CALS Curriculum Committee Meeting
August 23, 2019
2:00 p.m.
1044 McCarty Hall D


Agenda and Index for Materials

Welcome new members

Approve Minutes from April 12, 2019 meeting

Dr. Brendemuhl: Update from UCC

Graduate New Course Proposals

1. MCB 6XXX – Bacterial Physiology (req. #13924)

2. WIS 6XXX – Biodiversity (req. #13927)

Graduate Course Change Proposals

3. DIE 6942 – Dietetic Internship I (req. #14020)

4. DIE 6944 – Dietetic Internship II (req. #14021)

Undergraduate New Course Proposals

5. FAS 4XXX – Algae Biology and Ecology (req. #13928)

6. FOS 4XXX – Food Engineering (req. #14076)

7. FYC 4XXX – UF in Ireland Field Study (req. #13975)

8. WIS 4XXX – Wetland Management Techniques (req. #13496)

Minor Change Proposal

9. Proposed Pathogenesis Minor (req. #13906)

Certificates
10. Proposed modification to the Plant Pest Risk Assessment and Management Graduate Certificate (req. #13830)

11. Proposed new Biosecurity Undergraduate Certificate (req. #13875)

12. Proposed new Horticultural Therapy Undergraduate Certificate (req. #13862)

**Curriculum**

13. Proposed modification to the Global Systems Agroecology Ph.D. Concentration (req. #14077)

14. Proposed Marine Sciences Undergraduate Degree Program (req. #14082)

**Recycled items**

15. ALS 6XXX – Multivariate Statistics for Agricultural and Life Sciences (req. #13713)

   Prior comments: STA 6XXX – Multivariate Statistics for Agricultural and Life Sciences (req. #13713)

   A motion was made by Dr. Kolaczkowski to recycle this item back to the department for required changes and resubmission. An outside consultation from the Statistics Department is required. This must be from the department chair. This can be submitted along with the other letters of support already provided. A lab code of “C” is indicated on the UCC form. This must be included with the proposed course number (STA6XXX). The course objectives need to be more specific. The proposed prefix and course number need to be added to the syllabus. In the grading section the percentages of the grade given to class attendance and participation are too high. There needs to be more weight given to the two projects and final or points given to the required assignments apart from points given for class participation. The most recent version of the CALS syllabus statements boilerplate needs to be added to both the syllabus and UCC form. This can be found at: https://cals.ufl.edu/content/PDF/Faculty_Staff/CALS-Syllabus-Policy.pdf.

16. HOS 5XXX – Root and Rhizosphere Ecology (req. #13683)

   Prior comments: HOS 5XXX – Root and Rhizosphere Ecology (req. #13683)

   A motion was made by Dr. Johnson to recycle this item back to the department for required edits and resubmission. The motion was approved. An outside consultation from the Agronomy Department is required. The proposed course number needs to be changed to the 6000 level. The category of instruction on the UCC form indicates this is a joint graduate/undergraduate course. If that is the case, an undergraduate new course submission must be made at the same time as the proposed graduate level course. If this is not a joint taught course an edit must be made to the UCC form. The proposed credit amount and weekly contact hours do not match. A three credit course needs to have three weekly contact hours. The verbs used in the course objectives are acceptable, but weak. These need to be changed to reflect the rigor expected from a graduate level course. In the assignment breakdown section of both the UCC form and syllabus there is a mathematical error (250 x
3 = 1500 is incorrect). The committee also requires an overall grammatical check for the entire submission.

17. WIS 6XXX – Data Carpentry for Biologists (req. #13538)
Prior comments: WIS 6XXX – Data Carpentry for Biologists (req. #13538)

A motion was made by Dr. Kolaczkowski to recycle this item back to the department for required updates and resubmission. The motion was approved. The course description on the UCC form must match the description in the syllabus. The attendance policy is listed twice in the syllabus. The grading scale needs to include decimal points (A 93-100, A- 90-92.9, B+ 87-89.9, etc.). This will help avoid any unnecessary debate when final grades are awarded. There needs to be a greater explanation of how grades are assessed in this course. The boilerplate statements at the end of the syllabus need to be replaced with the most recent version. This can be found at: https://cals.ufl.edu/content/PDF/Faculty_Staff/CALS-Syllabus-Policy.pdf. Also, the committee was concerned with the overall structure of the syllabus. Reconstruction is suggested.

18. WIS 6XXX – Applied Wildlife Forensic Genetics (req. #12953)
Prior comments: WIS 6XXX – Applied Wildlife Forensic Genetics (req. #12953)

A motion was made by Dr. Wilson to recycle this item back to the department for required changes and resubmission. The motion was approved. The course description on both the UCC form and syllabus must match. Also, Harvey-Weinberg needs to be changed to Hardy-Weinberg. The committee suggests changing the verbs in the learning objectives section in the syllabus and on the UCC form. The verbs are acceptable but weak. There may be an issue further on in the approval process with their use considering this is a graduate level course. Include an explanation of the “Self-evaluation” referenced in week 15 of the topics schedule. In the Point Assignments section of both the UCC form and syllabus the percentages listed total 103. In the syllabus, when referring to the course bulletin board, you must use the university’s current learning management system, Canvas. The term Bulletin Board could be confusing to students. The syllabus must contain the most recent version of the CALS syllabus statements boilerplate. This can be found at: http://cals.ufl.edu/faculty-staff/docs/policies/CALS%20Syllabus%20Policy%202017-18.pdf.

19. ALS 3XXX – Home and Community Gardening: Collegiate Master Gardener (req. #13576)
Prior comments: ALS 3XXX – Home and Community Gardening: Collegiate Master Gardener (req. #13576)

A motion was made by Dr. Nunez to recycle this item back to the department. The motion was approved. Dr. Nunez proposed that the submitter contact him directly to discuss excessive overlap with an existing HOS course.
CALS Curriculum Committee Meeting
April 12, 2019
Submitted by James Fant


Substitutes: Erica Diffenderfer for J.C. Bunch

Guests: Melissa Jones
James Estrada

Call to Order: The College of Agricultural and Life Sciences Curriculum Committee met on April 12, 2019 in Rm. 1044 McCarty Hall D. Scott Sager called the meeting to order at 2:00 p.m.

Previous agenda items and supporting material can be found on the CALS College Committees homepage under document archives: https://cals.ufl.edu/faculty-staff/committees/

Approval of Minutes: A motion was made by Dr. Porter to approve the minutes from the March 15, 2019 meeting of the CALS CC. The motion was approved.

All items approved by the committee will be forwarded to either the Graduate Curriculum Committee (GCC), Graduate Council (GC) or the University Curriculum Committee (UCC) once any changes requested are made and the submission is complete.

Syllabus Statements – https://cals.ufl.edu/content/PDF/Faculty_Staff/CALS-Syllabus-Policy.pdf

Update from UCC: Dr. Brendemuhl noted the following items were on the UCC agenda for March 19 and 26th agenda: 1) Proposed changes to the Horticultural Science major specializations (all 4 approved); proposed change to Natural Resource Conservation major (approved); proposed change to the FYC major (approved) and proposed change to the Agricultural Operations Management major (Recycled). 2) Proposed new undergraduate courses: a) HOS 3XXX – Viticulture for Table Grapes and Wine (approved). 3) Proposed changes to undergraduate courses a) ALS 3203 PC Use in Agriculture (approved); b) FAS 2024 Global and Regional Perspectives in Fisheries (approved); c) FYC 4941 Practicum in Family, Youth and Community Sciences (approved); d) PEN 2138 Advanced Scuba Diving (approved); and e) MCB 4782 Archaea and Biotechnology (approved). He also noted the following were on the April 16th agenda: 1) Approval of new undergraduate courses: a) PLS 3XXX Introduction to Horticultural Therapy; b) PLS 4XXX Program Management in Horticultural Therapy; and d) FOS 4xxxFood and Environmental Virology. MCB 6781 was also approved by the Graduate Curriculum Committee. Lastly, he mentioned the Gator Done initiative to help facilitate 4-year graduation
Graduate New Course Proposals

1. ANS 6XXX – HACCP Systems (req. #13769)
   Reviewed with item #15. All comments apply to both items unless otherwise stated. A motion was made by Dr. Kolaczkowski to approve these items with changes required. The motion was approved. There is no mention of required text in the syllabuses. Code of HACCP systems regulations will be fine. Look for typo in required text section of graduate UCC1 (Cod). Account for Spring Break in the weekly schedule of topics on the UCC1 form for the undergraduate submission. Demonstrate should not be the only learning verb used in the objective sections of the UCC form and syllabus. The objectives should not be the same for both graduate and undergraduate students. Also, the objectives in the graduate submission should use learning verbs that reflect the rigor of graduate level coursework. The attendance and make-up policies need to match that of the university. Participation in the class trip should be mentioned, if possible, in the catalog description or at the top of the syllabus. The assignment section of each syllabus needs to include the percentages that are included on the UCC1 forms. The percentages in the final grades section of each syllabus need to include decimal points. This will help avoid any confusion when it comes final assessment. The most recent version of the CALS syllabus statements boilerplate needs to be included in both syllabuses. This can be found at: https://cals.ufl.edu/content/PDF/Faculty_Staff/CALS-Syllabus-Policy.pdf.

2. ENY 6XXX – Advanced Apiculture (req. #13824)
   Reviewed with item #6. All comments apply to both items unless otherwise stated. A motion was made by Dr. Wilson to recycle this item back to the department for required updates and resubmission. The motion was approved. The committee has some concern about the course titles. Typically, courses that are co-taught have the same title. The pre-requisite section of the UCC1 form for the graduate submission needs to include graduate level courses. The learning objectives on both the UCC1 form and in the syllabus for the graduate submission need to include learning verbs that reflect the rigor of a graduate level course. A graduate syllabus needs to include a more extensive reading list. You can include past readings of industry standards and more up-to-date publications. In order to be ADA compliant be sure all video material includes closed captioning. The final grading sections on the UCC1 form and in the syllabus of the undergraduate submission need to include decimal points like the graduate submission. Spring Break needs to be accounted for in the weekly topic sections. The most recent version of the CALS syllabus statements boilerplate needs to be included in the syllabus. This can be found at: https://cals.ufl.edu/content/PDF/Faculty_Staff/CALS-Syllabus-Policy.pdf.

3. FAS 5XXX – Fisheries and Aquaculture: An Economics Perspective (req. #12898)
   A motion was made by Dr. Porter to approve this item with changes required. The motion was approved. The committee was curious as to why this course was being submitted as a 5000 level course and not a 6000 level course. The reading list needs to be added to the UCC1 form. The course objectives need to include learning verbs appropriate for the rigor of a graduate level course. Decimal points need to be added to the grading scale to avoid any question of rounding up grades. The most recent version of the CALS syllabus statements boilerplate needs to be
included in the syllabus. This can be found at:
https://cals.ufl.edu/content/PDF/Faculty_Staff/CALS-Syllabus-Policy.pdf

4. WIS 6XXX – Wetland Management (req. #13763)
   A motion was made by Dr. Kolaczkowski to recycle this item back to the department for
   required changes and resubmission. The motion was approved. There is concern over the
   proposed course title being too general. An additional outside consultation is required from Soil
   and Water Science. This consult form needs to be completed by the department chair. If this is to
   be a joint offered course the undergraduate syllabus needs to be included as well as the
   submission of the undergraduate course. In addition, a separate document outlining the
   assessment differences between undergraduate and graduate students must be included. The
   course objectives need to include learning verbs that reflect the rigor of a graduate level course.
   Replace all references to WIS6943 in the submission with WIS 6XXX. The most recent version
   of the CALS syllabus statements boilerplate needs to be included in the syllabus. This can be
   found at: https://cals.ufl.edu/content/PDF/Faculty_Staff/CALS-Syllabus-Policy.pdf.

Graduate Course Change Proposal

5. ENY 5572 – Advanced Apiculture (req. #13825)
   A motion was made by Dr. Weeks to recycle this item back to the department for
   required changes and resubmission. You must provide a course syllabus with a course change
   proposal.

Undergraduate New Course Proposals

6. ENY 4XXX – Advanced Beekeeping (req. #13823)
   See item #2

7. MCB 4XXXL – Virology Laboratory (req. #13519)
   A motion was made by Dr. Porter to approve this item with changes required. The motion
   was approved. The attendance and participation section of the syllabus needs to be reworced
correspond with university policy. The academic honesty and honor code sections need to be
sourced from the current undergraduate catalog. The most recent version of the CALS syllabus
statements boilerplate needs to be included in the syllabus. This can be found at:
https://cals.ufl.edu/cccontent/PDF/Faculty_Staff/CALS-Syllabus-Policy.pdf.

Undergraduate Course Change Proposals

8. PLS 2003C – Plants that Feed the World (req. #13754)
   A motion was made by Dr. Porter to approve this item with changes required. The motion
   was approved. Consider changing the proposed transcript title to one that is more representative
   of the course. If the course is currently not repeatable the maximum repeatable credit on the
   UCC2 form needs to be 0. Make sure the class attendance and make-up policies do not contradict
   the university’s policies. The most recent version of the CALS syllabus statements boilerplate
needs to be included in the syllabus. This can be found at:
https://cals.ufl.edu/content/PDF/Faculty_Staff/CALS-Syllabus-Policy.pdf.

9. PLS 4941 – Practical Work Experience (req. #13787)
   A motion was made by Dr. Nunez to recycle this item back to the department for required
   updates and resubmission. The motion was approved. The Plant Science Curriculum Committee
   will need to discuss this submission.

Certificates

10. Proposed Microbial and Cellular Bioinformatics Graduate Certificate (req. #13553)
    A motion was made by Dr. Coenen to approve this item with additions required. The
    motion was approved. Please provide statements from both the Statistics department and the
    department of Computer and Information Sciences indicating that neither has any concerns with
    this proposal. Emails will be sufficient.

11. Proposed modification to the Plant Pest Risk Assessment and Management Graduate
    Certificate (req. #13830)
    A motion was made by Dr. Porter to recycle this item back to the department for required
    changes and resubmission. The motion was approved. Due to the removal of several course
    options the last sentence of the proposed new certificate description should mention “insects of
    regulatory concern” instead of “regulatory plant health programs and policies.” The current
    requirement section on the UCC form needs to say 16 credits instead of ten. There needs to be a
    greater explanation of the required six credit internship. There was concern as to why there are
    so many hours required. Six credits could lead to a six month internship. There was concern by
    the committee that some of the assessments need to be updated due to the removal of certain
    course options.

12. Proposed modification to the Soil Ecosystem Services Graduate Certificate (req. #13805)
    A motion was made by Dr. Porter to approve this item with one change required. The
    motion was approved. The prerequisite section needs to be edited.

Curriculum

13. Proposed addition of ABE to PhD Agroecology Concentration (req. #13829)
    A motion was made by Dr. Kolaczkowski to approve this item as submitted. The motion
    was approved.

14. Proposed revision to the Horticultural Sciences Minor (req. #13831)
    A motion was made by Dr. Warren to approve this item as submitted. The motion was
    approved.

Recycled Items

15. ANS 4XXX – HACCP Systems (req. #10762)
    See item #1.
16. FOS 3XXX – Life After Graduation (req. #12308)

A motion was made by Dr. Kolaczkowski to approve this item with changes required. The motion was approved. Provide a brief explanation of the four graded assignments.

The meeting was adjourned at 3:45 p.m.
# Cover Sheet: Request 13924

**MCB6XXX Bacterial Physiology**

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Course|New for request 13924

Info

Request: MCB8XXX Bacterial Physiology
Description of request: I would like to request a conversion of a graduate level course from Special Topics course to standard graduate course.
Submitter: Mariola Edelmann medelmann@ufl.edu
Created: 4/17/2019 4:05:45 PM
Form version: 1

Responses
Recommended Prefix MCB
Course Level 6
Number XXX
Category of Instruction Joint (Ugrad/Grad)
Lab Code None
Course Title Bacterial Physiology
Transcript Title Bacterial Physiology
Degree Type Graduate

Delivery Method(s) Online, UF Online - Please attach a letter of support from the Director of the UF Online program
Co-Listing Yes
Co-Listing Explanation Syllabus attached. The graduate assigment includes additional summary paper, which is an overview of a select aspect of bacterial physiology and prepares graduate students to think critically and write thesis.
Effective Term Fall
Effective Year 2019
Rotating Topic? No
Repeatabe Credit? No

Amount of Credit 3

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 3
Course Description This course explores the structure and physiology of bacterial cells. The principles of energy and biosynthetic metabolism will be examined in aerobic and anaerobic microorganisms. Several current research topics in microbiology will also be covered including microbial proteases, chaperones, chemotaxis, antimicrobial resistance, and adaptations of microbes in extreme environments.
Prerequisites CHM 2211; MCB 3020, MCB 3020L with minimum C. It is recommended that BCH 4024 or CHM 4207 be taken before or concurrent.
Co-requisites N/A, see above
Rationale and Placement in Curriculum There is currently no graduate-level course, which is focused on bacterial physiology. This course is currently offered as a Special Topics course for both, traditional and distance education students.
Course Objectives • To become an expert on the structure & function of prokaryotic cells
  • To gain the concepts and skills needed to understand and critically evaluate research articles that address the structure & function of prokaryotes
  • To creatively apply the theories of prokaryotic cell physiology to current problems (e.g. controlling bacterial pathogens)

Additionally, students will be required to read select peer-reviewed papers related to bacterial physiology.

**Weekly Schedule of Topics Week 1**

R 08/23 Introduction to course and overview of the syllabus

**Week 2**

T 08/28 Structure and Function (Chapter 1) MODULE 1

Conference online 4-5 PM Q&A to Intro

R 08/30 Growth and Cell Division. Chromosome Replication (Chapters 2-3) MODULE 2

**Week 3**

T 09/04 Membrane Bioenergetics. (Chapter 4); MODULE 3

R 09/06 Electron Transport, Photosynthesis (Chapters 5-6); MODULE 4

Assignment 1 – due

**Week 4**

T 09/11 Review/Special lecture MODULE 1-4

R 09/13 Exam 1 (Chapters 1-6) ProctorU MODULE 1-4

**Week 5**

T 09/18 Regulation of Metabolic Pathways (Chapter 7) MODULE 5

R 09/20 Central Metabolic Pathways (Chapter 8-9), MODULE 6

**Week 6**

T 09/25 Review/Special lecture MODULE 7-9

R 09/27 Exam 2 (Chapters 7-9) ProctorU MODULE 5-6

**Week 7**

T 10/02 Metabolism of Lipids, Nucleotides, Amino Acids and Hydrocarbons (Chapter 10), MODULE 7,

Assignment 2 – due

R 10/04 Cell Wall and Capsule Biosynthesis (Chapter 12) MODULE 8

**Week 8**

T 10/09 Inorganic Metabolism (Chapter 13) MODULE 9

R 10/11 Review/Special lecture MODULE 7-9

**Week 9**

T 10/16 Assignment 3 – due (no meeting),

Graduate students submit their Assignment 6

R 10/18 Exam 3 (Chapters 10, 12-13) ProctorU MODULE 7-9

**Week 10**

T 10/23 Metabolism (Ch. 14) MODULE 10

R 10/25 Fermentations (Ch. 15) MODULE 11

**Week 11**

T 10/30 Assignment 4 – due

R 11/01 Review/Special lecture MODULE 10-11

**Week 12**

T 11/06 Exam 4 (Chapters 14-15) ProctorU MODULE 10-11

R 11/08 Solute Transport. Protein Transport and Secretion (Chapters 17-18) MODULE 12

**Week 13**

T 11/13 Assignment 5 – due

R 11/15 Responses to Environmental Stress. Responses to environmental Cues. Chemotaxis (Ch. 16, Ch. 19 and Ch. 20)

MODULE 13

**Week 14**

T 11/20 Review/Special lecture MODULE 12-13

**Week 15**

T 11/27 Summary Paper due (graduate students only)

R 11/29 Exam 5 (Chapters 16, 19-20) ProctorU MODULE 12-13

**Week 16**

T 12/04 Extra Credit Assignment – due (optional)

**Week 17**

R 12/10 Cumulative Final Exam (optional) ProctorU MODULE 1-13

**Links and Policies**

**OTHER INFORMATION:**

Attendance and Make-Up Work

Excused absences follow the criteria of the UF Undergraduate Catalogue (e.g., illness, serious family emergency, military obligations, religious holidays) and must be communicated by formal signed...
documentation to the instructor prior to the missed exam. Appropriate documentation MUST be provided for the absence caused by serious illness, accident, jury duty or death in the immediate family. An alternative time for the exam will be arranged by the instructor. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/currentregulations/info/attendance.aspx.

COURSE MATERIALS: PLEASE NOTE THAT THE COURSE INSTRUCTOR CONSIDERS ALL UNAUTHORIZED ONLINE POSTING OR DISTRIBUTION OF COURSE MATERIALS A FORM OF ACADEMIC DISHONESTY, AND SUCH ACTIONS WILL BE TREATED ACCORDINGLY. All course materials posted on the course website are assembled and intended for students taking this course ONLY, this is why they are only available for student use from the secure Canvas website. Unauthorized posting of course materials infringes on UF's copyright policies and the "Fair Use" Act. These policies will be vigorously upheld at all times in this course.

Online Course Evaluation Process
Student assessment of instruction helps to improve teaching and learning. Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Academic Honesty
UF students are bound by The Honor Pledge, which states: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently unless the instructor provides explicit permission for you to collaborate on course tasks. Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code.

Software Use:
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Services for Students with Disabilities
Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Campus Helping Resources
Health and Wellness
• U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.
• Counseling and Wellness Center: http://www.counseling.ufl.edu/cwo/default.aspx, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
• Student Health Care Center, 392-1161.
• University Police Department, 392-1111 (or 9-1-1 for emergencies). http://www.police.ufl.edu/

Academic Resources
• E-learning technical support, 352-392-4357 (select option 2) or e-mail to
Learningsupport@ufl.edu. https://liss.at.ufl.edu/help.shtml.
• Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.
http://www crc.ufl.edu/
• Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance concerning
using the libraries or finding resources.

