, TX 77554
Phone: (409) 740-4409
Fax: (409) 740-4429
email: loup@tamug.edu<mailto:loup@tamug.edu>
PLANT – 642: COASTAL RESILIENCY AND SUSTAINABILITY

Spring, 2013
Prerequisites: Graduate standing
Mon./Weds. 3:00 p.m.- 4:15 p.m.
Langford A205/OCSB 200A

Sam Brody
Bld. C-104 Langford (CS)
OCSB 366 (Galv.)
sbrody@tamu.edu

Course Description

This course will cover a broad range of topics related to resiliency and sustainability in coastal areas. Readings and classroom discussions will examine a range of issues associated with understanding resiliency/sustainability from ecological, social, economic, organizational, planning, and built-environment perspectives. Specific topics will include: ecological disturbance, adaptive learning, sustainable enterprise, social vulnerability, natural hazards, climate change, development management, and ecological footprint analysis. The approach of the course will be problem-based, where students will have the opportunity to apply the principles of sustainability and resiliency to realistic problems, settings, and solutions. The content of the course will prepare students to address the interdisciplinary, complex problems associated with coastal sustainability and resiliency in their work and everyday lives.

Course Objectives

- To understand the principles of resiliency and sustainable development in coastal areas at and between a variety of scales and settings;
- To critically examine the challenges and opportunities to build, plan for, and direct sustainable/resilient communities;
- To apply the principles of resiliency and sustainable development to real-world problem domains;
- To develop individual student expertise on a topic related to sustainability/resiliency that will in turn enhance professional development and increase effectiveness in the workplace after graduation.

Course Requirements

The format for the course will be reading intensive and discussion based. Students will be expected to apply their own knowledge and specializations to solving specific sustainable planning and development problems from a variety of perspectives. Several problem papers will be assigned that ask students to apply the concepts presented throughout the course to actual planning and development situations. A final project will require students to identify, write about, and present to the class a sustainability/resiliency problem of their choice.
Specific course requirements are as follows:

1. Class participation: students will be expected to attend class regularly and contribute to class discussions that critically evaluate readings and case studies. Students will be expected to bring to discussions knowledge and expertise gained throughout their graduate program or work experience. For more information on class attendance, see student rule 7: http://www.tamug.edu/stulife/Academic%20Rules/Rule%207.pdf. **Grading 20%.

2. Problem papers: two take-home problem papers will be assigned which require students to critically evaluate and solve problems associated with sustainable planning and development. **Grading 40%.

3. Final project: students will be required to select a resiliency/sustainability problem within their area of interest and draft a final paper/plan/site plan/architectural design based on specific parameters. The project will be presented in class as well as submitted as a written document or drawing. Students may work individually or in groups. **Grading 40%.

Grading scale: A=90-100, B=80-89, C= 70-79, D= 60-69, F= 0-59.

**Late papers will be downgraded 10% for each day they are turned in past due.

Papers turned in after the assignment has been graded and returned to students will not receive credit.

**Readings**

**Required Texts**


**Recommended Texts**


**Additional Resources**


http://www.resalliance.org/1.php

*Readings not contained in required texts will be available electronically at on the elearning/WebCT site for the class at: http://elearning.tamu.edu/ (use your neo credentials to access).
INTRODUCTION AND OVERVIEW OF SUSTAINABILITY AND RESILIENCY

January 14

Introduction to course

January 16 – Definitions and Concepts


January 21 – MLK Holiday

January 23 - Sustainability and Resiliency Linkages


CASE STUDY – THE EVERGLADES ECOSYSTEM, FLORIDA

January 28


ECOLOGICAL RESILIENCE

January 30


Recommended


February 4 – Panarchy


February 6 – Panarchy (Cont.)


Recommended


CASE STUDY – CORAL REEFS

February 11


Recommended


February 13 – Human Systems


ORGANIZATIONS AND ADAPTIVE CAPACITY

February 18- Adaptive Management


URL: http://www.ecologyandsociety.org/vol11/iss1/art19/.

February 20


URL: http://www.ecologyandsociety.org/vol11/iss1/art18/.


February 25– Sustainable Enterprise


Hawken, P. 1993. The Ecology of Commerce. Ch1, pgs. 1-17; Ch. 4, pgs. 57-73.

February 27 – Sustainable Enterprise (Cont.)


**SOCIAL DIMENSIONS OF RESILIENCY**

March 4 - Social Vulnerability


Recommended


*Guest Speaker: Walter Peacock, Director of the Hazard Reduction and Recovery Center*

March 6 – Social Capital and Improving Equity


**March 11 and 13 – Spring Break**
March 18– Measuring Resiliency and Sustainability

Texas Sustainable Indicators Project, 2006, Skim.

Emmer et al. 2008. Coastal Resiliency Index: A Community Self-Assessment
A Guide to Examining How Prepared Your Community Is for a Disaster. Pgs. 1-10:

NOAA CSC project Report

NATURAL HAZARDS AND RESILIENCY

March 20 – Natural Hazards Introduction


Recommended


March 25 – Acute Hazards


*Guest speaker: Lori Swartz, Galveston Planning Dept.
March 27- Chronic Hazards - Floods


**Recommended**


April 1- Chronic Hazards II- Climate Change


**Recommended**


**COMMUNITY PLANNING AND DEVELOPMENT**

April 3 – Planning for the worst


Room for the Rivers Programme, Cost of Flood Protection Measures in The Netherlands, PDF.


--see also: [http://www.resilientus.org/](http://www.resilientus.org/) for more resources.
April 8 – Planning Tools and Techniques


April 10- Urban Form and Development Patterns


Southeast FL Climate Change Action Plan

**BUILDING, CONSTRUCTION, & GREEN ARCHITECTURE**

April 15 – Site Analysis


Bijan Khazai, Jane C. Ingram, David S. Saah. 2007. The Protective Role of Natural and Engineered Defence Systems in Coastal Hazards. Pgs. 3-5; 7-8; skim rest as interested.


April 17 – Buildings and Architecture


Recommended


Brody, S.D., Blessing, R., Sebastian, A., Bedient, P. Examining the impact of land use/land cover characteristics on flood losses. Journal of Environmental Planning and Management.

HOUSEHOLD/INDIVIDUAL PREPAREDNESS

April 22

- Calculate footprint on: www.myfootprint.org


HCFCFD Family Flood Plan.


Recommended


April 24

COURSE SUMMARY/CONCLUSION

April 29


**Final Paper Due: On day of scheduled final exam.

"The Americans with Disabilities Act (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 126 of the Koldus Building, or call 845-1637."

In all aspects of this course, please adhere to the University Honor Code: "An Aggie does not lie, cheat, or steal or tolerate those who do."