Online Course Assistance
• Each online distance learning program has a process for and will make every attempt to
resolve, student complaints within its academic and administrative departments at the program level.
See http://distance.ufl.edu/student-complaints

Grading Scheme Learning will be evaluated based on the following criteria:
500 points (5 exams × 100 points each)
250 points (5 written assignments × 50 points each)
+50 points (extra credit, optional)
10 points (summary paper subject submitted on time)
200 points (summary paper)
960 points total

Final grades will be based on the following performance standard:
95 - 100 % = A
90 - 94 % = A-
87 - 89 % = B+
84 - 86 % = B
80 - 83 % = B-
77 - 79 % = C+
74 - 76 % = C
70 - 73 % = C-
60 - 69 % = D
Less than 60 % = E

Instructor(s) Mariola J Edelmann
COURSE DESCRIPTION: This course explores the structure and physiology of bacterial cells. The principles of energy and biosynthetic metabolism will be examined in aerobic and anaerobic microorganisms. Several current research topics in microbiology will also be covered including microbial proteases, chaperones, chemotaxis, antimicrobial resistance, and adaptations of microbes in extreme environments.

Pre-requisites: CHM 2211; MCB 3020, MCB 3020L with minimum C. It is recommended that BCH 4024 or CHM 4207 be taken before or concurrent.

Credits: 3

COURSE INSTRUCTOR:
Mariola J. Edelmann, Ph.D
Room 1048, Microbiology & Cell Science Department, Phone 352-846-0954, medelmann@ufl.edu

Office hours: Tuesday/Thursday 3-4 PM or by appointment (e-mail preferred), online students are welcome to meet via phone or Skype conferences

TEACHING ASSISTANT: Winnie Hui, MSc
huiw11@ufl.edu

CLASS MEETING/EXAM LOCATION:
The course as well as exams are done online – no meetings on campus except for optional office hours
COURSE LEARNING OBJECTIVES:

- To become an expert on the structure & function of prokaryotic cells
- To gain the concepts and skills needed to understand and critically evaluate research articles that address the structure & function of prokaryotes
- To creatively apply the theories of prokaryotic cell physiology to current problems (e.g. controlling bacterial pathogens)

RECOMMENDED TEXTBOOK:


CLASS LECTURES AND NOTES:

Class lectures and associated notes are available on the University of Florida E-learning in Canvas support services under ‘modules’ in video format with slide notes in pdf format. You can access this account from the LSS homepage (http://lss.at.ufl.edu/) using your GatorLink username and password. To obtain a GatorLink account, you will need to signup with a UF ID number at https://my.ufl.edu/psp/pew/EMPLOYEE/EMPL/c/UF_PA_GL_ACCT_MGMT.UF_PA_SS_GL_CREATE.GBL

EVALUATION OF LEARNING:

Each weekly topic will include online lectures, plus an assigned classic 'review paper' to read. Class lectures and associated notes will be available on the University of Florida E-learning in Canvas support services under ‘modules’ in video format. Slides are also available as PDF for download. Exam questions will be drawn from the lectures and review paper as described below. See details of grading scheme for (1) graduate (MCB6937) and (2) undergraduate (MCB4403) sections:

1. **MCB6937 (Bacterial Physiology)**
   Learning will be evaluated based on the following criteria:
   
   500 points (5 exams x 100 points each)  
   250 points (5 written assignments x 50 points each)  
   +50 points (extra credit, optional)  
   10 points (summary paper subject submitted on time)  
   200 points (summary paper)  
   **960 points total**

   Final grades will be based on the following performance standard:
   
   95 - 100 % = A  
   90 - 94 % = A-  
   87 - 89 % = B+  
   84 - 86 % = B  
   80 - 83 % = B-  
   77 - 79 % = C+  
   /4 - /6 % = C  
   70 - 73 % = C-  
   60 - 69 % = D  
   Less than 60 % = E


2. MCB4403 (Prokaryotic Cell Structure and Function)

Learning will be evaluated based on the following criteria:

- 500 points (5 exams × 100 points each)
- 250 points (5 written assignments × 50 points each)
- +50 points (extra credit, optional)
- **750 points total**

Final grades will be based on the following performance standard:

- 95 - 100 % = A
- 90 - 94 % = A-
- 87 - 89 % = B+
- 84 - 86 % = B
- 80 - 83 % = B-
- 77 - 79 % = C+
- 74 - 76 % = C
- 70 - 73 % = C-
- 60 - 69 % = D
- Less than 60 % = E

**A. Exams and assignments for (1) graduate (MCB6937) and (2) undergraduate (MCB4403) students** will complete the following assignments and exams:

**Exams (5 exams × 100 points each):** Five equally weighted exams are scheduled throughout the semester (see course schedule for details on exam times). Each exam is worth 100 points. The exams will focus on the material covered in the class lectures (online). The student should read the textbook chapters noted in parenthesis and print out the lecture notes (in pdf format, online) and then watch the online lectures to enhance understanding of the material. The exams are multiple choice/short answer and will be administered on Canvas e-learning through Proctor U services [http://www.proctoru.com/index.php]. ProctorU allows you to take your exam on demand or by appointment. All appointments should be made at least 3 days in advance. To make an appointment, create an account at http://go.proctoru.com, then log in, click on the “new exam” link and select the exam, date, and time you desire. You will receive a confirmation email of your reservation at the email address that you provided to ProctorU. Reservations made within 72 hours of your exam are subject to a late reservation fee. Students without an appointment can take their exam on demand within 15, 30 or 45 minutes utilizing “Take it Now.” This premiere feature is designed to give test takers added convenience and only costs ~$8.75. Late registrations and “Take it Now” are subject to availability.

**Written assignments (5 x 50 points each):** Written assignments related to lecture material are due throughout the semester (see course schedule). For each assignment:

- Choose only one article per assignment for 700-word summary
- All of the assigned literature is available (free of charge) online through Medline or the UF library at http://www.uflib.ufl.edu.
- Read the assigned research article/review.
- Write a brief summary (~700 words) of the article.
- Do not plagiarize (http://web.uflib.ufl.edu/msl/07b/studentplagiarism.html).
- Upload the assignment onto Canvas by no later than 11:59 PM on the date of the deadline. Deadlines are in the “COURSE SCHEDULE.”
- Use one of the following formats only: Word, PDF, or plain text.
For all written assignments, please use the following reference format or similar:


**Endnote Web** (provided free of charge by UF) and other library management software can be used to help with this aspect: [http://web.uflib.ufl.edu/endnoteweb.html](http://web.uflib.ufl.edu/endnoteweb.html)

**Assignment 1**


**Assignment 2**


**Assignment 3**


**Assignment 4**


**Assignment 5**


**Extra Credit (50 points, optional):** Please provide a comprehensive 1000-word summary that includes a brief discussion of all the following papers, as well as your conclusion/discussion:


B. Only graduate (MCB6937) students are to complete the following assignments:

Summary Paper: The summary paper should be an overview of a topic related to prokaryotic biochemistry, metabolism or cell physiology of interest to you. The paper must be typed (double-spaced with 1-inch margins). The summary paper should include 10 pages. References, a title page, and figures/tables can be included on extra pages. While the figures and tables are optional, they might be helpful in presentation. The aim of this paper is to provide a summary or a review of peer-reviewed research articles published in scientific journals. Although the deadline for choosing a subject of this paper is 10/16 (Assignment 6), please contact me early in the semester to discuss the topic of your summary paper if you like (including potential references you will use for the final paper) to confirm that your topic is relevant to the subject area. Please upload the paper through Canvas e-learning by no later than DECEMBER 07, 2018. This paper will be scanned by TurnItIn for plagiarism. Contact me if you have doubts what constitutes plagiarism.
COURSE SCHEDULE:

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>R 08/23</td>
<td>Introduction to course and overview of the syllabus</td>
</tr>
<tr>
<td>Week 2</td>
<td>T 08/28</td>
<td>Structure and Function (Chapter 1) MODULE 1</td>
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<td>Conference online 4-5 PM Q&amp;A to Intro</td>
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<td>R 08/30</td>
<td>Growth and Cell Division. Chromosome Replication (Chapters 2-3) MODULE 2</td>
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<td>Week 3</td>
<td>T 09/04</td>
<td>Membrane Bioenergetics. (Chapter 4); MODULE 3</td>
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<td>R 09/06</td>
<td>Electron Transport, Photosynthesis (Chapters 5-6); MODULE 4 Assignment 1 - due</td>
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<td>Week 4</td>
<td>T 09/11</td>
<td>Review/Special lecture MODULE 1-4</td>
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<td>Exam 1 (Chapters 1-6) ProctorU MODULE 1-4</td>
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<td>Week 5</td>
<td>T 09/18</td>
<td>Regulation of Metabolic Pathways (Chapter 7) MODULE 5</td>
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<td>Central Metabolic Pathways (Chapter 8-9), MODULE 6</td>
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<td>Week 6</td>
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<td>Week 7</td>
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<td>Metabolism of Lipids, Nucleotides, Amino Acids and Hydrocarbons (Chapter 10), MODULE 7, Assignment 2 – due</td>
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<td>Cell Wall and Capsule Biosynthesis (Chapter 12) MODULE 8</td>
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<td>Inorganic Metabolism (Chapter 13) MODULE 9</td>
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<td>Week 9</td>
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<td>Assignment 3 – due (no meeting). Graduate students submit their Assignment 6</td>
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<td>Week 13</td>
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<td>Solute Transport. Protein Transport and Secretion (Chapters 17-18) MODULE 12</td>
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<td>R 11/15</td>
<td>Responses to Environmental Stress. Responses to environmental Cues. Chemotaxis (Ch. 16, Ch. 19 and Ch. 20) MODULE 13</td>
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<td>Review/Special lecture MODULE 12-13</td>
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<td>Week 15</td>
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<td>Summary Paper due (graduate students only)</td>
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<td>Week 16</td>
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<td>Week 17</td>
<td>12/10</td>
<td>Cumulative Final Exam (optional) ProctorU MODULE 1-13</td>
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OTHER INFORMATION:

Attendance and Make-Up Work

Excused absences follow the criteria of the UF Undergraduate Catalogue (e.g., illness, serious family emergency, military obligations, religious holidays) and must be communicated by formal signed documentation to the instructor prior to the missed exam. Appropriate documentation MUST be provided for the absence caused by serious illness, accident, jury duty or death in the immediate family. An alternative time for the exam will be arranged by the instructor. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.
COURSE MATERIALS: PLEASE NOTE THAT THE COURSE INSTRUCTOR CONSIDERS ALL UNAUTHORIZED ONLINE POSTING OR DISTRIBUTION OF COURSE MATERIALS A FORM OF ACADEMIC DISHONESTY, AND SUCH ACTIONS WILL BE TREATED ACCORDINGLY. All course materials posted on the course website are assembled and intended for students taking this course ONLY, this is why they are only available for student use from the secure Canvas website. Unauthorized posting of course materials infringes on UF's copyright policies and the "Fair Use" Act. These policies will be vigorously upheld at all times in this course.

Online Course Evaluation Process
Student assessment of instruction helps to improve teaching and learning. Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Academic Honesty
UF students are bound by The Honor Pledge, which states: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently unless the instructor provides explicit permission for you to collaborate on course tasks. Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code.

Software Use:
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Services for Students with Disabilities
Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Campus Helping Resources
Health and Wellness
- U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.
- Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc/Default.aspx, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
- Student Health Care Center, 392-1161.
- University Police Department, 392-1111 (or 9-1-1 for emergencies). http://www.police.ufl.edu/

Academic Resources
- E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learningsupport@ufl.edu, https://iss.at.ufl.edu/help.shtml.

**Online Course Assistance**
- Each online distance learning program has a process for and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level. See http://distance.ufl.edu/student-complaints
Cover Sheet: Request 13927

WIS6XXX Biodiversity

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Course New for request 13927

Info
Request: WIS6XXX Biodiversity
Description of request: This request is to convert a course that has been taught as a special topic for the past 3 years into an official course in the course catalog.
Submitter: Sarah Ernest skmorgane@ufl.edu
Created: 5/23/2019 1:34:20 PM
Form version: 1

Responses
Recommended Prefix WIS
Course Level 6
Number XXX
Category of Instruction Intermediate
Lab Code None
Course Title Biodiversity
Transcript Title Biodiversity
Degree Type Graduate

Delivery Method(s) On-Campus
Co-Listing No
Co-Listing Explanation The course is for graduate students only.
Effective Term Fall
Effective Year 2019
Rotating Topic? No
Repeatable Credit? No

Amount of Credit 3

If variable, # max 0
S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 4

Course Description Biodiversity emerges from a combination of ecological and evolutionary processes operating across many scales of space and time. This course examines the concept of biodiversity and the processes that generate important patterns of biodiversity in ecology.
Prerequisites None
Co-requisites none

Rationale and Placement in Curriculum Biodiversity research is a growing area of study, and studying issues related to biodiversity is increasingly a major component of graduate thesis work in the environmental sciences. Biodiversity research integrates across many different domains of expertise, which means coursework on this topic is split among a variety of courses, each of which only deals with a small part of this complex research area. This course provides an integrative perspective on biodiversity that provides graduate students entering this rapidly evolving field with a broad foundation that allows them to understand the issues and scientific approaches related to it.

Course Objectives
• Define the dimensions of biodiversity through discussion and reading the primary literature
• Discuss patterns of biodiversity from the literature and how they relate to ecological processes
• Use current literature to assess current gaps in our scientific understanding of biodiversity
• Design research questions to gain experience with addressing and communicating gaps in scientific knowledge
• Design a presentation to communicate to an audience of broad backgrounds

Course Textbook(s) and/or Other Assigned Reading
There is not a required or recommended text book for this class
• Readings for this class come from journal articles available electronically through UF journal subscriptions. Links to papers are made available through the course website
Weekly Schedule of Topics (Below, the title of the journal article is provided. On the course website, these titles are hyperlinked to the on-line version of the article available through university subscriptions)

Weeks 1-3: Thinking about what biodiversity means/is
1. August 23 Introductions. What does the word biodiversity mean to you?
2. August 28 Taxonomic Alpha, Beta, Gamma Diversity - Concepts
   - Reading: Disentangling the Drivers of Beta Diversity Along Latitudinal and Elevational Gradients
   - Questions
3. August 30 Taxonomic Alpha, Beta, Gamma Diversity - Practice
4. September 4 Phylogenetic and functional diversity - Concepts
   - Reading: Functional diversity (FD), species richness and community composition
   - Questions
5. September 6 Phylogenetic and functional diversity - Practice

Weeks 4-7: Local-scale Biodiversity Patterns & Processes
6. September 11 Assembly Mechanisms - Niches and Biotic and Environmental Filters
   - Reading: Rethinking Community Assembly through the Lens of Coexistence Theory
   - Questions
7. September 13 Assembly Mechanisms - The role of Stochasticity and History
   - Reading: Drought mediates the importance of stochastic community assembly
   - Questions
   - Class Activity: Create your elevator pitch
8. September 18 Patterns in Taxonomic, Phylogenetic, and Functional Diversity
   - Reading: Phylogenetic Overdispersion in Floridian Oak Communities
   - Reading: Spatial mismatch and congruence between taxonomic, phylogenetic and functional diversity
   - Questions
9. September 20 Biodiversity through time
   - Debate-style discussion: There will be two groups and the papers you read for this class differ depending on what group you were assigned to. Everyone needs to read: Assemblage Time Series Reveal Biodiversity Change but Not Systematic Loss
   - ** Group 1 **
     - Reading: Species-level and community-level responses to disturbance: a cross-community analysis
   - ** Group 2 **
     - Reading: Recent Trends in Local-Scale Marine Biodiversity Reflect Community Structure and Human Impacts
10. September 25 Species Networks
     - Reading: Estimating local biodiversity change: a critique of papers claiming no net loss of local diversity
     - Reading: Biodiversity change is uncoupled from species richness trends: consequences for conservation and monitoring
     - Group Projects: Sharing Interests

11. September 27 Biodiversity Ecosystem Function
    - Reading: Effects of biodiversity on the functioning of trophic groups and ecosystems
    - Reading: Emerging horizons in biodiversity and ecosystem functioning research
    - Reading: Plant Species Richness and Ecosystem Multifunctionality in Global Drylands
    - Questions

12. October 2 Patterns of Abundance
    - Reading: EXCERPTS from Niche Apportionment and Species Coexistence Chapter will be emailed to group.
    - Reading: Hyperdominance in the Amazonian Tree Flora
    - Questions

Weeks 7-10 Regional-Scale Diversity Patterns & Processes
13. October 4 Regional Assembly - Dispersal
   • Reading: The metacommunity concept: a framework for multi-scale community ecology
   • Questions
   • Group Project Day. Start talking with each other about big challenges or important unanswered question that you all are interested in.
14. October 9 Regional Assembly - Environmental Heterogeneity
   • Reading: The "Frankenpaper" - emailed to the class listserv
   • Questions
   • Class Activity: Group Projects
15. October 11 Habitat Fragmentation patterns
   • Reading: How fragmentation and corridors affect wind dynamics and seed dispersal in open habitats
   • Reading: Habitat fragmentation and genetic variability of tetrapod populations
   • Questions
   • Class Activity: Group Projects
16. October 16 Local-Regional Diversity Relationships
   • Reading: Community diversity: relative roles of local and regional processes
   • Reading: The Combined Influence of the Local Environment and Regional Enrichment on Bird Species Richness.
   • Questions
17. October 18 Species-Area Relationships
   • Reading: species-area relationship frankenpaper (emailed to group)
   • Reading: Analysis of an evolutionary species–area relationship
   • Questions
   • Class Activity: Group Projects
18. October 23 Core-Transient Framework
   • Reading: Explaining the excess of rare species in natural species abundance distributions
   • Reading: Opposing mechanisms drive richness patterns of core and transient bird species
   • Questions
19. October 25 Group Project Day
20. Weeks 11-13 Global Biodiversity Patterns and Processes
   • Readings: An update on Wallace’s zoogeographic regions of the World
22. November 1: Biogeographic Processes: Evolution
   Readings: Biogeographic regions and events of isolation and diversification of the endemic biota of the tropical Andes
   • Questions
23. November 6 Hotspots and Endemism
   • Readings: Global hotspots of species richness are not congruent with endemism or threat
   • Readings: The Influence of Late Quaternary Climate-Change Velocity on Species Endemism
   • Questions
24. November 8 Latitudinal Gradient:
   Read the paper you were assigned in class - read the abstracts of the other 3. For this assignment, be able to explain the processes generating the latitudinal gradient of diversity that your assigned paper examined. You will break into small groups first to make sure everyone understands their mechanisms, and then each group will explain their mechanisms to the rest of the group.
   • Readings: Faster Speciation and Reduced Extinction in the Tropics Contribute to the Mammalian Latitudinal Diversity Gradient
   • Readings: Plant diversity increases with the strength of negative density dependence at the global scale
   • Readings: Global Biodiversity, Biochemical Kinetics, and the Energetic Equivalence Rule
   • Readings: A latitudinal gradient in planktonic marine bacteria
   • Group Projects
25. November 13 Large-scale Patterns of Phylogenetic, Functional, and Species Diversity
   • Reading: Understanding global patterns of mammalian functional and phylogenetic diversity
   • Questions
26. November 15 Extinctions
   • Reading: Pleistocene megafaunal collapse, novel plant communities, and enhanced fire regimes in North America
   • Reading—you only need to read the abstract! Extinctions and the loss of ecological function in island bird communities
• Questions
• Group Project time
Weeks 14-15: Group Presentations and Wrap-Up
27. November 20
• No readings: Group Projects
28. November 27
• No readings Group Projects
29. November 29 Group Presentations!
30. December 4: What have we learned? Wrapping up the Semester
• Readings: Look over the questions and topics on the schedule and reflect on what we have covered over the past semester
  o What themes or processes came up multiple times this semester?
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  o When you entered the class, what dimension of biodiversity did you focus on? How did you assume it was related to other aspects of biodiversity? Did the class strengthen or change the way you think about that?

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Grading Scheme
GENERAL COURSE STRUCTURE AND EXPECTATIONS
This course is designed to provide advanced training for graduate students in a specialized area of ecology. This course is a mixture of lecture, class discussion of primary literature, hands-on experience through class activities, and a major project. While there is some lecturing, class participation, intellectual engagement with topics, and discussion participation are the main ways students will learn in this class. The first hour of Tuesdays and Thursdays are devoted to lecture and class discussions. You are expected to come prepared to discuss the assigned papers. The second hour on Thursdays are devoted to either class activities or working on group projects.

Course Grading
60% of grade will be based on a class project and presentation (330 points), 40% will be based on class participation in discussion* (220 points, 10 points/class day).

*Students uncomfortable with the expectation of participating in a graduate discussion should talk to me about a written alternative.

PercentGrade
90.0 - 100.0 A
87.0 - 89.9 A-
84.0 - 86.9 B+
81.0 - 83.9 B
78.0 - 80.9 B-
75.0 - 79.9 C+
72.0 - 74.9 C
69.0 - 71.9 C-
66.0 - 68.9 D+
63.0 - 65.9 D
60.0 - 62.9 D-
0 - 59.9 E

Instructor(s) S.K. Morgan Ernest
**External Consultation Results (departments with potential overlap or interest in proposed course, if any)**

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<td>Marta L. Wayne, Professor &amp; Chair</td>
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<td>352-392-9925</td>
<td><a href="mailto:mlwayne@ufl.edu">mlwayne@ufl.edu</a></td>
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**Comments**

These are great courses taught by outstanding faculty. Although there is some overlap between material of these courses and some that we teach, there is not sufficient overlap to cause any concern.
**WIS 6934 - Biodiversity**

*Linking biodiversity patterns and processes across scales of space and time*

*T 1:55-2:45 & Th 1:55-3:50, MCCB G108*

*Fall 2018, 3 credits*

**Instructor:** Dr. Morgan Ernest  
**Office Location:** Building 150, Room 2  
**Phone:** 352-294-2082  
**Email** (preferred mode of contact): skmorgane@ufl.edu  
**Website:** skmorgane.github.io/biodiversity-course  
**Office Hour:** Tuesday 3-4 or by appointment  
**Prerequisites:** None

---

**DESCRIPTION/ORGANIZATION**

Biodiversity emerges from a combination of ecological and evolutionary processes operating across many scales of space and time. This course examines the concept of biodiversity and the processes that generate important patterns of biodiversity in ecology.

**COURSE OBJECTIVES**

- Define the dimensions of biodiversity through discussion and reading the primary literature
- Discuss patterns of biodiversity from the literature and how they relate to ecological processes
- Use current literature to assess current gaps in our scientific understanding of biodiversity
- Design research questions to gain experience with addressing and communicating gaps in scientific knowledge
- Design a presentation to communicate to an audience of broad backgrounds

**TEXT AND REQUIRED SUPPLIES**

- There is not a required or recommended text book for this class
- Readings for this class come from journal articles available electronically through UF journal subscriptions. Links to papers are made available through the course website (skmorgane.github.io/biodiversity-course).
- Laptops: On specific days (noted on the course schedule) laptops or tablets will be required to participate in literature search and basic computational activities. If you do not have a laptop or tablet, please let the instructor know and access to one can be arranged.
• Software: We will be using R (a freely available statistical programming environment) to learn about quantitative approaches to studying biodiversity patterns. R is required. It is also recommending that student load RStudio – a freely available integrated programming environment – which makes working with R more user friendly.

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**CLASS SCHEDULE**
Weeks 1-3: Thinking about what biodiversity means/is

1. August 23 Introductions. What does the word biodiversity mean to you?
2. August 28 Taxonomic Alpha, Beta, Gamma Diversity - Concepts
   - Reading: Disentangling the Drivers of Beta Diversity Along Latitudinal and Elevational Gradients
     - Questions
3. August 30 Taxonomic Alpha, Beta, Gamma Diversity - Practice
4. September 4 Phylogenetic and functional diversity - Concepts
   - Reading: Functional diversity (FD), species richness and community composition
   - Questions
5. September 6 Phylogenetic and functional diversity - Practice

Weeks 4-7: Local-scale Biodiversity Patterns & Processes

6. September 11 Assembly Mechanisms - Niches and Biotic and Environmental Filters
   - Reading: Rethinking Community Assembly through the Lens of Coexistence Theory
   - Questions
7. September 13 Assembly Mechanisms - The role of Stochasticity and History
   - Reading: Drought mediates the importance of stochastic community assembly
   - Questions
   - Class Activity: Create your elevator pitch
8. September 18 Patterns in Taxonomic, Phylogenetic, and Functional Diversity
   - Reading: Phylogenetic Overdispersion in Floridian Oak Communities
   - Reading: Spatial mismatch and congruence between taxonomic, phylogenetic and functional diversity
   - Questions
9. September 20 Biodiversity through time

Debate-style discussion: There will be two groups and the papers you read for this class differ depending on what group you were assigned to. Everyone needs to read: Assemblage Time Series Reveal Biodiversity Change but Not Systematic Loss

- **Group 1**
  - Reading: Species-level and community-level responses to disturbance: a cross-community analysis
  - Reading: Recent Trends in Local-Scale Marine Biodiversity Reflect Community Structure and Human Impacts
- **Group 2**
  - Reading: Estimating local biodiversity change: a critique of papers claiming no net loss of local diversity
  - Reading: Biodiversity change is uncoupled from species richness trends: consequences for conservation and monitoring
- Group Projects: Sharing Interests
10. September 25 Species Networks

- Readings: Stability of Ecological Communities and the Architecture of Mutualistic and Trophic Networks
- Questions

11. September 27 Biodiversity Ecosystem Function

- Readings: Effects of biodiversity on the functioning of trophic groups and ecosystems
- Readings: Emerging horizons in biodiversity and ecosystem functioning research
- Readings: Plant Species Richness and Ecosystem Multifunctionality in Global Drylands
- Questions

12. October 2 Patterns of Abundance

- Readings: EXCERPTS from Niche Apportionment and Species Coexistence Chapter will be emailed to group.
- Readings: Hyperdominance in the Amazonian Tree Flora
- Questions

Weeks 7-10 Regional-Scale Diversity Patterns & Processes

13. October 4 Regional Assembly - Dispersal

- Reading: The metacommunity concept: a framework for multi-scale community ecology
- Questions
- Group Project Day. Start talking with each other about big challenges or important unanswered question that you all are interested in.

14. October 9 Regional Assembly - Environmental Heterogeneity

- Reading: The “Frankenpaper” - emailed to the class listserv
- Questions
- Class Activity: Group Projects

15. October 11 Habitat Fragmentation patterns

- Reading: How fragmentation and corridors affect wind dynamics and seed dispersal in open habitats
- Reading: Habitat fragmentation and genetic variability of tetrapod populations
- Questions
- Class Activity: Group Projects

16. October 16 Local-Regional Diversity Relationships

- Reading: Community diversity: relative roles of local and regional processes
• Reading: *The Combined Influence of the Local Environment and Regional Enrichment on Bird Species Richness.*
• Questions

17. October 18 *Species-Area Relationships*

• Reading: species-area relationship Frankenpaper ( emailed to group)
• Reading: *Analysis of an evolutionary species-area relationship*
• Questions
• Class Activity: Group Projects

18. October 23 *Core-Transient Framework*

• Reading: *Explaining the excess of rare species in natural species abundance distributions*
• Reading: *Opposing mechanisms drive richness patterns of core and transient bird species*
• Questions

19. October 25 *Group Project Day*

**Weeks 11-13 Global Biodiversity Patterns and Processes**

21. October 30: *Biogeographic Processes: Biogeographic Regions*

• Readings: *An update on Wallace’s zoogeographic regions of the World*
• Questions

22. November 1: *Biogeographic Processes: Evolution*

Readings: *Biogeographic regions and events of isolation and diversification of the endemic biota of the tropical Andes*

• Questions

23. November 6 *Hotspots and Endemism*

• Readings: *Global hotspots of species richness are not congruent with endemism or threat*
• Readings: *The Influence of Late Quaternary Climate-Change Velocity on Species Endemism*
• Questions

24. November 8 *Latitudinal Gradient:*

Read the paper you were assigned in class - read the abstracts of the other 3. For this assignment, be able to explain the processes generating the latitudinal gradient of diversity that your assigned paper examined. You will break into small groups first to make sure everyone understands their mechanisms, and then each group will explain their mechanisms to the rest of the group.
• Readings: Faster Speciation and Reduced Extinction in the Tropics Contribute to the Mammalian Latitudinal Diversity Gradient
• Readings: Plant diversity increases with the strength of negative density dependence at the global scale
• Readings: Global Biodiversity, Biochemical Kinetics, and the Energetic Equivalence Rule
• Readings: A latitudinal gradient in planktonic marine bacteria
• Group Projects

25. November 13 Large-scale Patterns of Phylogenetic, Functional, and Species Diversity

• Reading: Understanding global patterns of mammalian functional and phylogenetic diversity
• Questions

26. November 15 Extinctions

• Reading: Pleistocene megafaunal collapse, novel plant communities, and enhanced fire regimes in North America
• Reading—you only need to read the abstract! Extinctions and the loss of ecological function in island bird communities
• Questions
• Group Project time

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Cover Sheet: Request 14020

DIE6942 Dietetic Internship I

Info

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Submitter: Jeanette Andrade jandrade1@ufl.edu
Created: 6/28/2019 12:35:28 PM
Form version: 3

Responses
Current Prefix DIE
Course Level 6
Number 942
Lab Code None
Course Title Dietetic Internship I
Effective Term Spring
Effective Year 2020
Requested Action Other (selecting this option opens additional form fields below)
Change Course Prefix? No

Change Course Level? No

Change Course Number? No

Change Lab Code? No

Change Course Title? No

Change Transcript Title? No

Change Credit Hours? Yes
Current Credit Hours 8
Proposed Credit Hours 9
Change Variable Credit? No

Change S/U Only? No

Change Contact Type? No

Change Rotating Topic Designation? No

Change Repeatable Credit? No

Maximum Repeatable Credits 0
Change Course Description? No
Change Prerequisites? No

Change Co-requisites? Yes
Current Co-requisites DIE 6938 Advanced Dietetic Seminar
Proposed Co-requisites None
Rationale After discussions with department faculty and program stakeholders, we have determined to increase the internship credit hours from 8 hours to 9 credit hours. This will allow the students to enhance their food management and clinical skills while completing necessary projects in the clinical facility. The previous instructor did not have a syllabus and a search of the departmental archives resulted in none, thus it is not possible to include a previous one in this submission. The co-requisite course is no longer required through the MS/DI program, thus remove this stipulation.
**Cover Sheet: Request 14021**

**DIE6944 Dietetic Internship II**

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Process</td>
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<tr>
<td>Status</td>
<td>Pending at CALS - College of Agricultural and Life Sciences</td>
</tr>
<tr>
<td>Submitter</td>
<td>Jeanette Andrade <a href="mailto:jandrade1@ufl.edu">jandrade1@ufl.edu</a></td>
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<td>Created</td>
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<td>We are requesting that the number of credit hours for DIE6944 Dietetic Internship II goes from 4 credit hours to 6 credit hours.</td>
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<td>CALS - Food Science and Human Nutrition 514915000</td>
<td>Susan Percival</td>
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<td>8/12/2019</td>
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**No document changes**

| College       | Pending     | CALS - College of Agricultural and Life Sciences |                 | 8/12/2019     |

**No document changes**

| Graduate      |             |                                             |                   |               |
| Curriculum    |             |                                             |                   |               |
| Committee     |             |                                             |                   |               |

**No document changes**

| University    |             |                                             |                   |               |
| Curriculum    |             |                                             |                   |               |
| Committee     |             |                                             |                   |               |
| Notified      |             |                                             |                   |               |

**No document changes**

| Statewide     |             |                                             |                   |               |
| Course        |             |                                             |                   |               |
| Numbering     |             |                                             |                   |               |
| System        |             |                                             |                   |               |

**No document changes**

| Graduate      |             |                                             |                   |               |
| School        |             |                                             |                   |               |
| Notified      |             |                                             |                   |               |

**No document changes**

| Office of the Registrar |             |                                             |                   |               |

**No document changes**

| College |             |                                             |                   |               |
| Notified|             |                                             |                   |               |

**No document changes**

Page 40 of 278
Course|Modify for request 14021

Info
Request: DIE6944 Dietetic Internship II
Description of request: We are requesting that the number of credit hours for DIE6944 Dietetic Internship II goes from 4 credit hours to 6 credit hours.
Submitter: Jeanette Andrade jandrade1@ufl.edu
Created: 6/25/2019 12:27:00 PM
Form version: 1

Responses
Current Prefix DIE
Course Level 6
Number 944
Lab Code None
Course Title Dietetic Internship II
Effective Term Summer
Effective Year 2020
Requested Action Other (selecting this option opens additional form fields below)
Change Course Prefix? No

Change Course Level? No

Change Course Number? No

Change Lab Code? No

Change Course Title? No

Change Transcript Title? No

Change Credit Hours? Yes
Current Credit Hours 4
Proposed Credit Hours 2
Change Variable Credit? No

Change S/U Only? No
Change Contact Type? No

Change Rotating Topic Designation? No
Change Repeatable Credit? No
Maximum Repeatable Credits 0
Change Course Description? No

Change Prerequisites? No
Change Co-requisites? No

Rationale After discussions with department faculty and program stakeholders, we have determined to increase the internship credit hours from 4 hours to 6 credit hours. This will allow the students to enhance their outpatient and clinical skills while completing necessary projects in the clinical facility. The previous instructor did not have a syllabus and a search of the departmental archives resulted in none, thus it is not possible to include a previous one in this submission.
# Cover Sheet: Request 13928

**FAS4XXX Algae Biology and Ecology**

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<td>Submitter</td>
<td>Scott Sager, <a href="mailto:ssager@ufl.edu">ssager@ufl.edu</a></td>
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## Actions

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<td>Terrell Baker III</td>
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No document changes

University
Curriculum
Committee

No document changes

Statewide
Course
Numbering
System

No document changes

Office of the Registrar

No document changes

Student
Academic
Support
System

No document changes

Catalog

No document changes

College
Notified

No document changes
Course|New for request 13928

Info
Request: FAS4XXX Algae Biology and Ecology
Description of request: new course
Submitter: Scott Sager sasager@ufl.edu
Created: 5/23/2019 3:24:07 PM
Form version: 1

Responses
Recommended Prefix FAS
Course Level 4
Number XXX
Category of Instruction Advanced
Lab Code None
Course Title Algae Biology and Ecology
Transcript Title ALGAE BIOLOGY/ECOLOGY
Degree Type Baccalaureate

Delivery Method(s) Online
Co-Listing Yes
Co-Listing Explanation Exams will be different for graduate and undergrad versions, with grad exams more extensively testing understanding of concepts and principles outlined in the readings, requiring synthesis of information through essay questions and similar. Undergrad exams will be more general, and structured with less emphasis on synthesis and more checking basic understanding of core concepts and topics.
Undergrad version has two special projects... grad version has one special project, with the second being an academic-level presentation/lecture developed on a specified topic.
Effective Term Earliest Available
Effective Year Earliest Available
Rotating Topic? No
Repeatable Credit? No

Amount of Credit 3

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 3
Course Description The biology and ecology of aquatic algae, including evolution, classification, structure, photosynthesis, growth, and reproduction. Emphasis on the ecological role of algae in different aquatic ecosystems (e.g. open ocean, estuaries, coral reefs, rocky intertidal), their impacts (e.g. harmful algae blooms, food webs), and their applications (e.g. food, biochemical).
Prerequisites BSC2010+BSC2010L, or equivalent
Co-requisites none
Rationale and Placement in Curriculum This course provides a basis for the foundational trophic level, required for students studying marine ecological systems. The course is required for students in the Interdisciplinary Studies-Marine Sciences major (CALS track).
Course Objectives After completing the course, students will:
- be able to describe the basic concepts of algal biology and ecology, and how they apply to different aquatic environments;
- be able to synthesize the role algae play in critical environmental issues, such as eutrophication, human health and global climate change;
- be able to articulate the basic applications of algae in biotechnology, such as the production of food, chemicals, and biofuels.
Course Textbook(s) and/or Other Assigned Reading No textbook required. Readings will be taken from recent literature, such as...
Ophelia 41, 199-219.

Weekly Schedule of Topics
- Introduction & course description
- Origins of algae, environmental changes and evolution of algae, phylogeny of algae, systematics basics
- Algae structure & function – by division
- Plankton sampling methods, benthic algae sampling methods, taxonomic methods
- Photosynthesis
- Growth
- Freshwater algae toxins
- Marine algae toxins, other harmful effects of algae
- Ecological principles (eutrophication, hydrologic factors, food webs, climatic factors)
- Examples of ecosystem types
- Algal applications

Links and Policies
Online Course Evaluation Process: Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

Academic Honesty
As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.” You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sscr/process/student-conduct-honor-code.

Campus Helping Resources: Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu

Counseling Services
Groups and Workshops
Outreach and Consultation
Self-Help Library
Wellness Coaching

U Matter We Care, www.umatter.ufl.edu/

Career Connections Center, First Floor JWRU, 392-1601, https://career.ufl.edu/

Services for Students with Disabilities: The Disability Resource Center coordinates the needed
accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation0001 Reid Hall, 352-392-8565, www.cso.ufl.edu/drc/

Software Use: All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

**Grading Scheme**

Online Assignments (12) - 24%
Exam 1 - 20%
Exam 2 - 20%
Special Project Part 1 - 2%
Special Project Part 2 - 10%
Special Project Part 3 - 20%
Participation in Project - 4%

**Instructor(s)** Dr. Edward Philips
FAS4XXX ALGAE BIOLOGY AND ECOLOGY

Instructor: Professor Edward Phlips

Main Office: Program of Fisheries and Aquatic Sciences, 7922 NW 71st Street, Gainesville, Florida, 32653

Telephone: 352-273-3603

E-mail: phlips@ufl.edu

Office Hours: Thursday 8-10 AM

Course Description: The biology and ecology of aquatic algae, including evolution, classification, structure, photosynthesis, growth, and reproduction. Emphasis on the ecological role of algae in different aquatic ecosystems (e.g. open ocean, estuaries, coral reefs, rocky intertidal), their impacts (e.g. harmful algae blooms, food webs), and their applications (e.g. food, biochemical).

Prerequisites: BSC2010 and BSC2010L, or equivalent as determined by instructor

Time and Place:
Lectures (Online): Lecture modules will be posted on the e-Learning web site for the course on Monday of each week, along with required reading and supplemental information. Each online distance learning program has a process for, and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level. See http://distance.ufl.edu/student-complaints for more details.

Course Objectives: After completing the course, students will:
- be able to describe the basic concepts of algal biology and ecology, and how they apply to different aquatic environments;
- be able to synthesize the role algae play in critical environmental issues, such as eutrophication, human health and global climate change;
- be able to articulate the basic applications of algae in biotechnology, such as the production of food, chemicals, and biofuels.

Course Communication: This course will take advantage of e-Learning support to post course information and to allow you day-to-day access to your grades. Please visit http://lss.at.ufl.edu to access the course via the e-Learning link and for information on how use the e-Learning site (Please use the help desk as your first course of action if you have any difficulties). Lectures are based on PowerPoint presentations to facilitate the use of figures and visual aids. Not all the information for the class will be on the PowerPoint slides, therefore it is your responsibility to take notes and complete reading assignments.

Participation and Attendance: Participation and attendance is expected for all lectures, discussions, and special project presentations. Contact me as early as possible if you must miss a scheduled exam.
Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

**Example Readings:** Readings will include, but are not limited to:


**Course Format and Grading:** This course is offered for three (3) credits in the spring semester. Exams will be based on material presented in the lectures and the required readings. Required readings will be provided on line for each major topical area. Twelve short assignments will be administered during the term. The online assignments will involve five questions related to that week’s lecture and/or reading material. Each correct answer will be worth 0.4 points.

The course will also involve a special team project during the semester. Each group will consist of 5-6 persons selected by the instructor. The final product of the project will be a short voice-over Power Point presentation (i.e. around 5-7 minutes) on a topic of their choice based on a list of options provided by the instructor. Three parts of the project will be due during the semester:

Part 1: Selection of project topic by teams. Topics should focus on algae species of particular ecological importance (e.g. harmful algae bloom species, important food web or habitat species), key ecosystem functions carried out by algae or biotechnological applications using algae (biofuel production, aquaculture) perspectives. Teams can consult with the instructor to discuss options. On time submission of topics will be associated with 2 points for each team member.

Part 2: Each member of each team will be required to find a short video (i.e. < 4 minutes in ‘.flv’ file format) or a still image (jpeg format) which illustrates a concept or principle associated with the topic selected by each team. The image or video will be accompanied by a paragraph (approximately half a page single spaced text) describing the video or image and its significance, along with three published references (journal articles or books) related to the subject. Image files should be imbedded in the pdf file. Video files can be submitted as separate flv files labeled with the student’s name and assignment number (e.g. ‘John Smith Video Special Project 1’*). The visual material with text will be posted on the e-Learning web site. Part 2 of the Special Project will be worth up to 10 points (4 points for image/video, 4 points for descriptive paragraph, and 2 points for references).

Part 3: Each team will work together to produce a short voice-over Power Point presentation (i.e. around 5-7 minutes) on a topic of their choice. The presentation can include video segments. All members of the team must be included in the presentation to receive credit.
The presentation should also include references for the information provided in the presentation. Each of the team members will receive up to 20 points for the presentation (8 points for visual content, 8 points for narration content, 4 points for referencing). All students will be asked to evaluate the presentations of a selected number of other team projects in the class on a scale of 1-3 (1 – low quality, 2 – moderate quality, 3 – high quality). During the evaluations each person will be asked to enter a brief comment on the presentation they are assigned to evaluate (e.g. strong point and/or weak point). The average of the evaluations will be included in the instructor’s grade of the project. Each student will be given 4 points for participation in the evaluation process.

Two exams will be administered online during the course. Each will be worth 20% of the grade. The exams will not be cumulative in terms of the material covered. Exam questions will emphasize lecture materials, but may also include general concepts presented in the required reading. The exams will be one hour in length and will be available online Wednesday-Sunday of exam week. Exam questions may include multiple-choice, true/false, list/explain, short answers or short essays.

The grade point allocation is: A (93-100%), A- (90-92), B+ (86-89%), B (82-85%), B- (78-81%), C+ (74-77%), C (67-73%), C- (63-66%), D+ (59-62%), D (55-58%), D- (51-54%), and E «50%.

For information on current UF policies for assigning grade points, see https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

Basis for grade:

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<tr>
<td>Exam 1</td>
<td>20%</td>
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<tr>
<td>Exam 2</td>
<td>20%</td>
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<tr>
<td>Special Project Part 1</td>
<td>2%</td>
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<tr>
<td>Special Project Part 2</td>
<td>10%</td>
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<tr>
<td>Special Project Part 3</td>
<td>20%</td>
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<tr>
<td>Participation in Project</td>
<td>4%</td>
</tr>
<tr>
<td>grading &amp; discussion</td>
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**Course Outline**

**Week** | **Topical Areas, Tests and Assignments**
---|---
Week 1 | Introduction & course description
Week 2 | Origins of algae
| Environmental changes and evolution of algae
| Phylogeny of algae
| Systematics basics
| Reading assignments
| Online Assignment 1
Week 3  Algae structure & function – by division

Reading assignments
Online Assignment 2

Week 4  Algae structure & function – by division – continued

Reading assignments
Online Assignment 3

Week 5  Plankton sampling methods
Benthic algae sampling methods
Taxonomic methods

Reading assignments
Online Assignment 4

Week 6  Photosynthesis – Structures, processes, methodologies
Growth – Dynamics, physical limiting factors, methodologies

Reading assignments
Online Assignment 5

Week 7  Growth – Chemical limiting factors, methodologies

**First Special Project due by Wednesday**
Reading assignments
Online Assignment 6

Week 8  **Exam 1**

Week 9  Spring break

Week 10  Freshwater algae toxins

Reading assignments
Online Assignment 7

**Peer Grades for Special Project 1 due**

Week 11  Marine algae toxins
Other harmful effects of algae

Reading assignments
Online Assignment 8
Week 12  Ecological principles – e.g. eutrophication, hydrologic factors, food webs, climatic factors
Reading assignments
Online Assignment 9

Week 13  Examples of ecosystem types
Reading assignments
Online Assignment 10

Week 14  Examples of ecosystem types - continued
Reading assignments
Online Assignment 11

Week 15  Algal applications
Reading assignments
Online Assignment 12

Second special project due by Wednesday

Week 16  Exam 2
Peer Grades for Special Project 2 due

Online Course Evaluation Process: Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

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Counseling Services
Groups and Workshops
Outreach and Consultation
Self-Help Library
Wellness Coaching

U Matter We Care, www.umatter.ufl.edu/

Career Connections Center, First Floor JWRU, 392-1601, https://career.ufl.edu/

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Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

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Cover Sheet: Request 14076

FOS4XXX Food Engineering

| Info |  
|------|---
| Process | Course|New|Ugrad|Pro |
| Status | Pending at CALS - College of Agricultural and Life Sciences |
| Submitter | Andrew MacIntosh andrewmacintosh@ufl.edu |
| Created | 7/11/2019 1:53:48 PM |
| Updated | 7/11/2019 2:08:45 PM |
| Description of request | Create a food engineering course to replace AOM4062 that delivers the background theory required for the final semester food processing course. Food engineering is a required undergraduate course in the food science curriculum that is no longer available through ABE. |

| Actions |  
|------|---
| Step | Department |
| Status | Approved |
| Group | CALS - Food Science and Human Nutrition 514925000 |
| User | Susan Percival |
| Comment | Dr. Migliaccio and I have discussed AOM 4062 on the phone. This is our solution. |
| Updated | 7/11/2019 |

No document changes

| College | Pending |
| Group | CALS - College of Agricultural and Life Sciences |
| User |  |
| Comment |  |
| Updated | 7/11/2019 |

No document changes

| University Curriculum Committee |  
|------|---
| Statewide Course Numbering System |  
| Office of the Registrar |  
| Student Academic Support System |  
| Catalog |  
| College Notified |  

No document changes
Course|New for request 14076

Info
Request: FOS4XXX Food Engineering
Description of request: Create a food engineering course to replace AOM4062 that delivers the background theory required for the final semester food processing course. Food engineering is a required undergraduate course in the food science curriculum that is no longer available through ABE.

Submitter: Andrew MacIntosh andrewmacintosh@ufl.edu
Created: 7/11/2019 1:59:16 PM
Form version: 2

Responses
Recommended Prefix FOS
Course Level 4
Number XXX
Category of Instruction Advanced
Lab Code C
Course Title Food Engineering
Transcript Title Food Engineering
Degree Type Baccalaureate

Delivery Method(s) On-Campus
Co-Listing No

Effective Term Fall
Effective Year 2020
Rotating Topic? No
Repeatable Credit? No

Amount of Credit 4

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 6
Course Description This class will introduce the fundamental principles of Food Engineering: Engineering Units, Food Properties, Micro Death, Conduction, Steam, Convection, Heat Exchangers, Steady State Heat Transfer, Extrusion, Unsteady State Heat Transfer, and Radiation. Laboratories provide students with hands-on experience working with food processing equipment.
Prerequisites Mac 1147
Phy 2004/2004L or
Phy 2053/2053L (preferred)
Co-requisites none
Rationale and Placement in Curriculum Replacement for AOM 4062 (food engineering), a mandatory course for the food science undergraduate degree that is no longer offered offered by ABE.

Course Objectives Students will understand the theory behind the thermal unit operations of food processing to the extent that students will be able to manipulate parameters to predict specific outcomes. Students will be able to use relevant published literature, and analyze situations in which food processing theory may be utilized.
Note: Supplemental notes and handouts will be distributed to class via Canvas and/or email.

Week 11-19 Intro and units
Week 219-29 History and food Properties
Week 3413-422 Microbial Death
Week 451-55 & 257-266 Thermal Properties of Food & Conduction
Week 5: 232-236 Thermocouples
Week 6: 29-46 Mass balance 187-200 & Steam,
Week 7: 266-274 285-286 Convection & Frying
Week 8: Exam I Prep
Week 10: 84-88 Reynolds number & Fluid Flow
Week 11: 65-73 Pumps 721-735 Extrusion
Week 12: 337-350 USSHT
Week 13: 422 – 433 Lethal Rate
Week 14: 269-270 Radiation HT 371 – 379 Microwave
Week 15: Food Irradiation - Handout
Week 16: Exam prep, no reading assigned

Weekly Schedule of Topics
Week 1: Intro and Units
Week 2: History and food Properties
Week 3: Microbial Death
Week 4: Thermal Properties of Food & Conduction
Week 5: Thermocouples and Accuracy
Week 6: Mass balances & Steam,
Week 7: Convection & Frying
Week 8: Exam I Prep
Week 9: Heat Exchangers
Week 10: Reynolds Number & Fluid Flow
Week 11: Pumps & Extrusion
Week 12: USSHT
Week 13: Lethal Rate
Week 14: Radiation & Microwave

Week 15: Food Irradiation - Handout
Week 16: Exam prep, no reading assigned

Grading Scheme
Lab reports x 6

36%

Tutorial questions x 6

16%

Exam I 23%
Exam II 23%

Instructor(s): Andrew J MacIntosh
Attendance & Make-up: Yes
Accomodations: Yes
UF Grading Policies for assigning Grade Points: Yes
Course Evaluation Policy: Yes
FOS XXXXC Principles of Food Engineering (4 credits)

Syllabus

Lecture: M W F period 2 8:30-9:20 AM
Laboratory A: R 5,6,7 (11:45-2:45) PM Food Science Pilot Plant/WEIL 408D
Laboratory B: R 8,9,10 (3-6) PM Food Science Pilot Plant/WEIL 408D

Instructor: Dr. Andrew MacIntosh  Phone: 352-294-3594
Office: AFPP (Bldg 120)  E-mail: Andrewmacintosh@ufl.edu
Room 126
Office Hours: Wed (9:30-10:30)

Course Description: This class will introduce fundamental principles of Food Engineering: Engineering Units, Food Properties, Microbial Death, Thermal Conduction, Phase Changes, Thermal Convection, Heat Exchangers, Steady State Heat Transfer, Extrusion, Unsteady State Heat Transfer, and Radiation. The goal will be to use and comprehend these concepts as they relate to food science.

Required Textbook:
Note: Supplemental notes and handouts will be distributed to class via Canvas and/or email.

Readings from text:
Week 1  1-19 Intro and Units
Week 2  19-29 Food Properties
Week 3  413-422 Food Microbiology (Death)
Week 4  51-55 & 257-266 Thermal Properties of Food & Conduction
Week 5  232-236 Thermocouples
Week 6  29-46 Mass Balance 187-200 Steam,
Week 7  266-274 &285-286 Convection, Nu and Frying
Week 8  Exam I (Laboratory Period - Oct 10th)
Week 10  84-88 Reynolds number
Week 11  65-73 Pumps 721-735 Extrusion
Week 12  337-350 USSHT
Week 13  422 – 433 Lethality Rate
Week 14  269-270 Radiation HT 371 – 379 Microwave
Week 15  Irradiation - Handout
Week 16  Exam II (As Assigned)

Course Outcome: Students will be able to apply the principles of food engineering to food processing systems to contrast methods and evaluate safety. Students will also be able analyze food processing scenarios and determine optimal solutions.

Learning Activities: These include classroom lectures, laboratory sessions and reports (with application based problems), group discussions, guest lectures on select topics (as available) and a term project with presentation.

Assessment Tools: Written exam(s), laboratory reports, and performance in term project/presentation will be used to assess students’ learning outcomes. In addition, observations during classroom discussion and reflections during laboratory sessions will also be conducted to determine success of the learning outcomes.

Exams: A midterm and final exam will be given. Note: All exams are open book, open notes, open computer.
Grading Policy:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Lab reports x 6 (6% each)</td>
<td>36%</td>
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<tr>
<td>Tutorial x 6 (3% each)</td>
<td>18%</td>
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<tr>
<td>Exam I (20% each)</td>
<td>20%</td>
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<tr>
<td>Exam II (20% each)</td>
<td>20%</td>
</tr>
<tr>
<td>Project (6% each)</td>
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<td><strong>Total</strong></td>
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</tbody>
</table>

- A: 90 – 100
- A-: 87-89.99
- B+: 85 – 86.99
- B: 80 – 84.99
- C+: 75 - 79.99
- C: 70 - 74.99
- D+: 65 - 69.99
- D: 60 - 64.99
- E: Below 60

For information on current UF policies for assigning grade points, see
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Attendance and Make-Up Work
Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

**Reports:** Laboratory and Tutorials reports are due before the beginning of the next laboratory or Tutorial. A 20% penalty will be assigned for late assignments or reports turned in within 3 days after the due date. No reports will be accepted after 3 days past the due date. Reports should be started early so that any questions may be asked well in advance of the due date (ideally during office hours). It is the student’s responsibility to ask any questions about the report before the last minute.

**Project:** The project has the same value as a laboratory report, and the same amount of effort is expected. The idea to improve an aspect of the course, from material, to laboratories and present your results to the class. Thus, the particulars of the project change each year. Details will be given the first week of class.

**Other Course Information:**

**Participation:** Students will not be assigned a grade based on their attendance, however, preparedness for the laboratory is essential and students who have not reviewed the laboratory manual will not be permitted to participate in the laboratory. If you do not attend the tutorial/laboratory, any report will not be marked.

**Services for Students with Disabilities**
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

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**Academic Honesty:** The University of Florida requires all members of its community to be honest in all endeavors. Cheating, plagiarism, and other acts diminish the process of learning. When students enroll at UF they commit themselves to honesty and integrity. Students are fully expected to adhere to the academic honesty guidelines they signed when they were admitted to UF. As a result of completing the registration form at the University of Florida, every student has signed the following statement:

"I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University." Furthermore, on work submitted for credit by UF students, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is to be assumed all work will be completed independently unless the assignment is defined as a group project as indicated explicitly by the professor. This policy will be upheld at all times in this course.

**Software Use:** All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

**Online Course Evaluation Process**
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**Student Complaints:**
Residential Course: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

**Campus Helping Resources:** Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/
  Counseling Services; Groups and Workshops; Outreach and Consultation; Self-Help Library; Wellness Coaching

- U Matter We Care, www.umatter.ufl.edu/
- Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/
### Class Schedule Summary:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Laboratory</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>Lab walk-around, safety</td>
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<td>Units/Eng. Toolbox</td>
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<tr>
<td>2</td>
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<td>Report Writing</td>
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<td>History</td>
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<td>2 Steam Flaking</td>
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<td>Frying</td>
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<td>SSHT</td>
<td>4 SSHT</td>
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<td>Heat Exchangers</td>
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<td>HE examples</td>
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<td>Radiation HT</td>
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<td>Examples</td>
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<td>Exam Prep/ Presentations</td>
<td>EXAM II</td>
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Cover Sheet: Request 13975

New Course Approval – FYCS

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<td>Submitter</td>
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<td>FYCS is requesting approval of this study abroad course to receive an official number from the state moving forward. Submitter: Kathryn Ivey <a href="mailto:kbeaty@ufl.edu">kbeaty@ufl.edu</a></td>
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No document changes

University Curriculum Committee

No document changes

Statewide Course Numbering System

No document changes

Office of the Registrar

No document changes

Student Academic Support System

No document changes

Catalog

No document changes

College Notified

No document changes
Course|New for request 13975

Info
Request: New Course Approval -- FYCS
Description of request: FYCS is requesting approval of this study abroad course to receive an official number from the state moving forward.
Submitter: Kathryn Ivey kbeaty@ufl.edu
Created: 6/10/2019 10:14:22 AM
Form version: 1

Responses
Recommended Prefix FYC
Course Level 4
Number XXX
Category of Instruction Advanced
Lab Code None
Course Title UF in Ireland Field Study
Transcript Title Ireland Field Study
Degree Type Baccalaureate
Delivery Method(s) Off-Campus
Co-Listing No
Co-Listing Explanation N/A
Effective Term Earliest Available
Effective Year Earliest Available
Rotating Topic? No
Repeatable Credit? No
Amount of Credit 3
If variable, # min 0
If variable, # max 0
S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 6
Course Description This course explores Irish culture through observation, participation, and reflection on a variety of Irish cultural experiences. Students will also participate, summarize, and report on a capstone project.
Prerequisites Prerequisites: 1 entry-level youth development course (FYC3001, FYC3201, EDF3110, EDF3132, EDF3135, or PSY2012)
Co-requisites N/A
Rationale and Placement in Curriculum This course serves as an international service-learning experience for the emerging youth professional and meets the goals for both Quest-3 and the requirements for the CALS International Studies minor. This course can also serve as one of the required 4 internal electives to the major course requirements.
Course Objectives 1. Implement mindfulness techniques during our study abroad experience.
2. Comprehend and describe a variety of cultural immersion experiences.
3. Recognize differences and similarities in Irish culture and their own culture.
4. Identify differences and similarities in Irish culture and their own culture.
5. Summarize the capstone project and its merit to the community center along with the UF in Galway and Gweedore team.


Weekly Schedule of Topics

Week 2: Belfast, Northern Ireland, Queens University Belfast, Giants Causeway, Dark Hedges

Week 3: Cliffs of Moher and the Burren National Park

Week 4: Galway International Arts Festival

Week 5: Sligo, Irish Traditional Music Evening at Teach Hiúdaí Beag, Glenveagh National Park and Castle

Week 6: Implement capstone project, Gola Island, Estuary and Coastal walk, Bunbeg Festival

Links and Policies

UNIVERSITY POLICIES

Academic Honesty
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Software Use
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Late Assignments
All late assignments will be penalized 10 points for each business day late. This penalty starts the minute after the assignment was due. It is the student's responsibility to ensure that assignments are received by the instructor by the time described on each assignment (double-check that your assignment successfully uploaded into Canvas). Only University-approved excuses will be accepted.

Attendance and Make-up Work
Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Communication
E-mail: Please use Canvas to communicate with your instructors. It will be checked daily but plan for a 48-hour response time. However, you may have cell phones on for UF Alert purposes. Students may use laptops with Canvas open only in order to take notes during lectures or to work on group projects during team meeting days.

Services for Students with Disabilities
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation 0001 Reid Hall, 352-392-8565, Disability Resource Center www.dso.ufl.edu/drc/
Campus Helping Resources
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University of Florida Counseling Services:
Resources are available on campus for students having personal problems or lacking clear career and academic goals that interfere with their academic performance. These resources include:
- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575
  www.counseling.ufl.edu/cwc
- Counseling Services
- Groups and Workshops
- Outreach and Consultation
- Self-Help Library
- Training Programs
- Community Provider Database
- Career Connections Center, First Floor J.W. Reitz Union, 352-392-1601
  www.career.ufl.edu/
- UMatter – UMatter, We Care
  http://www.umatter.ufl.edu/

Online Course Evaluations Process
Student assessment of instruction is an important part of the efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two to three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results

Student Complaints
Online Course: http://www.distance.ufl.edu/student-complaint-process
Grading Scheme
A = 93 - 100% C+ = 77 - 79.48%
A+ = 90 - 92.48% C = 73 - 76.49%
A+ = 87 - 89.48% C- = 70 - 72.49%
B = 83 - 86.49% D+ = 67 - 69.49%
B- = 80 - 82.49% D = 60 - 66.49%
E = 59.46% and below

Assignment Points Percentage
Podcast (1) 20 20%
Guided Cultural Journals
(4 @ 15 points each)
60 60%
Summary of Capstone Project
20 20%

Total 100 100%
Instructor(s) Dale Pracht, Ph.D.
Kate H. Fletcher, M.S.
UNIVERSITY COURSE DESCRIPTION
This course explores Irish culture through observation, participation, and reflection on a variety of Irish cultural experiences. Students will also participate, summarize, and report on a capstone project.

COURSE GOALS
By the end of this six-week study abroad experience the student will have gained knowledge of the practice of mindfulness, the Irish culture through a series of 10 excursions to a variety of destinations, traditional Irish music, cultural events and festivals, an international arts festival, and various sites throughout Ireland. Through these excursions and practice of mindfulness, students will be able to comprehend, apply, analyze, synthesize, and evaluate their own cultural experiences in the Republic of Ireland.

COURSE OBJECTIVES
1. Implement mindfulness techniques during our study abroad experience.
2. Comprehend and describe a variety of cultural immersion experiences.
3. Recognize differences and similarities in Irish culture and their own culture.
4. Identify differences and similarities in Irish culture and their own culture.
5. Summarize the capstone project and its merit to the community centre along with the UF in Galway and Gweedore team.

REQUIRED READINGS

ASSIGNMENTS
Podcast (1 at 20 points)
1. Listen to the mindfulness podcast located in Canvas assignments
2. Answer the questions included in the Canvas assignment
3. Submit your response via vlogging (multimedia submissions only)
4. Continue to be mindful throughout your time in Ireland

Guided Cultural Journals (4 at 15 points each) – connect to any of the 10 different cultural excursions
- Discuss a recent excursion for your guided cultural journal entry.
- You will write a 1-2-page journal summarizing what you learned from your recent cultural excursion. The questions you will answer in your journal will include:
  1. What happened and what did I do?
  2. What connections can you make between your culture and the culture you are observing?
  3. What knowledge have you gained as a result of this cultural excursion?
  4. What did you experience that will help you become more culturally competent?
  5. How did this experience change or reinforce your preconceived notions of Irish culture?

We encourage you to document your time on each excursion by using any of the following methods: note taking, picture taking, storytelling, audio recordings of your own interpretations of the experience, etc. (choose a method that works best for you and your learning style).

Summary of Capstone Project (20 points)
- Details to emerge based on the chosen Capstone Project for Ionad Naomh Pádraig during our time in Gweedore, Co. Donegal.
- Assignment will be provided once we arrive in Gweedore and work with Mary Coyle, Director of Ionad Naomh Pádraig to determine a needs assessment of the Centre. A final capstone project will be agreed upon and completed by the entire team.
- Your submission will be a summary of what our team and Mary will chose to complete for the Capstone Project.

GRADES & GRADING SCALE

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<tr>
<th>Assignment</th>
<th>Points</th>
<th>Percentage</th>
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<td>Podcast (1)</td>
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<td>20%</td>
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<tr>
<td>Guided Cultural Journals (4 @ 15 points each)</td>
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<td>Summary of Capstone Project</td>
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<tr>
<td>Total</td>
<td>100</td>
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C+ = 77 – 79.48%
C = 73 – 76.49%
C- = 70 – 72.49%
D+ = 67 – 69.49%
D = 60 – 66.49%
E = 59.49% and below
COURSE CALENDAR
Week 1: Aran Islands, Irish Traditional Music Evening, Galway Market
Week 2: Belfast, Northern Ireland, Queens University Belfast, Giants Causeway, Dark Hedges
Week 3: Cliffs of Moher and the Burren National Park
Week 4: Galway International Arts Festival
Week 5: Sligo, Irish Traditional Music Evening at Teach Huídait Beag, Glenveagh National Park and Castle
Week 6: Implement capstone project, Gola Island, Estuary and Coastal walk, Buncbeg Festival

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Communication
E-mail: Please use Canvas to communicate with your instructors. It will be checked daily but plan for a 48-hour response time. However, you may have cell phones on for UF Alert purposes. Students may use laptops with Canvas open only in order to take notes during lectures or to work on group projects during team meeting days.
Services for Students with Disabilities
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, Disability Resource Center www.dso.ufl.edu/drc/

Campus Helping Resources
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. Both the Counseling Center and Student Mental Health Services provide confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance. The Counseling Center is located at 301 Peabody Hall (next to Crister Hall). Student Mental Health Services is located on the second floor of the Student Health Care Center in the Infirmary.

University of Florida Counseling Services: Resources are available on campus for students having personal problems or lacking clear career and academic goals that interfere with their academic performance. These resources include:

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575
  www.counseling.ufl.edu/cwc
  - Counseling Services
  - Groups and Workshops
  - Outreach and Consultation
  - Self-Help Library
  - Training Programs
  - Community Provider Database
- Career Connections Center, First Floor J.W. Reitz Union, 352-392-1601
  www.career.ufl.edu/
- UMatter – UMatter, We Care
  http://www.umatter.ufl.edu/

Online Course Evaluations Process
Student assessment of instruction is an important part of the efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two to three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results

Student Complaints
Online Course: http://www.distance.ufl.edu/student-complaint-process
**Cover Sheet: Request 13496**

**WIS 4XXX, Wetland Management Techniques**

<table>
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<th>Info</th>
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<tr>
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<tr>
<td><strong>User:</strong> Eric Hellgren</td>
</tr>
<tr>
<td><strong>Comment:</strong> Consult demonstrates articulation on wetlands course with 2 other departments</td>
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<td><strong>Updated:</strong> 4/30/2019</td>
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<td><strong>UCN consult Peter Frederick2.pdf</strong></td>
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<tr>
<td><strong>Updated:</strong> 4/30/2019</td>
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</tbody>
</table>

**No document changes**

University Curriculum Committee

No document changes

Statewide Course Numbering System

No document changes

Office of the Registrar

No document changes

Student Academic Support System

No document changes

Catalog

No document changes

College Notified

No document changes
Course|New for request 13496

Info

Request: WIS 4XXX, Wetland Management Techniques
Description of request: This is a request for a new course for advanced undergraduates in wetland management. This is aimed at advanced undergraduates likely to pursue a career in private or agency management of wetlands, who need background in wetland management and measurement techniques as preparation for their coursework and research. This course fills an important gap between introductory wetland ecology, and the skills needed to become an entry level professional in wetland science.
Submitter: Peter Frederick pfred@ufl.edu
Created: 3/18/2019 12:55:30 PM
Form version: 4

Responses

Recommended Prefix WIS
Course Level 4
Number XXX
Category of Instruction Advanced
Lab Code C
Course Title Wetland Management
Transcript Title Wetland Management
Degree Type Baccalaureate

Delivery Method(s) On-Campus
Co-Listing Yes
Co-Listing Explanation This course is for a) undergraduate students interested in pursuing careers in wetland management and restoration, and b) graduate students interested in applying wetland management and restoration techniques in their research. Undergrads are graded on a combination of in class tests and exams, lab reports and practical quizzes. In addition to these, grads must work on a project with a management agency that involves production of a management or monitoring plan to the satisfaction of the agency.
Effective Term Fall
Effective Year 2019
Rotating Topic? No
Repeateable Credit? No

Amount of Credit 3

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 5
Course Description This course provides an overview of current wetland management and restoration techniques and approaches, including identification of soils and biota, instrumentation and monitoring techniques, and management and restoration methods. Learning will be accomplished through a combination of class lectures, field identification and hands-on field exercises.
Prerequisites none
Co-requisites none
Rationale and Placement in Curriculum This course fills an important gap for students interested in wetland ecology and management. Wetlands (SOS 4244) gives undergraduates a basic background in wetland ecology, but does not offer a lot of specifics in wetland management. The proposed course is designed in part as a next step, offering specific management techniques and restoration examples for undergraduates. This course fits an important gap for undergrads interested in professional experience with wetland management
Course Objectives By the end of this course, students will be able to:
Identify important plants, animals and biotic communities in southeastern wetlands,
Identify wetland soil types and what they tell about wetland history,
Understand components of hydrological budgets and how to measure them,
Be familiar with standard wetland delineation techniques
Recommend appropriate sampling techniques for tracking spatial and temporal biotic parameters in wetlands
Recommend different wetland management and restoration techniques for specific goals.

Course Textbook(s) and/or Other Assigned Reading
Florida Wetlands Delineation Manual:
http://www.dep.state.fl.us/water/wetlands/delineation/manual.htm
Wetland habitat classification: Florida Natural Areas Inventory:
http://fnai.org/naturalcommguide.cfm

Weekly Schedule of Topics
Unit I. Wetland ecology, communities, and indicators for management.

Week 1. Intro to course, wetland ecological principles
23-Aug Course introduction, wetland ecology overview

4 Sept FNAL community types I, typical and impaired Hydric soils as indicators - Dr. Mark Clark
6-Sep Wetland plant identification, community type field trip

Week 3. Wetland communities and indicators
11-Sep Soils and plants quiz, FNAL Community types II
13-Sep

Hydric soils identification lab – Meet at NATL

Week 4. Wetland Communities and indicators
18-Sep Wetland communities quiz, Herps as indicators
20-Sep Wetland fish and herp field exercise,

Week 5. Wetland animal ecology
25 Sept Monitoring Wetland birds
27-Sep

Animal indicators, plant presses due.

Unit II. Monitoring Wetlands
Week 6. Wetland Classification and Delineation
2 Oct Wetland Classification and delineation
4 Oct Wetland delineation field exercise

Week 7. Catchup, midterm
9-Oct Test I
11-Oct Herp & fish ID quiz, Aquatic bird id lab

Week 8. Monitoring biota
16-Oct Wetland Delineation quiz. Monitoring vegetation
18-Oct Field exercise- quantifying wetland vegetation

Week 9. Monitoring hydrology
23-Oct  Managing Hydrology
25-Oct  Open for field trip.

Week 10. Monitoring biota, field safety and logistics
30-Oct  Monitoring wetland hydrology – Dr. David Kaplan
1-Nov  Field safety & logistics

Unit III. Managing and restoring wetlands
Week 11. Hydrological management
6-Nov  Quiz on field safety. Wetland fire ecology
8-Nov  field trip to Sweetwater Wetlands Park

Week 12. Fire, Restoration
13-Nov Waterfowl and wetland management
15-Nov Shellfish and Seagrass restoration, Aquatic bird ID quiz

Week 13. Management, restoration
20-Nov Vector control
22-Nov Thanksgiving, no class

Week 14. Management and Restoration
27-Nov Wetland hydrology quiz. Chesapeake restoration
29-Nov

Kissimmee and Everglades restoration,

Week 16. Test
4-Dec  Test II
**Links and Policies**

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Safe Space & Mutual Respect: My classroom and my office are safe spaces. What that means for you, as a student, is that while in class or in my office you have the right to express yourself freely and openly (and appropriately), and have me, your TA and your classmates respect your expression. In these safe spaces, mutual respect is expected; this means that both parties have respect for one another (note: this does not mean we always agree). In order to foster this environment conducive of learning and growth experiences, please join me in treating your classmates with respect.
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Academic Honesty: In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. On all work submitted for credit by students at the university, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office. (Source: 2015-2016 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project in writing by the instructor.

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sscr/process/student-conduct-honor-code.

Software Use: All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Expectations for online usage -- please see "Netiquette document) at http://teach.ufl.edu/syllabus-templates/

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•University Counseling Center, 301 Peabody Hall, 392-1575, www.counsel.ufl.edu
•Career Resource Center, CR-100 JWRU, 392-1601, www.crc.ufl.edu/
•Student Mental Health Services, Rm. 245 Student Health Care Center, 392-1171, www.shcc.ufl.edu/smhhs/
Alcohol and Substance Abuse Program (ASAP)
Attention Deficit Hyperactivity Disorder (ADHD)
Center for Sexual Assault / Abuse Recovery & Education (CARE)
Eating Disorders Program
Employee Assistance Program
Students with Disabilities: The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic
accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. 0001 Reid Hall, 392-8565, www.dso.ufl.edu/drc/
Student Complaints: see https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

Grading Scheme Contributions to final grade for WIS 4xxx:

- Participation and attendance: 10%
- Lab quizzes: 15%
- Field trips and exercises: 10%
- Mid Term: 30%
- Final exam: 35%
- Total: 100%

Grading: A (94% or greater), A- (90%-93%), B+ (87%-89%), B (84%-86%), B- (80%-83%), C+ (77%-79%), C (74%-76%), C- (70%-73%), D+ (67%-69%), D (64%-66%), D- (60%-63%) E (<60). See https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx for UF grading policy.

Instructor(s) Dr. Peter Frederick, Research Professor, Department of Wildlife Ecology and Conservation.
### External Consultation Results (departments with potential overlap or interest in proposed course, if any)

<table>
<thead>
<tr>
<th>Department</th>
<th>Name and Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil and Water Sciences</td>
<td>Mark Clark, Associate Professor</td>
</tr>
<tr>
<td>Phone Number</td>
<td>E-mail</td>
</tr>
<tr>
<td>352-294-3115</td>
<td><a href="mailto:clarkmw@ufl.edu">clarkmw@ufl.edu</a></td>
</tr>
</tbody>
</table>

**Comments**

The proposed undergraduate and graduate Wetlands Management Techniques course will be highly complementary to both SWS4244 and SWS5248, which are classroom based introductory wetlands courses. The proposed techniques course would provide a more field and management focused opportunity for students. This course will fill a present gap in wetland related course offerings at UF specifically hands on learning opportunities related to measurement and monitoring techniques, identification of biota and soils as well as a focus on wetland restoration techniques.

<table>
<thead>
<tr>
<th>Department</th>
<th>Name and Title</th>
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<tbody>
<tr>
<td>ESSIE</td>
<td>David Kaplan, Associate Professor</td>
</tr>
<tr>
<td>Phone Number</td>
<td>E-mail</td>
</tr>
<tr>
<td>352-392-8439</td>
<td><a href="mailto:dkaplan@ufl.edu">dkaplan@ufl.edu</a></td>
</tr>
</tbody>
</table>

**Comments**

The proposed course will be of great interest and applicability at the graduate and undergraduate levels. It will serve as a good addition to the Wetlands Certificate and Concentration offered by Center for Wetlands. The material is complementary to, but not duplicative of, SWS 5248, EES 6309, and ENV 6508. Major differences from existing courses include this new course’s focus on identifying plants, animals, biotic communities, and soils; wetland delineation techniques; and sampling methods and techniques.
Syllabus

Wetlands Management and Restoration

WIS 4xxx section xxxx
Rooms 219 and 222 Newins-Ziegler Hall
3 credits

Instructor:  Dr. Peter Frederick, Department of Wildlife Ecology and Conservation
            pfred@ufl.edu, Ofc 352-846-0565
            Office: Building 87, next to Florida Cooperative Wildlife Research Unit
            (knock on entrance door, someone will open it)

Office hours: TBA

Class Time and location: TBA

Course Description
Wetlands ecology is an important and separate area of ecological inquiry because of the unique physical and biological attributes of wetlands. Management and restoration of wetland systems similarly requires a unique set of skills to be effective, and this course provides an overview of current wetland management and restoration techniques and approaches, including identification of soils and biota, measurement and monitoring techniques, and management and restoration techniques. Learning will be accomplished through a combination of class lectures, specimen identification, and hands-on field exercises.

Course Objectives:
By the end of this course, students will be able to:
  Identify important plants, animals and biotic communities in southeastern wetlands
  Identify wetland soil types and what they tell about wetland history
  Understand components of hydrological budgets and how to measure them
  Be familiar with standard wetland delineation techniques
  Recommend appropriate sampling techniques for tracking spatial and temporal biotic parameters in wetlands
  Recommend different wetland management and restoration techniques for specific goals.

Prerequisites or concurrency: none
Course requirements: Class attendance, field trip attendance, 5 lab practical quizzes, two lab practical exercises, two written tests. Note that two of the field trips will be on a Saturday, attendance is optional. These are the only coastal trips, and one of the few places we'll see shorebirds, ducks, and coastal habitats.

Course requirements for WIS 6934 that differ from WIS 4934: In addition to the regular course requirements above, graduate students enrolled in this class will also write a management and monitoring plan for one of the wetlands that we visit, in consultation with the manager.

Contributions to final grade for WIS 4934:

<table>
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<tbody>
<tr>
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<tr>
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Course Materials and Readings.

This course is heavily based on identification and hands on field experience, which will be supplemented with readings, and a combination of field guides and online material. This course relies considerably on material presented in class and encountered in the field – this is definitely not a class where you can miss classes and catchup by reading the materials on the Canvas site.

Required Materials:

*General*: Anderson, J.T. and C.T. Davis (eds). 2014. Wetland Techniques, Volumes 2 – 3. Springer Science Press, Dortrecht. *Note this book is available free to UF students*, see the Canvas site (under Files) for downloads. The two chapters (below) must be finished BEFORE the lectures that they pertain to. The goal is to supplement information from lectures and build
general knowledge about commonly accepted techniques for monitoring and assessing wetland biota and condition.

Material in these chapters will be on Mid-term and Final exams, and we will discuss much of the reading and situations in which different methodologies are used, and the ability to name and identify what is generally involved in each technique. For example, I might ask an exam question about the situation in which a funnel net might be used to capture turtles, or the most likely method to sample amphibians emerging from a pond postbreeding. These readings will also build your knowledge for more synthetic questions that involve designing a monitoring study for a particular purpose, that involves multiple forms of biota and wetland response. These are also likely to be on the tests.

Reading schedule:

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<th>Date due</th>
<th>Assignment</th>
<th>Folder (Canvas&gt;Files...)</th>
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<tbody>
<tr>
<td>September 6, field trip</td>
<td>Lightning Safety (be prepared to answer questions)</td>
<td>&gt;Wetland transport and safety</td>
</tr>
<tr>
<td>September 25, class</td>
<td>Chapter 7 in Wetland Wildlife Monitoring and Assessment (vol 2)</td>
<td>&gt;Wetland Techniques</td>
</tr>
<tr>
<td>September 27, class</td>
<td>Chapter 7 in Wetland Wildlife Monitoring and Assessment (vol 2)</td>
<td>&gt;Wetland Techniques</td>
</tr>
<tr>
<td>October 4, field trip</td>
<td>Methods section in the Florida Wetland Delineation Manual</td>
<td>&gt;Wetland classification and delineation</td>
</tr>
<tr>
<td>October 18, lab</td>
<td>Updated Wetland Plant Sampling Protocol</td>
<td>&gt;Wetland Plant quantification lab</td>
</tr>
<tr>
<td>November 1, class</td>
<td>Chapter 2 in Management of Wetlands for Wildlife (vol 3)</td>
<td>&gt;Wetland Techniques</td>
</tr>
<tr>
<td>November 6, class</td>
<td>Chapter 2 in Management of Wetlands for Wildlife (vol 3)</td>
<td>&gt;Wetland Techniques</td>
</tr>
<tr>
<td>November 8, field trip</td>
<td>Payne’s Prairie Sheetflow project pdf</td>
<td>In Files</td>
</tr>
<tr>
<td>November 15, class</td>
<td>Kellogg paper (Kellog et al 2013) and Mann and Powell paper (2007)</td>
<td>&gt;Shellfish restoration</td>
</tr>
<tr>
<td>November 20, class</td>
<td>Chapter 2 in Management of Wetlands for Wildlife (vol 3)</td>
<td>&gt;Wetland Techniques</td>
</tr>
<tr>
<td>November 29, class</td>
<td>Sklar paper (Sklar et al 2005) and Smith paper (Smith et al 2011)</td>
<td>&gt;Everglades and Chesapeake</td>
</tr>
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</table>


Vol. 3. Chapter 4. Management of Wetlands for Wildlife. Read before classes on 1, 6, 20 November.

Paynes Prairie Sheetflow project pdf. Read prior to the field trip to the Sweetwater Branch Park on 8 November.
Shellfish restoration – read and be prepared to discuss the Kellogg paper and the Mann and Powell papers, plus one other paper of your choice (Canvas- Files-Shellfish restoration) prior to class on 15 November.

Wetland delineation – read Methods section of the Florida Wetland Delineation Manual before the field trip on 4 October.

Wetland plant quantification – read Updated Wetland Plant Sampling Protocol prior to the lab on 18 October.

Lightning Safety – read and be prepared to answer questions about Lightning Safety before the first field trip on 6 September.

Everglades restoration: Read and be prepared to discuss Sklar et al. article and Smith article on Hole in the Donut before class on November 29th.

*Birds identification:* Sibley Field Guide to Birds – book or the eGuide app (recommended). https://play.google.com/store/apps/details?id=com.coolideas.eproducts.sibleybirds&feature=search_result. Other field guides such as Audubon guides or National Geographic guides are also acceptable, but you will need to find a source for calls (which are in the app).


*Wetland Plant identification:* Tobe, J. et al. 1998. Florida Wetland Plants: an identification manual. Florida Department of Environmental Protection and UF/IFAS Publications. The manual is no longer available in print, but we will make a pdf available on the Canvas site.

*Frogs and toads identification:* Johnson, S. A. and M.E. McGarrity. Identification Guide to the Frogs of Florida. University of Florida. SP 468, available from the University of Florida/The Institute of Food and Agricultural Sciences (UF/IFAS) Publications, P.O.Box 110011, Gainesville, Florida, 32611. The cost is $16.00 plus $7.00 shipping and handling. Note the book can be purchased without shipping and handling charge 9:00 – 5:00 pm at the IFAS bookstore, Building 440, 1371 Sabal Palm Drive on the UF campus (1-800-226-1764).

Frog calls: Use the Florida Frog Calls lookup https://www.pwrc.usgs.gov/Frogquiz/index.cfm?fuseaction=main.lookup&CFID=6366850&CF_TOKEN=288034ba03db9883-0B5283B7-D5D5-4EA0-BD3B20F30FA9B4A6

Wetland habitat classification: Florida Natural Areas Inventory:

Other resources:

Wetland Plants:


Aquatic and Wetland Plants in Florida – Plant management

Links to information and research on frogs and toads:
http://ufwildlife.ifas.ufl.edu/frogs/links.shtml


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Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

Academic Honesty: In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. On all work submitted for credit by students at the university, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office. (Source: 2015-2016 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project in writing by the instructor.

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to
appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/scr/process/student-conduct-honor-code.

Software Use: All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Expectations for online usage – please see “Netiquette document) at http://teach.ufl.edu/syllabus-templates/

**Campus Helping Resources**

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. Both the Counseling Center and Student Mental Health Services provide confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance. The Counseling Center is located at 301 Peabody Hall (next to Criser Hall). Student Mental Health Services is located on the second floor of the Student Health Care Center in the Infirmary.

- University Counseling Center, 301 Peabody Hall, 392-1575, www.counsel.ufl.edu
- Career Resource Center, CR-100 JWRU, 392-1601, www.crc.ufl.edu/
- Student Mental Health Services, Rm. 245 Student Health Care Center, 392-1171, www.shcc.ufl.edu/smhs/

Alcohol and Substance Abuse Program (ASAP)

Attention Deficit Hyperactivity Disorder (ADHD)

Center for Sexual Assault / Abuse Recovery & Education (CARE)

Eating Disorders Program

Employee Assistance Program

Students with Disabilities: The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. 0001 Reid Hall, 392-8565, www.dso.ufl.edu/drc/
Student Complaints: see https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf
Course schedule
WIS 6934/4934
Fall 2018

Unit I. Wetland ecology, communities, and indicators for management.

Week 1. Intro to course, wetland ecological principles
23-Aug Course introduction, wetland ecology overview

Week 2.

FNAI community types I, typical and impaired
4 Sept indicators - Dr. Mark Clark
6-Sep Wetland plant identification, community type field trip

Week 3. Wetland communities and indicators
11-Sep Soils and plants quiz, FNAI Community types II
13-Sep Hydric soils identification lab – Meet at NATL

Week 4. Wetland Communities and indicators
18-Sep Wetland communities quiz, Herps as indicators
20-Sep Wetland fish and herp field exercise,

Week 5. Wetland animal ecology
25 Sept Monitoring Wetland birds
27-Sep Animal indicators, plant presses due.

Unit II. Monitoring Wetlands

Week 6. Wetland Classification and Delineation
2 Oct Wetland Classification and delineation
4 Oct Wetland delineation field exercise

Week 7. Catchup, midterm
9-Oct Test I
11-Oct Herp & fish ID quiz, Aquatic bird id lab
Week 8. Monitoring biota
   16-Oct  *Wetland Delineation quiz.* Monitoring vegetation
   18-Oct  Field exercise- quantifying wetland vegetation

Week 9. Monitoring hydrology
   23-Oct  Managing Hydrology
   25-Oct  *Open for field trip.*

Week 10. Monitoring biota, field safety and logistics
   30-Oct  Monitoring wetland hydrology – Dr. David Kaplan
   1-Nov   Field safety & logistics

**Unit III. Managing and restoring wetlands**
Week 11. Hydrological management
   6-Nov   *Quiz on field safety.* Wetland fire ecology
   8-Nov   field trip to Sweetwater Wetlands Park

Week 12. Fire, Restoration
   13-Nov  Waterfowl and wetland management
   15-Nov  Shellfish and Seagrass restoration, *Aquatic bird ID quiz*

Week 13. Management, restoration
   20-Nov  Vector control
   22-Nov  *Thanksgiving, no class*

Week 14. Management and Restoration
   27-Nov  *Wetland hydrology quiz.* Chesapeake restoration
   29-Nov  Kissimmee and Everglades restoration,

Week 16. Test

   4-Dec   *Test II*
**Cover Sheet: Request 13906**

**Creation of Pathogenesis minor**

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No document changes
Minor|New for request 13906

Info

Request: Creation of Pathogenesis minor
Description of request: The Department of Microbiology and Cell Science would like to create an undergraduate minor in Pathogenesis, designed to provide a strong foundation in the field of microbial pathogenesis, with an emphasis on human infectious disease. This will be provided by academic coursework covering fundamental and advanced aspects of microbial pathogenesis from both the host and pathogen perspective.
Submitter: Kelly Rice kcrice@ufl.edu
Created: 12/1/2018 9:54:58 PM
Form version: 1

Responses

Existing Degree Program Name Microbiology and Cell Science
CIP Code 26.0503
Existing Minor(s) Bioinformatics minor
Proposed Minor Name Pathogenesis
Proposed Transcript Title (Maximum 50 characters) Pathogenesis
Code PAT
Credits 12
Number of Students 100
Effective Term Fall
Effective Year 2019
Percentage of Credits Available Fully Online 50-99%
Percentage of Credits Available Off-Campus <25%

Rationale and Place in Curriculum Rationale: This minor will provide a strong foundation for undergraduate students in the field of microbial pathogenesis, with an emphasis on human infectious disease. This will be provided by academic coursework covering fundamental and advanced aspects of microbial pathogenesis from both the host and pathogen perspective. Students looking to pursue graduate studies in host-pathogen research or entrance into professional human health (dental, medical, pharmacy) or veterinary schools would benefit from this proposed Pathogenesis minor.
Overlap: There is no overlap with the bioinformatics minor offered by our department. In perusing the 2018-2019 UF undergraduate catalogue list of minors (https://catalog.ufl.edu/UGRD/programs/), there is no overlap with minors offered by other degree programs at the university. Specifically, we have reviewed the descriptions and course requirements for the undergraduate minors in Health Promotion (https://catalog.ufl.edu/UGRD/colleges-schools/UGHHL/HEP_UMN/), Health Science (https://catalog.ufl.edu/UGRD/colleges-schools/UGPH/HEP_UMN/), and Public Health (https://catalog.ufl.edu/UGRD/colleges-schools/UGPB/PH_UMN/) and found no overlap with our proposed Pathogenesis minor. Additionally, we have reviewed courses and curriculum associated with the following departments and/or undergraduate majors, and no overlap appears to exist with undergraduate minors offered by these programs:
College of Medicine, Dept. Medical Genetics and Microbiology – only courses at graduate level and for first yr medical school; http://mgm.ufl.edu/academics/mgm-affiliated-graduate-courses/
College of Medicine, Dept. Biochemistry and Molecular Biology – no overlap
https://biochem.med.ufl.edu/academics/undergraduate-courses/
College of Medicine: Dept. Pathology, Immunology, and Laboratory Medicine – only graduate and medical school courses: https://pathology.ufl.edu/education/
Biology Dept (CALS and CLAS undergraduate majors) – no apparent overlap with current minors/concentrations
https://botany.biology.ufl.edu/courses/undergrad/
https://biology.ufl.edu/undergraduates/approvedcourses/
College of Dentistry, Dept. Oral Biology – all graduate or dental school courses - https://dental.ufl.edu/education/advanced-graduate-education-programs/curriculum/

Impacts on Other Programs We have permission from respective department chairs to include the following courses outside our major in the list of elective courses for the Pathogenesis minor (please see attached email correspondence):
*indicates offered online
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<td>PLP 4222C</td>
<td>Viral Pathogens of Plants</td>
<td>Plant Pathology</td>
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<td>*SWS 4307</td>
<td>Ecology of Waterborne Pathogens</td>
<td>Soil and Water Science</td>
<td>30-50</td>
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Re: Microbiology and Cell Science Pathogenesis minor

Loria, Rosemary
Fri 2/22/2019 3:29 PM

To: Rice, Kelly C <kcrice@ad.ufl.edu>; Oli, Monika <moli@ufl.edu>
Cc: Jones, Jeffrey B <bjones@ufl.edu>; Rollins, Jeffrey A <rollinsj@ufl.edu>; Polston, Jane E <jep@ufl.edu>; Ulloa, Jessica Laura <julloa@ufl.edu>

Hi Kelly and Monika,

Thank you for being in touch about your new minor in pathogenesis! I suspect that this will be a winner. We would be pleased to have you include our pathogen courses as electives.

Best,
Rose

Rosemary Loria
Professor and Chair
Department of Plant Pathology
IFAS, University of Florida
Gainesville, FL
(352) 273-4634
RLoria@UFL.edu
http://plantpath.ifas.ufl.edu/

On Feb 22, 2019, at 9:54 AM, Rice, Kelly C <kcrice@ad.ufl.edu> wrote:

Dear Dr. Loria,

The Department of Microbiology and Cell Science is developing an undergraduate Pathogenesis minor, and we would like your permission to include your department’s courses PLP 4242C (Bacterial Plant Pathogens), PLP 4260C (Introduction to Plant Pathogenic Fungi), and PLP 4222C (Viral Pathogens of Plants) as part of the list of electives that students could take as part of this minor. We estimate that no more than 10 students would seek registration in each course each semester it is taught.

Thank-you in advance for considering this request, and please let either of us know if you have any questions or would like more details about the Pathogenesis minor. We are also happy to meet with you and/or the course instructors to discuss this request.

Best Regards,
Kelly Rice,
Associate Professor, Microbiology and Cell Science
kcrice@ufl.edu

Monika Oli
Undergraduate Coordinator, Microbiology and Cell Science
moli@ufl.edu

Kelly C. Rice, PhD.
Associate Professor
Dept. of Microbiology and Cell Science, IFAS
University of Florida
Rm. 1147, Bldg. 981 Museum Rd.
PO BOX 110700
Gainesville, FL 32611-0700
352-392-1192 (office)
352-392-7797 (lab)
kcrice@ufl.edu
RE: Microbiology and Cell Science Pathogenesis minor

Whiles, Matthew R
Fri 3/8/2019 2:47 PM

To: Rice, Kelly C <kcrice@ad.ufl.edu>

Hey Kelly –

This is fine.

Matt R. Whiles
Chair and Professor, Soil and Water Sciences Department
Past President, Society for Freshwater Science

2181 McCarty Hall A
PO Box 110290
University of Florida
Gainesville, FL 32611-0290

Phone: (352) 294 3161
Email: mwhiles@ufl.edu

From: Rice, Kelly C <kcrice@ad.ufl.edu>
Sent: Friday, February 22, 2019 10:00 AM
To: Whiles, Matthew R <mwhiles@ufl.edu>
Subject: Microbiology and Cell Science Pathogenesis minor

Dear Dr. Whiles,

The Department of Microbiology and Cell Science is developing an undergraduate Pathogenesis minor, and we would like your permission to include your department’s course SWS 4307 Ecology of Waterborne Pathogens as part of the list of electives that students could take as part of this minor. We estimate that 30-50 students would seek registration in this course each semester it is taught.

Thank-you in advance for considering this request, and please let either of us know if you have any questions or would like more details about the Pathogenesis minor. We are also happy to meet with you and/or the course instructor to discuss this request.

Best Regards,
Kelly Rice,
Associate Professor, Microbiology and Cell Science
kcrice@ufl.edu

Monika Oli
Undergraduate Coordinator, Microbiology and Cell Science
moli@ufl.edu

Kelly C. Rice, PhD.
Associate Professor
Dept. of Microbiology and Cell Science, IFAS
University of Florida
Rm. 1147, Bldg. 981 Museum Rd.
PO BOX 110700
Gainesville, FL 32611-0700
352-392-1192 (office)
352-392-7797 (lab)
kcrice@ufl.edu
DRAFT Catalog copy for Undergraduate Pathogenesis minor

Minor
Pathogenesis
This minor provides a strong foundation in the field of microbial pathogenesis, with an emphasis on human infectious disease. This is provided by academic coursework covering fundamental and advanced aspects of microbial pathogenesis from both the host and pathogen perspective.

About this minor:
College: Agricultural and Life Sciences
Credits: 12, completed with minimum grades of C
Contact: Your major’s academic advisor

Overview:
This minor is open to all students who have a science background and who meet course prerequisites.

It is particularly appropriate for students majoring in animal sciences, biology, microbiology and cell science, plant pathology, public health, and zoology, and for any student interested in professional programs in dentistry, medicine, pharmacy, and veterinary medicine.

There are 9 required course credits, consisting of three 3-credit courses. One additional approved elective course (3 credits) must also be taken.

Overlap allowed with MCY or MCB major
Microbiology and cell science majors should meet with their academic advisors before applying to this minor to plan a program of study. Students must complete a minimum of six credits of coursework exclusive to the minor that cannot count toward the major(s) or other minors.

To be eligible for many upper-level botany courses, students must have completed:
MCB 3023 Principles of Microbiology
MCB 3023L Principles of Microbiology Laboratory
Required Courses (select 9 credits; *indicates can be taken online):

* MCB 4203 Bacterial Pathogens (3 credits) (Fall only)
* MCB 4503 General Virology (3 credits) (Spring only)
* MCB 4934 Antimicrobial Resistance (3 credits) (Spring only)
* MCB 4422 Probiotics (3 credits) (Spring only)
* PCB 4233 Immunology (3 credits) (Spring only)
* ZOO 4232 Human Parasitology (3 credits) (Fall only)

Approved Elective Course List (select 1 course from the list below; *indicates can be taken online)

Please note: Any of the required 3-credit courses listed above can be taken to satisfy the minor elective if not already taken as a required course

PLP 4242C Bacterial Plant Pathogens (3 Credits) (Spring only)
PLP 4260C Introduction to Plant Pathogenic Fungi (3 credits) (Spring only)
PLP 4222C Viral Pathogens of Plants (3 credits) (Summer only)
* SWS 4307 Ecology of Waterborne Pathogens (3 Credits) (Spring only)
Cover Sheet: Request 13830

Certificate of Plant Pest Risk Assessment and Management-Modification Request

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Certificate|Close-Modify for request 13830

Info

Request: Certificate of Plant Pest Risk Assessment and Management-Modification Request
Description of request: The request reduces the credit hour requirements for the Certificate of Plant Pest Risk Assessment and Management from 16 to 10 credits. The 10 credits listed for the modified curriculum are the original core courses listed within the certificate.
Submitter: Amanda Hodges achodges@ufl.edu
Created: 4/4/2019 8:07:24 AM
Form version: 1

Responses

Current Certificate Name Plant Pest Risk Assessment and Management
Effective Term Earliest Available
Effective Year Earliest Available
Requested Action Other (selecting this option will open additional form fields below)
Change Certificate Name? No
Proposed Certificate Name Plant Pest Risk Assessment and Management
Change Certificate Name on Transcript? No
Current Transcript Name Plant Pest Risk Assessment and Management
Proposed Transcript Name (21 char. max) PPRAM
Change Credit Hours? Yes
Current Credit Hours more than 12 (please detail in description how many credits)
Proposed Credit Hours 10
Change Certificate Description? Yes
Current Certificate Description The mobility of plant pests and plant diseases poses significant risks to world food and fiber production. The movement of pests and diseases can best be managed when the potential risks of relocation and the potential impact are understood. This certificate program goal is to equip graduate students, especially those in the Doctor of Plant Medicine (DPM) Program, to work in the regulatory sector on management of plant pests and disease risk.
Proposed Certificate Description (50 word max) Exciting career opportunities in plant pest regulation occur at the federal (U.S.), state government, and international level. The University of Florida Graduate Certificate in Plant Pest Risk Assessment and Management will further your knowledge of regulatory plant health programs and policies.
Change Certificate Prerequisites? No
Current Prerequisites Completion of a baccalaureate degree and admission criteria for the UF graduate school.
Proposed Prerequisites Completion of a baccalaureate degree and admission criteria for the UF graduate school.
Change Certificate Requirements? Yes
Current Requirements Current Core Courses/Internships (10 Credits)

1. Principles of Plant Pest Risk Assessment and Management, ALS 6942, 3 credits
2. Colloquium on Plant Pests of Regulatory Significance, ALS 6921, 1 credit
3. Internship in Plant Pest Risk Assessment and Management, ALS 6943, 6 credits

Elective Courses (at least 6 credits)
Students must select at least one course from each group
Group 1 – Technical (3 credits)
1. Exotic Species and Biosecurity Issues, ALS 6166, 3 credits
2. Epidemiology of Plant Disease, PLP 6404, 4 credits
3. GIS and Remote Sensing in Agriculture and Natural Resources, AOM 5431, 3 credits

Group 2 – Policy (3 credits)
1. Special Topics, AEB 6933, 1-6 credits
2. Ag and Natural Resources Communications Theory and Strategy, AEC 6540, 3 credits
3. Environmental Institutions and Regulations, ENV 6932P, 3 credits
4. Environmental Policy, ENV 5075, 3 credits
5. Special Problems in Environmental Engineering, ENV 6932, 1-4 credits
6. Natural Resources and Environmental Policy, ENV 6932, 3 credits
7. Policy Evaluation, PUP 6006, 3 credits
8. Policy Process, PUP 6007, 3 credits
9. Public Opinion and Agricultural and Natural Resource Issues, AEC 5060, 3 credits
10. Public Policy Analysis, PUP 6009, 3 credits
11. Public Policy and Agribusiness Firm, AEB 6225, 3 credits

Proposed Requirements

1. Principles of Plant Pest Risk Assessment and Management, ALS 6942, 3 credits
2. Colloquium on Plant Pests of Regulatory Significance, ALS 6921, 1 credit
3. Internship in Plant Pest Risk Assessment and Management, ALS 6943, 6 credits

Upon completion of 10 required core courses for the Certificate of Plant Pest Risk Assessment and Management and a comprehensive assessment, students will be awarded the certificate. The proposed certificate change reduces requirements to the essential regulatory plant health courses offered. All course offerings required for the certificate are available online.

Impact on Program

The proposed changes to the Certificate of Plant Pest Risk Assessment and Management will reduce certificate requirements to the core content currently assessed.

Rationale for Proposed Change(s)

Requirements have been reduced to core content with proposed changes. It is anticipated that the credit reduction from 16 to 10 credits will increase certificate enrollment for graduate students in discipline departments affiliated with the DPM program. The credit hour reduction will also improve certificate enrollment opportunity for DPM students.

Assessment Data Review

The following student learning outcomes associated with the Certificate of Plant Pest Risk Assessment and Management were reviewed as a component of this process:
1. Identify invasive pests and describe their biology and the diseases they cause.
2. Develop management options for invasive pests and diseases and methods to reduce invasiveness.
3. Describe risk assessment methodology.
4. Assimilate technical information related to invasive pests and diseases.
5. Conduct risk assessments using standard methodologies.
6. Communicate pest-related hazards impact on agriculture and natural resources.

It was determined that all student learning outcomes and program goals were achievable within the original core courses and internships available.

Academic Assessment Plan Changes

As the student learning outcomes were met with the original core content and internship requirement for the Certificate of Plant Pest Risk Assessment and Management, changes to the Academic Assessment Plan are not necessary.
**Cover Sheet: Request 13875**

**Biosecurity**

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<td>Tolulope Agunbiade <a href="mailto:agunbiade@ufl.edu">agunbiade@ufl.edu</a></td>
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Office of Institutional Planning and Research

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University Curriculum Committee

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OIRP Notified

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Student Academic Support System

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Catalog

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Certificate|New for request 13875

Info

Request: Biosecurity
Description of request: This certificate program is designed to equip students with the skill set necessary for the detection, surveillance, and management of agricultural and medical threats. Students will acquire critical thinking skills for the assessment, management, and communication of the biosecurity risks and challenges facing the 21st century.
Submitter: Tolulope Agunbiade agunbiade@ufl.edu
Created: 3/3/2019 10:25:49 PM
Form version: 1

Responses
Certificate Name Biosecurity
Transcript Title Biosecurity
Credits 10
Level Baccalaureate
CIP Code 26.0702
Degree Program Entomology and Nematology
Effective Term Spring
Effective Year 2020
Certificate Description This certificate program is designed to equip students with the skill set necessary for the detection, surveillance, and management of agricultural and medical threats. Students will acquire critical thinking skills for the assessment, management, and communication of the biosecurity risks and challenges facing the 21st century.
Requirements for Admission Applicants for this certificate program must have taken:
1. Integrated Principles of Biology 1 and Laboratory (BSC 2010 and 2010L), and Integrated Principles of Biology 2 and Laboratory (BSC 2011 and 2011L), OR
2. two semesters of introductory biology courses from an accredited higher institution.

Requirements for Completion The minimum requirements for completion of the certificate course are 10 credits taken as follows:
Required (7 credits)
1. ALS 4161, Exotic Species and Biosecurity Issues, 3 credits
2. ALS 4162, Consequences of Biological Invasions, 3 credits
3. ENY 4905, Internship, 1 credit

Elective (3 credits)
1. ENY 4202, Ecology of Vector-Borne Diseases, 2 credits
2. IPM 3022, Fundamentals of Plant-Pest Management, 3 credits
3. *ENY 4905, Insect Pest and Vector Management, 3 credits
4. ENY 3225C, Principles of Urban Pest Management, 3 credits
5. ENY 3510C, Turf and Ornamental Entomology, 3 credits
6. FOS 4202, Food Safety and Sanitation, 2 credits
7. FAS 4932, Invasion Ecology of Aquatic Animals, 3 credits
8. PLP 4104, Applied Plant Disease Management, 3 credits

All courses except the internship (ENY 4905) are letter graded.
*This course has been taught for several years as ENY 4905 to undergraduate students and the undergraduate course number has been applied for.

Rationale and Place in Curriculum The current drive for globalization, increased travel and trade in food and agricultural products, emerging infectious diseases, and the threat of bioterrorism makes the field of biosecurity an area of major and widespread importance. Biosecurity involves a strategic and integrated approach to excluding, eradicating, and managing threats to human, animal and plant life and health, the environment, and global trade. The overall goal of this certificate program is to equip students with the skill set necessary for the detection, surveillance, and management of agricultural and medical threats. Students will acquire critical thinking skills for the assessment, management, and communication of the biosecurity risks and challenges facing the 21st century. The biosecurity
certificate is designed to meet the career and professional needs of those interested in, or already in industry, public health, homeland security, international security, quarantine and pest management, and organizations involved in emergency preparedness, and general threat management.

**Student Learning Outcomes**

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<thead>
<tr>
<th>Associated Courses</th>
<th>Assessment Type</th>
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<tr>
<td>Content knowledge</td>
<td>1. Describe the biosecurity challenges facing the 21st century</td>
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<tr>
<td>2. Understand the attributes and characteristics that make particular animals, plants, and microorganisms biosecurity threats</td>
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<tr>
<td>3. Understand the principles of pest exclusion, eradication, and management as it relates to biosecurity</td>
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<td>4. Understand risk assessment, risk management, and risk communication in biosecurity measures</td>
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<tr>
<td>5. Understand the structure and roles of federal, state, and local governments, and international organizations in biosecurity issues ALS 4161, ALS 4162 Course-related exams, assignments and term paper Single faculty member</td>
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<tr>
<td>Critical thinking</td>
<td>6. Develop critical thinking skills for the detection, surveillance, and assessment of biosecurity risks</td>
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<td>7. Conduct risk assessment and develop risk management strategies ALS 4161, ALS 4162 Course-related exams, assignments and term paper Single faculty member</td>
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<td>Communication</td>
<td>8. Apply knowledge gained in the classroom to real world biosecurity issues</td>
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<td>9. Acquire hands-on communication and professional skills through interactions with researchers working in the field of biosecurity ENY 4905 Student evaluation by on-site supervisor or mentor Rubric</td>
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# Student Learning Outcomes

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**Cover Sheet: Request 13862**

**Horticultural Therapy**

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Certificate|New for request 13862

Info

Request: Horticultural Therapy
Description of request: This is an undergraduate-level certificate in horticultural therapy offered via distance learning technology. The goal is to provide students a background in people/plant relationships and train them to develop activities, treatment plans, and programs using plants to achieve therapeutic outcomes. The curriculum will align with the certification requirements of the American Horticultural Therapy Association for professional recognition as Horticultural Therapist-Registered (HTR).
Submitter: Elizabeth Diehl leahdiehl@ufl.edu
Created: 4/17/2019 12:18:01 PM
Form version: 1

Responses

Certificate Name Horticultural Therapy
Transcript Title Undergraduate Certificate in Horticultural Therapy
Credits 12
Level Baccalaureate
CIP Code 01.1101
Degree Program Plant Science
Effective Term Fall
Effective Year 2019
Certificate Description This certificate in horticultural therapy provides students a background in people/plant relationships and training in developing activities, treatment plans, and programs using plants to achieve therapeutic outcomes. The curriculum aligns with the certification requirements of the American Horticultural Therapy Association for professional recognition as Horticultural Therapist-Registered (HTR).
Requirements for Admission Sophomore standing or departmental permission. The certificate program accepts both UF students and non-degree seeking students.
Requirements for Completion PLS 3XXX Introduction to Horticultural Therapy (3 credit hours; letter graded)
PLS 4XXX Techniques in Horticultural Therapy (3 credit hours; letter graded)
PLS 4XXX Program Management in Horticultural Therapy (3 credit hours; letter graded)
PLS 4941 Fracutal Work Experience (3 credit hours; S/U) OR PLS4905 – Independent Study of Plant Science (3 credit hours; letter graded)

Rationale and Place in Curriculum The University of Florida is uniquely poised to become the powerhouse of horticultural therapy (HT) education, practice, and research in the southeast, nationally, and beyond. A HT certificate program can be informed, strengthened, promoted, and enhanced by the unique presence of all the disciplines at UF that are required to conduct the multidisciplinary research approaches needed to reveal the full complement of health and wellbeing benefits accruing from HT, gardening, and other beneficial people-plant interactions. A HT certificate will attract students and postgraduate professionals to the field and to campus, thereby creating a dynamic and comprehensive environment that will include a rigorous instructional program, and providing HT services to client populations at Wilmot Botanical Gardens. A HT certificate program will undoubtedly foster new interdisciplinary research endeavors at the frontier of agriculture and plants, medical sciences, and human health.

The proposed certificate is highly compatible as an academic component option within the current Plant Science major. The three lecture courses would be completely novel and unique to the current course offerings in the major and for horticulture offerings in general statewide. The work experience course in this certificate already exists in the Plant Science major and the HT internship will match the work experience requirements for the Plant Science major.

It is expected that many students enrolling in the certificate courses and program will have a major in plant science, horticulture, or botany. Students interested in recreational therapy or health and human performance may also be attracted to this certificate program. It is very likely that individuals having earned bachelor's degrees in plant science, horticulture, botany and human health and health-care
related fields such as physical and/or occupational therapy may also have a strong interest in this certificate program. There is survey data that HT courses and a HT certificate at the University of Florida will also attract the interest of students and individuals that are from academic backgrounds outside of health-related fields and the plant sciences.

Presently there are no courses on horticultural therapy offered at any university in the state system. Therefore, the horticultural therapy courses and the proposed certificate program will be completely novel and not redundant with any other course or certificate content offerings in the state-wide higher education curriculum.

To be an accredited certificate program recognized by the American Horticultural Therapy Association (AHTA) the HT curriculum must be taught by a horticultural therapist having HTR or HTM professional registration from the AHTA. Presently, Elizabeth (Leah) Diehl, Director of Therapeutic Horticulture at Wilmot Botanical Gardens on campus and lecturer in Environmental Horticulture has the HTM professional recognition from the AHTA. Because currently she is the only registered HT at UF, she will teach all HT courses in the certificate program.

**Student Learning Outcomes**

1. **Content:** Identify and characterize the role of plants, gardens, and nature in therapeutic interventions (PLS 3XXX HT Intro, PLS 4XXX HT Techniques, PLS 4XXX HT Programming, PLS4941 OR PLS4905). Assessment types: course-related quiz/exam; writing assignment.

2. **Content:** Identify strengths and deficits in populations served by horticultural therapy programs (PLS 3XXX HT Intro, PLS 4XXX HT Techniques, PLS4941 OR PLS4905). Assessment types: course-related quiz/exam; writing assignment; final project.

3. **Critical Thinking:** Evaluate and synthesize treatment tools and methods in horticultural therapy interventions (PLS 3XXX HT Intro, PLS 4XXX HT Techniques, PLS 4XXX HT Programming, PLS4941 OR PLS4905). Assessment types: course-related quiz/exam; writing assignment; final project.

4. **Critical Thinking:** Plan and execute treatment sessions based on client assessment data and facility goals (PLS 3XXX HT Intro, PLS 4XXX HT Techniques, PLS 4XXX HT Programming, PLS4941 OR PLS4905). Assessment types: course-related quiz/exam; writing assignment; final project.

5. **Communication:** Evaluate and report outcomes of sessions and program (PLS 4XXX HT Techniques, PLS 4XXX HT Programming, PLS4941 OR PLS4905). Assessment types: course-related quiz/exam; final project.

6. **Communication:** Propose and describe a comprehensive horticultural therapy program (PLS 4XXX HT Programming). Assessment types: writing assignment; final project.
New Certificate Transmittal Form

Department Name: Environmental Horticulture

Contact: Elizabeth Diehl leahdiehl@ufl.edu

CIP Code:

Certificate Name: Horticultural Therapy

Effective Year and Term: Fall, 2019

Amount of Credits: 12

Certificate Description: This is an undergraduate-level certificate in horticultural therapy offered via distance learning technology. The goal is to provide students a background in people/plant relationships and train them to develop activities, treatment plans, and programs using plants to achieve therapeutic outcomes. The curriculum will align with the certification requirements of the American Horticultural Therapy Association for professional recognition as Horticultural Therapist-Registered (HTR).

Requirements (Courses, and Internships): Twelve credits (four courses at 3 credits each) that consist of the courses listed below. Students are required to take the first three courses and then may choose between the work experience course or the independent study course as their fourth course. Students must maintain a C or better in each course to earn the certificate.

- PLS 3XXX Introduction to Horticultural Therapy (3 credit hours)
- PLS 4XXX Techniques in Horticultural Therapy (3 credit hours)
- PLS 4XXX Program Management in Horticultural Therapy (3 credit hours)
- PLS 4941 Practical Work Experience (3 credit hours) OR PLS4905 – Independent Study of Plant Science (3 credit hours)

Prerequisites:

Sophomore standing or permission from the department is required to enroll. Individual course prerequisites (below) also must be met before a student can enroll in any course.

- PLS 4XXX Techniques in Horticultural Therapy (prerequisite: Introduction to Horticultural Therapy)
- PLS 4XXX Program Management in Horticultural Therapy (prerequisites: Introduction to Horticultural Therapy and Techniques in Horticultural Therapy)
- PLS4941 Practical Work Experience (prerequisites: Introduction to Horticultural Therapy, Techniques in Horticultural Therapy, and Program Management in Horticultural Therapy or permission by the instructor)
• PLS4905 Independent Study of Plant Science (*prerequisites: Introduction to Horticultural Therapy, Techniques in Horticultural Therapy, and Program Management in Horticultural Therapy or permission by the instructor*)

**Certificate Level:** Baccalaureate

**Rationale and Place in Curriculum:** The University of Florida is uniquely poised to become the powerhouse of horticultural therapy (HT) education, practice, and research in the southeast, nationally, and beyond. A HT certificate program can be informed, strengthened, promoted, and enhanced by the unique presence of all the disciplines at UF that are required to conduct the multidisciplinary research approaches needed to reveal the full complement of health and wellbeing benefits accruing from HT, gardening, and other beneficial people-plant interactions. A HT certificate will attract students and postgraduate professionals to the field and to campus, thereby creating a dynamic and comprehensive environment that will include a rigorous instructional program, and providing HT services to client populations at Wilmot Botanical Gardens. A HT certificate program will undoubtedly foster new interdisciplinary research endeavors at the frontier of agriculture and plants, medical sciences, and human health.

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It is expected that many students enrolling in the certificate courses and program will have a major in plant science, horticulture, or botany. Students interested in recreational therapy or health and human performance may also be attracted to this certificate program. It is very likely that individuals having earned bachelor’s degrees in plant science, horticulture, botany and human health and health-care related fields such as physical and/or occupational therapy may also have a strong interest in this certificate program. There is survey data that HT courses and a HT certificate at the University of Florida will also attract the interest of students and individuals that are from academic backgrounds outside of health-related fields and the plant sciences.

Presently there are no courses on horticultural therapy offered at any university in the state system. Therefore, the horticultural therapy courses and the proposed certificate program will be completely novel and not redundant with any other course or certificate content offerings in the state-wide higher education curriculum.

To be an accredited certificate program recognized by the American Horticultural Therapy Association (AHTA), the HT curriculum must be taught by a horticultural therapist having
HTR or HTM professional registration from the AHTA. Presently, Elizabeth (Leah) Diehl, Director of Therapeutic Horticulture at Wilmot Botanical Gardens on campus and lecturer in Environmental Horticulture has the HTM professional recognition from the AHTA. Because currently she is the only registered HT at UF, she will teach all HT courses in the certificate program.

**Academic Learning Compact:** The Undergraduate Certificate in Horticultural Therapy is offered by the Department of Environmental Horticulture. Completion of the certificate will enable students to apply principles associated with the use of horticulture to increase human health and wellbeing. They will acquire knowledge about human dimensions of horticulture and its use as a vehicle for increased quality of life. Students will gain knowledge in treatment assessments, plans, and methods, as well as characteristics of special populations. They will acquire knowledge in the use of plants, gardens, and greenhouses in therapeutic programming as well as activity analysis and adaptation. Students will also learn about documentation, funding, and staff, volunteer, and program management. This program prepares students to work in horticultural therapy programs in diverse public and private settings.

**Before receiving the certificate, students must:**
- Create a comprehensive proposal for a horticultural therapy program
- Complete an internship OR independent study in horticultural therapy
- Achieve minimum grades of C in PLS 3XXX (Intro to HT), PLS 4XXX (Techniques in HT), PLS 4XXX (Program Management in HT), and PLS4941 (Practical Work Experience) or PLS4905 (Independent Study)

**Student Learning Outcomes:**

**Content**
1. Identify and characterize the role of plants, gardens, and nature in therapeutic interventions (PLS 3XXX HT Intro, PLS 4XXX HT Techniques, PLS 4XXX HT Programming, PLS4941 OR PLS4905)
2. Identify strengths and deficits in populations served by horticultural therapy programs (PLS 3XXX HT Intro, PLS 4XXX HT Techniques, PLS4941 OR PLS4905)

**Critical Thinking**
3. Evaluate and synthesize treatment tools and methods in horticultural therapy interventions (PLS 3XXX HT Intro, PLS 4XXX HT Techniques, PLS 4XXX HT Programming, PLS4941 OR PLS4905)
4. Plan and execute treatment sessions based on client assessment data and facility goals (PLS 3XXX HT Intro, PLS 4XXX HT Techniques, PLS 4XXX HT Programming, PLS4941 OR PLS4905)

**Communication**
5. Evaluate and report outcomes of sessions and program (PLS 4XXX HT Techniques, PLS 4XXX HT Programming, PLS4941 OR PLS4905)
6. Propose and describe a comprehensive horticultural therapy program (PLS 4XXX HT Programming)

Curriculum Map:
I = Introduced; R = Reinforced; A = Assessed

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Assessment Types
- Standardized post-tests (used in PLS 3XXX Intro, PLS 4XXX Techniques, PLS 4XXX Program Management – 75% of students to earn a 75% or higher on the exam)
- Written assignments (used in PLS 3XXX Intro, PLS 4XXX Techniques, PLS 4XXX Program Management – 75% of students to earn a 75% or higher on the exam)
- Final projects - (used in PLS 3XXX Intro, PLS 4XXX Techniques, PLS 4XXX Program Management – 75% of students to earn a 75% or higher on the exam)

Certificate Program Assessment
75% of students that enter the certificate program in horticultural therapy will obtain the certificate with a grade of C or higher within 3 years.
# Cover Sheet: Request 14077

**Modify Global Systems Agroecology Ph.D. Concentration**

### Info

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### Actions

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Office of the Registrar

No document changes

College Notified

No document changes
Concentration|Modify for request 14077

Info
Request: Modify Global Systems Agroecology Ph.D. Concentration
Description of request: We are incorporating 3 additional departments into the concentration, so these changes reflect adjustments to the curriculum to accommodate all areas.
Submitter: Theresa Martin tmoore72@ufl.edu
Created: 4/1/2019 9:45:24 AM
Form version: 1

Responses
Degree Level D - Doctoral Degree
Thesis or Non-Thesis Thesis
Concentration Global Systems Agroecology
Effective Term Earliest Available
Effective Year Earliest Available
Is this an undergraduate Innovation Academy Program No
Department/Degree/Majors to Offer Concentration Entomology/Nematology: Ph.D. in Entomology or Nematology
Agricultural and Biological Engineering: Ph.D. in Agricultural and Biological Engineering
School of Natural Resources and Environment: Ph.D. in Interdisciplinary Ecology

Current Curriculum for Concentration Please see the attachment which documents the current curriculum.
Proposed Concentration Changes With the addition of these additional departments/schools, the curriculum was revised to accommodate all disciplines.

Revised curriculum is part of the attached documents.
Pedagogical Rationale/Justification Currently, the UF departments of Agricultural and Biological Engineering and Entomology/Nematology have joined the M.S. Concentration. They, along with the School of Natural Resources and Environment, have expressed the desire to join the Ph.D concentration. There is an increased interest in students searching for Ph.D. interdisciplinary programs. This new concentration will address this need. The unique, fully online course requirements will further the long-term goals of all departments in providing expanded international exposure and hands-on learning in international cropping systems at the graduate level. These systems cross the full spectrum of traditional, alternative, and integrated agricultural production. Further, a transcript based credential in Global Agroecosystems provides proof of the experience level in global crop production this concentration will deliver, an achievement that many industry and academic positions currently demand at the PhD level.
Impacts on other programs We do not expect any needs for increased general education or common prerequisite courses as this concentration will use courses already offered. We do expect to provide the five participating academic units with the ability to at least maintain or gradually increase graduate student numbers by offering this concentration.
Due to the online coursework opportunity, we also see an ability to reach groups of students that would not be reached with traditional in-person coursework requirements.
Assessment Data Review Adding SLO's which were not in the originally approved proposal

SLO1: Identify and critically access issues related to the three core areas within agroecology (production, natural resource conservation, and societal impacts) in preparation for leadership roles in the discipline (in academia, government or the private sector).
SLO2: Describe the value of international research exposure and hands-on learning in agroecosystems to understanding the complexities of global crop production and preparing for a wide range of careers in sustainable agriculture.
SLO3: Apply multi-disciplinary knowledge of agricultural systems through research and course related critical thinking and communication skills (written, verbal, and interpersonal).
SLO4: Acquire essential professional skills necessary for success in the workplace through taking part to the various professional development opportunities provided at UF.
**Academic Learning Compact and Academic Assessment Plan**

SLO1: Assessment: GPA = or > 3.0 within concentration curriculum

SLO2: Assessment: complete and earn a passing grade in ALS 5905 International Research Immersion

SLO3: Assessment: successful completion of qualifying exams and dissertation defense (presentation and oral examination)

SLO4: Assessment: create and follow an Individual Development Plan (IDP) AND/OR complete a professional development workshop/course

All SLOs: What is the acceptable percentage of students who must achieve the outcome for you to consider the outcome to be met successfully for your program? 90 %
I approve the addition of SNRE, ABE, and ENT/NEM to the Agroecology Ph.D. Concentration.
Diane Rowland

Sent from my iPad

On Mar 28, 2019, at 7:36 AM, Martin, Theresa M <tmoore72@ufl.edu> wrote:

Dr. Whiles and Dr. Rowland,

All department curriculum groups have approved the attached curriculum modifications to incorporate ABE, ENT/NEM, and SNRE into the Ph.D. concentration.

Please reply to this e-mail indicating your approval/support of their request to join the concentration.

<image001.jpg>

Theresa Martin | Manager of Operations | UF/IFAS Agronomy Department  
G052A McCarty D, Box 110500 Gainesville, FL 32611 | 352-294-1590 | Fax: 352-392-1840  
tmoore72@ufl.edu

<Agroecology Ph.D. POS Mar19.pdf>
Approved

Matt R. Whiles
Chair and Professor, Soil and Water Sciences Department
Past President, Society for Freshwater Science

2181 McCarty Hall A
PO Box 110290
University of Florida
Gainesville, FL 32611-0290

Phone: (352) 294 3161
Email: mwhiles@ufl.edu

From: Martin, Theresa M <tmoore72@ufl.edu>
Sent: Thursday, March 28, 2019 7:36 AM
To: Rowland, Diane L <dlrowland@ufl.edu>; Whiles, Matthew R <mwhiles@ufl.edu>
Subject: Approval for SNRE, ABE and ENT to join Ph.D. concentration

Dr. Whiles and Dr. Rowland,

All department curriculum groups have approved the attached curriculum modifications to incorporate ABE, ENT/NEM, and SNRE into the Ph.D. concentration.

Please reply to this e-mail indicating your approval/support of their request to join the concentration.

Theresa Martin | Manager of Operations | UF/IFAS Agronomy Department
G052A McCarty D, Box 110500 Gainesville, FL 32611 | 352-294-1590 | Fax: 352-392-1840 | tmoore72@ufl.edu
Program of Study (POS) for Global Systems Agroecology Ph.D.

**Name:**

**UFID:**

**Major:**

1. **Required Core Courses**

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<th>Course Title</th>
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<td>Global Agroecosystems</td>
<td>3</td>
<td>Fall</td>
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<tr>
<td>AGR 5511</td>
<td>Crop Ecology</td>
<td>3</td>
<td>Fall</td>
<td></td>
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<tr>
<td>or AGR 5444</td>
<td>Ecophysiology of Crops</td>
<td></td>
<td></td>
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<tr>
<td>SWS 5050</td>
<td>Soils for Environmental Professionals</td>
<td>3</td>
<td>Fall or Spring</td>
<td></td>
</tr>
<tr>
<td>or AOM 6736</td>
<td>Principles and Issues in Environmental Hydrology</td>
<td></td>
<td>Fall</td>
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<tr>
<td>ALS 5905</td>
<td>International Research Immersion*</td>
<td>3</td>
<td>Any</td>
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* communicate with Romain Gloaguen about scheduling the course

2. **Chose one elective in each category** (refer to the list of online CALS courses to find a list of all online courses possibilities)

A. **Ecology**

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</thead>
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<tr>
<td>ENY 6203</td>
<td>Insect Ecology or Nematode Ecology <strong>REQUIRED FOR NEM/ENY</strong></td>
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<td>Fall</td>
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<tr>
<td>or NEM 6103</td>
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<td>Fall odd years</td>
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<td>PCB 5338</td>
<td>Principles of Ecosystem Ecology <strong>REQUIRED FOR SNRE</strong></td>
<td>3</td>
<td>Fall</td>
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<tr>
<td>FNR 6628</td>
<td>Watershed Restoration and Ecology</td>
<td>3</td>
<td>Fall even</td>
<td></td>
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<tr>
<td>FOR 6934</td>
<td>Ecology and Restoration of Invaded Ecosystems</td>
<td>3</td>
<td>Spring</td>
<td></td>
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<td>SWS 5305C</td>
<td>Soil Microbial Ecology</td>
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<td>Fall</td>
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<td>PLS 6626</td>
<td>Invasive Plant Ecology</td>
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B. **Modelling and Statistics**

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<th>Semester Offered</th>
<th>Grade</th>
</tr>
</thead>
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<td>ABE 6645C</td>
<td>Computer Simulation of Crop Growth and Management Responses <strong>REQUIRED FOR ABE</strong></td>
<td>3</td>
<td>Fall</td>
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<tr>
<td>AEC 6932</td>
<td>Statistical Thinking</td>
<td>3</td>
<td>Fall even</td>
<td></td>
</tr>
<tr>
<td>SWS 6932</td>
<td>A Field Guide to Modeling Processes</td>
<td>3</td>
<td>Summer B</td>
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<tr>
<td>FOR 6560</td>
<td>Bayesian Statistics</td>
<td>3</td>
<td>Spring even</td>
<td></td>
</tr>
<tr>
<td>FOR 6934</td>
<td>Introduction to Computer Programming with R</td>
<td>3</td>
<td>Spring</td>
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</table>

C. **Society**

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<th>Grade</th>
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<td>Principles and Practices of Diversity and Inclusion</td>
<td>3</td>
<td>Summer A</td>
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<td>AEC 6411</td>
<td>Organizational Leadership</td>
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<td>Fall even</td>
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<td>FNR 6669</td>
<td>Policy and Economics of Natural Resources</td>
<td>3</td>
<td>Spring</td>
<td></td>
</tr>
<tr>
<td>FOR 6934</td>
<td>Practical Legal Concepts in Natural Resources</td>
<td>3</td>
<td>Summer C</td>
<td></td>
</tr>
</tbody>
</table>
Program of Study (POS) for Global Systems Agroecology Ph.D

60 credits Total are Required Beyond a M.S

Approval/Signatures – Below the signature lines, type in the appropriate name

Student: ___________________________  UF Faculty Chair Name: ___________________________

UF Faculty Member Name: ___________________________

UF Faculty Member Name: ___________________________

UF Faculty Member or Special Member Name: ___________________________

Graduate Coordinator Review date/approval: ___________________________

Work closely with your committee chair to develop your POS

Please make sure to refer to your major’s graduate handbook for detailed information about the specific requirements on your POS

For questions please contact
Romain Gloaguen
romain.gloaguen@ufl.edu
PhD Concentration in Global Systems Agroecology

The current UF Agroecology program is the first online Agroecology Master of Science (MS) in the US and is offered through a joint collaboration between the Agronomy and Soil & Water Science (SWS) Departments at the University of Florida (UF). A unique aspect of the Agroecology program at UF is its strong foundation in ecological principles that drive the study of diverse cropping systems across the world. These systems cross the full spectrum of agricultural production from traditional, alternative, and integrated soil-plant-livestock systems. The program is a success, with 15 enrollments in the first 18 months after the program inception, and the first MS students just graduating within the last six months. To build upon this success, a PhD concentration in Global Systems Agroecology will enhance and expand UF’s Agroecology graduate education and training and will address the needs of many post-MS students inquiring about such a concentration since the MS concentration opened.

Requirements for entry

Students wishing to enroll in the Global Systems Agroecology concentration should have a Master’s degree from a regionally accredited college or university with a major in agronomy or soil science or an equivalent degree in an allied field such as horticulture, entomology, agricultural or environmental engineering, natural resources or ecology.

Requirements for completion

The PhD concentration in Global Systems Agroecology will have a total of 30-31 credits broken down as follows:

Eighteen (18) credits will come from core courses; some of these core requirements may be fulfilled through completion of the MS concentration in Agroecology. If any of the core classes were already taken during the Master’s degree, they must be replaced by a class from the elective course list in the Global Systems Agroecology PhD concentration.

Nine (9) to ten (10) credits from elective courses; students must take one elective course from each of the following areas: social science and economics, modelling, and ecology.

Three (3) credits will come from the completion of an international internship during the program. This will take place at one of several international partner institutions (See Attachment 1). All other departmental requirements (Agronomy or SWS) must also be met.

Core courses (18 credits):

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<tr>
<td>ALS 5155</td>
<td>Global Agroecosystems</td>
<td>Agronomy/Soil &amp; Water</td>
<td>3</td>
<td>Fall</td>
<td>Fundamentals of agroecology and sustainability</td>
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<td>SWS 5050</td>
<td>Soils Env. Professionals</td>
<td>Soil &amp; Water</td>
<td>3</td>
<td>Spring</td>
<td>Role of soils in the environment</td>
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<td>AGR5511</td>
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<td>Interactions between crops and their environments</td>
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<td>AGR5444</td>
<td>Ecophysiology of Crop Production</td>
<td>Agronomy</td>
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<td>Physiological, ecological, and environmental responses that impact growth, development, and yield of crops</td>
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<td>AGR6233</td>
<td>Tropical Grassland Agroecosystems</td>
<td>Agronomy</td>
<td>3</td>
<td>Fall of odd years</td>
<td>Importance, ecology, physiology, management, and utilization of planted grasslands in the tropics and subtropics</td>
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<td>SWS5246</td>
<td>Water Sustainability</td>
<td>Soil and Water</td>
<td>3</td>
<td>Spring</td>
<td>Human impacts on hydrologic ecosystems with quantitative measures of impacts and mitigation/attenuation efforts</td>
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</table>

**Elective courses (9-10 credits; one course from each category):** PhD students in Agroecology are required to take at least one course from each of the groups below:

**Social Science and Economics:**
- FNR6669 - Policy and Economics of Natural Resources (3 credits) *(highly recommended)*
- AGG5607 – Communicating in Academia (3 credits)
- AEC 5454 - Leadership Development for Extension and Community Nonprofit Organizations (3 credits)
- AEC 6325 - History and Philosophy of Agricultural Education (3 credits)
- AEC 6211 – Delivering Educational Programs in Agricultural Settings (3 credits)

**Modelling:**
- ABE 5643C - Biological Systems Modeling (3 credits) *(highly recommended)*
- ABE 5646 - Biological and Agricultural Systems Simulation (3 credits)
- ABE 5015 - Empirical Models of Crop Growth & Yield Response (3 credits)
- ABE 6254 - Simulation of Agricultural Watershed Systems (3 credits)
- ABE 6644 - Agricultural Decision Systems (3 credits)
- ABE 6933 - Crop Simulation (3 credits)

**Ecology:**
- PCB 5338 - Principles of Ecosystem Ecology (3 credits) *(highly recommended)*
- WIS 5496 - Research Design in Wildlife Ecology (Fall - 3 credits)
- WIS 5521 - Plant-Animal Interactions (every other year – 3 credits)
- WIS 5555C - Conservation Biology (Fall – 3 credits)
- PCB 6447C - Community Ecology (4 credits)

**International internship (3 credits):** All PhD students in the Agroecology concentration must have an understanding of international cropping systems. The program currently has international partner institutions with which academic agreements are in place (Attachment 2). The student and committee will define the most applicable international location, depending on the specifics of each program. Each student must spend from three to six months abroad. During this time, the student can enroll in distance education classes offered by the program as well as attend local classes offered by the international institution. Students are also expected to develop part of their research while abroad or participate in ongoing research at the host institution with resident faculty mentors.
**Suggested semester-by-semester plan:**

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<td>AGR 5511 Crop Ecology</td>
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<td>SWS 5050 Soils Env. Professionals</td>
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<td>SWS 5246 Water Sustainability</td>
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<td>AGR 6233 Tropical Grassland Agroecosystems</td>
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<td>PCB 5338 - Principles of Ecosystem Ecology</td>
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Attachment 1: List of foreign institutions

- Universidade Federal Rural de Pernambuco (UFRPE), Brazil
- Harper Adams University (HAU), United Kingdom
  ISARA-Lyon, France
- Western Sydney University, Australia
- University of New England, Australia
**Cover Sheet: Request 14082**

**Marine Sciences**

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<td>The B.S. in Marine Sciences degree program replaces the Interdisciplinary Studies-Marine Sciences major specializations that have been offered in parallel since 2012 through the Colleges of Liberal Arts and Sciences (CLAS) and Agricultural and Life Sciences (CALS) at the University of Florida (UF). Presently we have 120 undergraduates who are declared majors in the Interdisciplinary Studies Marine Sciences major between the two colleges. Our collaboratively administered Marine Sciences major is multi-disciplinary and broad in scope; every student takes courses across the fields of biology, chemistry, geology, and physics of marine, estuarine, and coastal environments, as well as the conservation and management of marine resources. Our interdisciplinary approach allows students to tailor a curriculum that suits their interests and career goals by emphasizing the physical or biological sciences (CLAS track) or the fields of ecology, conservation, and management (CALS track).</td>
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<tr>
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<td>College</td>
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<tr>
<td>No document changes</td>
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</tr>
</tbody>
</table>
## APPENDIX A

### TABLE 1-A  
PROJECTED HEADCOUNT FROM POTENTIAL SOURCES  
(Baccalaureate Degree Program)

<table>
<thead>
<tr>
<th>Source of Students (Non-duplicated headcount in any given year)*</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></td>
<td>HC</td>
<td>FTE</td>
<td>HC</td>
<td>FTE</td>
<td>HC</td>
</tr>
<tr>
<td>Upper-level students who are transferring from other majors within the university**</td>
<td>9</td>
<td>9</td>
<td>6</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Students who initially entered the university as FTIC students and who are progressing from the lower to the upper level***</td>
<td>101</td>
<td>101</td>
<td>111</td>
<td>111</td>
<td>120</td>
</tr>
<tr>
<td>Florida College System transfers to the upper level***</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Transfers to the upper level from other Florida colleges and universities***</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Transfers from out of state colleges and universities***</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other (Explain)***</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| Totals                                                       | 120    | 120    | 128    | 128    | 137    | 137    | 141    | 141    | 144    | 144    |

* List projected annual headcount of students enrolled in the degree program. List projected yearly cumulative ENROLLMENTS instead of admissions.  
** If numbers appear in this category, they should go DOWN in later years.  
*** Do not include individuals counted in any PRIOR CATEGORY in a given COLUMN.
### APPENDIX A

#### TABLE 1-B

**PROJECTED HEADCOUNT FROM POTENTIAL SOURCES**

*(Graduate Degree Program)*

<table>
<thead>
<tr>
<th>Source of Students (Non-duplicated headcount in any given year)**</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>HC</td>
<td>FTE</td>
<td>HC</td>
<td>FTE</td>
<td>HC</td>
</tr>
<tr>
<td>Individuals drawn from agencies/industries in your service area (e.g., older returning students)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Students who transfer from other graduate programs within the university**</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Individuals who have recently graduated from preceding degree programs at this university</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Individuals who graduated from preceding degree programs at other Florida public universities</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Individuals who graduated from preceding degree programs at non-public Florida institutions</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Additional in-state residents***</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Additional out-of-state residents***</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Additional foreign residents***</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>Other (Explain)***</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

---

* List projected annual headcount of students enrolled in the degree program. List projected yearly cumulative ENROLLMENTS instead of admissions.
** If numbers appear in this category, they should go DOWN in later years.
*** Do not include individuals counted in any PRIOR category in a given COLUMN.
## APPENDIX A

### TABLE 3
ANTICIPATED REALLOCATION OF EDUCATION & GENERAL FUNDS*

<table>
<thead>
<tr>
<th>Program and/or E&amp;G account from which current funds will be reallocated during Year 1</th>
<th>Base before reallocation</th>
<th>Amount to be reallocated</th>
<th>Base after reallocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geological Sciences</td>
<td>311,450</td>
<td>107,293</td>
<td>$204,156</td>
</tr>
<tr>
<td>Biology</td>
<td>89,099</td>
<td>17,258</td>
<td>$71,841</td>
</tr>
<tr>
<td>Coastal Engineering</td>
<td>125,315</td>
<td>18,534</td>
<td>$106,781</td>
</tr>
<tr>
<td>Museum of Natural History</td>
<td>115,698</td>
<td>53,779</td>
<td>$61,919</td>
</tr>
<tr>
<td>School of Forest Resources and Conservation</td>
<td>748,231</td>
<td>65,226</td>
<td>$683,005</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$1,389,793</strong></td>
<td><strong>$262,091</strong></td>
<td><strong>$1,127,702</strong></td>
</tr>
</tbody>
</table>

* If not reallocating funds, please submit a zeroed Table 3
## APPENDIX A

### TABLE 4

**ANTICIPATED FACULTY PARTICIPATION**

<table>
<thead>
<tr>
<th>Faculty Code</th>
<th>Faculty Name or &quot;New Hire&quot; Highest Degree Held Academic Discipline or Speciality</th>
<th>Rank</th>
<th>Contract Status</th>
<th>Initial Date for Participation in Program</th>
<th>Mos. Contract Year 1</th>
<th>FTE Year 1</th>
<th>% Effort for Prg. Year 1</th>
<th>PY Year 1</th>
<th>Mos. Contract Year 5</th>
<th>FTE Year 5</th>
<th>% Effort for Prg. Year 5</th>
<th>PY Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Andrea Dutton, PhD Geological Sciences</td>
<td>Asst. Prof.</td>
<td>Tenure track</td>
<td>Fall 2020</td>
<td>9</td>
<td>0.75</td>
<td>0.71</td>
<td>0.53</td>
<td>9</td>
<td>0.75</td>
<td>0.71</td>
<td>0.53</td>
</tr>
<tr>
<td>A</td>
<td>John Jaeger, PhD Geological Sciences</td>
<td>Assoc. Prof.</td>
<td>Tenured</td>
<td>Fall 2020</td>
<td>9</td>
<td>0.75</td>
<td>0.29</td>
<td>0.22</td>
<td>9</td>
<td>0.75</td>
<td>0.29</td>
<td>0.22</td>
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<tr>
<td>A</td>
<td>Arnolfo Valle-Levinson, PhD Coastal Engineering</td>
<td>Professor</td>
<td>Tenured</td>
<td>Fall 2020</td>
<td>9</td>
<td>0.75</td>
<td>0.15</td>
<td>0.11</td>
<td>9</td>
<td>0.75</td>
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<td>0.11</td>
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<tr>
<td>A</td>
<td>Andy Zimmerman, PhD Geological Sciences</td>
<td>Assoc. Prof.</td>
<td>Tenured</td>
<td>Fall 2020</td>
<td>9</td>
<td>0.75</td>
<td>0.14</td>
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<td>9</td>
<td>0.75</td>
<td>0.14</td>
<td>0.10</td>
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<tr>
<td>A</td>
<td>Matt Smith, PhD Geological Sciences</td>
<td>Senior Lecturer</td>
<td>Non-tenure track</td>
<td>Fall 2020</td>
<td>9</td>
<td>0.75</td>
<td>0.07</td>
<td>0.05</td>
<td>9</td>
<td>0.75</td>
<td>0.07</td>
<td>0.05</td>
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<tr>
<td>A</td>
<td>Gustav Paslany, PhD Marine Biodiversity</td>
<td>Curator</td>
<td>Tenured</td>
<td>Fall 2020</td>
<td>12</td>
<td>1.00</td>
<td>0.46</td>
<td>0.46</td>
<td>12</td>
<td>1.00</td>
<td>0.46</td>
<td>0.46</td>
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<tr>
<td>A</td>
<td>Joan Herrera, PhD Marine Invertebrate Biology</td>
<td>Adjunct</td>
<td>Non-tenure track</td>
<td>Fall 2020</td>
<td>5</td>
<td>0.38</td>
<td>1.00</td>
<td>0.38</td>
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<tr>
<td>A</td>
<td>Mike Gil, PhD Marine Ecology</td>
<td>Adjunct</td>
<td>Non-tenure track</td>
<td>Fall 2020</td>
<td>5</td>
<td>0.38</td>
<td>0.20</td>
<td>0.08</td>
<td>5</td>
<td>0.38</td>
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<tr>
<td>A</td>
<td>Nicole Gerlach, PhD Biology</td>
<td>Lecturer</td>
<td>Non-tenure track</td>
<td>Fall 2020</td>
<td>9</td>
<td>0.75</td>
<td>0.10</td>
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<tr>
<td>A</td>
<td>Damian Adams, PhD Marine Policy &amp; Economics</td>
<td>Asst. Prof.</td>
<td>Tenure track</td>
<td>Fall 2020</td>
<td>12</td>
<td>1.00</td>
<td>0.02</td>
<td>0.02</td>
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<tr>
<td>A</td>
<td>Rob Ahearn, PhD Quantitative Marine Fisheries</td>
<td>Asst. Prof.</td>
<td>Tenure track</td>
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<td>12</td>
<td>1.00</td>
<td>0.03</td>
<td>0.03</td>
<td>12</td>
<td>1.00</td>
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<tr>
<td>A</td>
<td>Daryl Parkyn, PhD Biology of Marine Fishes</td>
<td>Research Assoc.</td>
<td>Non-tenure track</td>
<td>Fall 2020</td>
<td>12</td>
<td>1.00</td>
<td>0.15</td>
<td>0.15</td>
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<td>0.15</td>
<td>0.15</td>
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<tr>
<td>A</td>
<td>Ed Phillips, PhD Phytoplankton Ecology</td>
<td>Professor</td>
<td>Tenured</td>
<td>Fall 2020</td>
<td>12</td>
<td>1.00</td>
<td>0.06</td>
<td>0.06</td>
<td>12</td>
<td>1.00</td>
<td>0.06</td>
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<tr>
<td>A</td>
<td>Don Behniger, PhD Marine Ecology</td>
<td>Assoc. Prof.</td>
<td>Tenured</td>
<td>Fall 2020</td>
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<td>0.09</td>
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<tr>
<td>A</td>
<td>William Patterson, PhD Marine Fisheries Ecology</td>
<td>Assoc. Prof.</td>
<td>Tenured</td>
<td>Fall 2020</td>
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<td>1.00</td>
<td>0.03</td>
<td>0.03</td>
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<td>1.00</td>
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<td>0.03</td>
</tr>
<tr>
<td>A</td>
<td>Shirley Baker, PhD Invertebrate Biology</td>
<td>Assoc. Prof.</td>
<td>Tenured</td>
<td>Fall 2020</td>
<td>12</td>
<td>1.00</td>
<td>0.10</td>
<td>0.10</td>
<td>12</td>
<td>1.00</td>
<td>0.10</td>
<td>0.10</td>
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Total Person-Years (PY)

|           | 2.49 | 2.49 |

### Faculty Code

<table>
<thead>
<tr>
<th>Faculty Code</th>
<th>Source of Funding</th>
<th>PY Workload by Budget Classification</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Year 1</td>
<td>Year 5</td>
</tr>
<tr>
<td>A</td>
<td>Existing faculty on a regular line</td>
<td>Current Education &amp; General Revenue</td>
</tr>
<tr>
<td>B</td>
<td>New faculty to be hired on a vacant line</td>
<td>Current Education &amp; General Revenue</td>
</tr>
<tr>
<td>C</td>
<td>New faculty to be hired on a new line</td>
<td>New Education &amp; General Revenue</td>
</tr>
<tr>
<td>D</td>
<td>Existing faculty hired on contracts/grants</td>
<td>Contracts/Grants</td>
</tr>
<tr>
<td>E</td>
<td>New faculty to be hired on contracts/grants</td>
<td>Contracts/Grants</td>
</tr>
</tbody>
</table>

Overall Totals for Year 1: 2.49

Overall Totals for Year 5: 2.49
EDUCATION
Ph.D., Food and Resource Economics University of Florida, 2007
M.Phil., Environmental Policy University of Cambridge, 2004
J.D./M.A.B., Law & Agribusiness University of Florida, 2001
B.S. summa cum laude, Economics University of Florida, 1997

PROFESSIONAL EXPERIENCE
2016 - present: Associate Professor, Natural Resource Economics and Policy, School of Forest Resources and Conservation, and Food and Resource Economics Department, University of Florida, Gainesville, FL.

Affiliate faculty status: Florida Climate Consortium, School of Natural Resources and the Environment, Tropical Conservation and Development Program, UF Water Institute.

2010 - 2016: Assistant Professor, Natural Resource Economics and Policy, School of Forest Resources and Conservation, and Food and Resource Economics Department, University of Florida, Gainesville, FL. 2010 – 2016.

2007 - 2010: Assistant Professor, Natural Resource and Environmental Economics, Department of Agricultural Economics, Oklahoma State University, Stillwater, OK.

AWARDS
2017 - 2019 UF Term Professorship
2016 USDA-NIFA Partnership Award for Mission Integration
2016 NACTA Educator Award
2015 UF Excellence Award for Assistant Professors (awarded to top 10 Asst. Profs. at UF)
2015 UF-IFAS Early Career Scientist Award
2013, 2015 UF-IFAS High Impact Research Publication Award
2011 Outstanding Faculty Award, Forestry Graduate Student Organization, University of Florida
2011 1st place poster, Society of American Foresters National Convention
2008 Outstanding Dissertation Award, American Agricultural Economics Association, Honorable Mention
2007 Prochaska Outstanding Doctoral Dissertation Award, Food & Resource Economics, University of Florida

SELECT FUNDED PROJECTS (of $26.7 million total)

<table>
<thead>
<tr>
<th>Duration</th>
<th>Short Title</th>
<th>Funding Source</th>
<th>Total Amount</th>
<th>Collaborators</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017-2022</td>
<td>Agricultural Water Security through Sustainable Use of the Floridan Aquifer: An Integrated Assessment of Economic and Environmental Impacts</td>
<td>USDA – NIFA</td>
<td>$5,000,000</td>
<td>Graham, Kaplan, et al.</td>
<td>Co-PI</td>
</tr>
<tr>
<td>2017-2020</td>
<td>Ecosystem service tradeoffs, landowner incentives, and optimal policy design to promote sustainable Longleaf Pine agroecosystems</td>
<td>USDA – NIFA</td>
<td>$499,729</td>
<td>Dwivedi, Lal, Susaeta</td>
<td>PI</td>
</tr>
<tr>
<td>2017-2018</td>
<td>Ecosystem service tradeoffs and management dynamics in restored ecosystems</td>
<td>UF – IFAS Ordway Swisher Biological Station</td>
<td>$116,352</td>
<td>Vogel, Susaeta, Cohen, Bacon</td>
<td>Co-PI</td>
</tr>
<tr>
<td>2016-2017</td>
<td>Potential tree pest invasions from Cuba: Pest diversity, economic assessment of threat, and Cuban policy analysis</td>
<td>USDA – APHIS</td>
<td>$228,000</td>
<td>Hulcr, Soto, et al.</td>
<td>PI</td>
</tr>
<tr>
<td>Year</td>
<td>Project Description</td>
<td>Funding Body</td>
<td>Amount</td>
<td>PI</td>
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<td>----------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>--------------------</td>
<td>----------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>2016-2018</td>
<td>Manipulating Plant Species Composition and Livestock Grazing to Enhance Ecosystem Services in Southeastern Grasslands</td>
<td>USDA– NIFA</td>
<td>$500,000</td>
<td>Dubeux, Mackowiak, Sollienberger, et al.</td>
<td></td>
</tr>
<tr>
<td>2015-2016</td>
<td>Assessment of Feasible Forest Water Yield Program Features and Landowner Preferences</td>
<td>University of Florida-IFAS</td>
<td>$49,971</td>
<td>n/a</td>
<td></td>
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<tr>
<td>2015-2016</td>
<td>Consumer Preferences for Ecosystem Services from Urban Forest Landscapes</td>
<td>USDA – McIntire-Stennis</td>
<td>$42,695</td>
<td>Escobedo, Koester, Khachatryan, Martin, Monroe, Peter, et al.</td>
<td></td>
</tr>
<tr>
<td>2011-2016</td>
<td>Integrating research, education and extension for enhancing southern pine climate change mitigation and adaptation</td>
<td>USDA–NIFA</td>
<td>$19,976,825</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SERVICE (EXAMPLES)**


Co-director, ProForest (Proactive Forest Health and Resilience) Initiative, 2017-present

Co-director, Conserved Forest Ecosystems: Outreach and Research Cooperative, 2012 - present

Ecosystem Services Working Group, US Forest Service, 2014 - present


Shared governance: UF Provost Committee on Academic Integrity, 2017; UF Faculty Senate, 2016 - present; CALS Scholarship and Leadership Awards Committee, 2015 - present; UF Sustainability Committee, 2014 - present; SFRC Graduate Student Symposium, organizer and faculty advisor 2014-present; Environmental Science General Education Course Committee, 2014; UF Hydrologic Sciences Academic Cluster Faculty Committee, Hydrologic Policy representative, 2013 - present; Scholarship & Awards Committee, UF-SFRC, 2012 - present; Distance Education Committee, UF-SFRC, 2012 - present; University Curriculum Committee, 2011 - 2014; Undergraduate Programs Committee, UF-SFRC, 2011 - 2013; Faculty Advisory Committee, UF School of Forest Resources & Conservation, 2011 - 2013; University Committee on Committees, chair, 2011; member, 2011 - 2012; Forestry Graduate Student Organization, advisor 2010 - present; Honor Marshall and CALS Banner Bearer, Advanced Degrees and Undergraduate Graduation Ceremonies, 2010-2011


Reviewer for 44 scholarly journals

**TEACHING**


**ADVISING**

PhD: Chair (2 current, 4 graduated), Member (7 current, 2 graduated), External (2 graduated); MS: Chair (15 current, 4 graduated), Member (4 current, 4 graduated); Postdoctoral: 4 current

**SELECT PUBLICATIONS (OF 58 referred journal publications, 75 other publications) (" Denotes advisee)**


ROBERT N. M. AHRENS
Assistant Professor | UF/IFAS School of Forest Resources and Conservation | Fisheries and Aquatic Sciences | 135 Newins-Ziegler Hall | Gainesville, FL USA 32611 | rahrens@ufl.edu | +1 (352) 273-3630 | +1 (352) 392-3672 Fax.

Professional Preparation
University of British Columbia Marine Biology BSc. 1993
University of British Columbia Zoology MSc. 1999
University of British Columbia Zoology PhD. 2010
University of British Columbia Global Ecosystem Modeling March 2010-December 2010

Appointments
2011-Present Associate Professor University of Florida
2004-2010 Sessional Lecturer University of British Columbia
2001-2003 Fulltime Lecturer University of British Columbia

Recent Publications

Synergistic Activites
• 2013, 2015 National Oceanographic and Atmospheric Association Recruitment, Training, and Research Program (NOAA-RTR) Graduate Workshop. A component of the NOAA RTR program to involve exceptional graduate students from across the nation in research related to all facets of marine resource management. As an instructor, I help to structure and teach a two-weeklong intensive workshop that 8 students were invited to. The ultimate goal of the workshop was to expose student to the multi-facets (biology, economics and social impact) inherent in managing natural resources. In 2013 the workshop focused on a research interest of mine the Gulf sturgeon. In 2015 the workshop focused on the refinement of an EwE model to explore option for lionfish management on the West Florida Shelf.
• 2011-2015 National Oceanographic and Atmospheric Association Recruitment, Training, and Research Program (NOAA-RTR) Undergraduate Workshop. A component of the NOAA RTR program is to expose exceptional undergraduate students from across the nation to the role that population dynamic play in the management of marine populations. As an instructor I help to structure and teach a weeklong intensive workshop that 15-17

Robert Ahrens 1/2
students are invited to. The ultimate goal of the workshop is to provide students with a clear picture of what a career as an assessment scientist would be like.

- 2012 Restoration of Gulf sturgeon as potential BP mitigation option. I provided an analysis of the gulf sturgeon population response to management options for habitat restoration on the Pearl and Bougue-Chitto Rivers to a panel of trustees from state and federal agencies.
- 2012 I conducted an intensive one-week course in fisheries ecology and stock assessment for 11 select undergraduate and graduate students from the University of Costa Rica. During the week, students experienced 10-hour days and content that roughly equaled a semester’s worth of graduate level fisheries science.

Collaborators & Other Affiliations

Collaborators and Co-Editors

Graduate Advisors and Postdoctoral Sponsors
Walters, C.J. (University of British Columbia) - Graduate Advisors, Christensen, V. (University of British Columbia) - Graduate Advisors, Postdoctoral Sponsors

Thesis Advisor and Postgraduate-Scholar Sponsor
Matthias, B. (University of Minnesota Duluth), Ducharme-Barth, N. (University of Florida), Moreau, C. (DFO-MPO), Jackson, J. (Comcast), Wilson, J. (BTT), Rudd, M. (University of Washington), Siders, Z. (University of Florida), Carvalho, F. (NOAA-NMFS), Olson, E. (NA), Jiorle, R. (Virginia Marine Resources Commission), Melissa Price (University of Florida), Nelly Kadagi (University of Florida), Chris Swanson (UF-FWRI), Claudia Friess (University of Florida), Grant Scholten (University of Florida)

I am or have chaired: 3 PhDs and 11 Masters, Co-chaired 4 PhDs and 1 Masters. I am or have been a member of 9 PhDs and 4 Masters.
Curriculum Vitae
Shirley M. Baker

Professional Preparation:
College or University   Department and/or Major   Dates Attended   Degree
College of William and Mary   Marine Science   1988-1994   Ph.D.
University of Oregon   Biology   1986-1888   M.S.
Seattle Pacific University   Biology   1982-1986   B.S.

Appointments:
Dates   Organization   Position
2008-pres   University of Florida/IFAS   Associate Professor
1999-2008   University of Florida/IFAS   Assistant Professor
1996-1999   SUNY Stony Brook   Research Assistant Professor
1993-1996   Macalester College   Visiting Assistant Professor
1988-1993   Virginia Institute of Marine Science   Graduate Research Assistant
1986-1988   University of Oregon   Graduate Teaching Fellow
1986   BioMed Research Laboratory   Fisheries Biologist

Selected Publications (of 50 total):


**Teaching and mentoring:**
1) Marine Adaptations, 3 credits, offered annually for graduate, undergraduate, and distance education students
2) Natural Resources in a Changing Climate, 3 credits, offered annually to graduate and distance education students
3) Guest lectures in Advanced Aquaculture, Introduction to Aquaculture, Aquatic Wildlife Health Issues, Invasion Ecology of Aquatic Animals, and Introduction to Fish and Aquatic Invertebrate Histological Interpretation
4) Supervision of graduate students: 7 MFAS, 8 MS, 2 PhD
5) Student committees: 24 PhD, 17 MS, 5 MFAS
6) Faculty advisor, Marine Sciences major, 100+ undergraduate students
**Curriculum Vitae**

**Donald C. Behringer**

A. Professional Preparation:

<table>
<thead>
<tr>
<th>Undergraduate Institution</th>
<th>Major</th>
<th>Degree &amp; Year</th>
</tr>
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<tbody>
<tr>
<td>University of Florida</td>
<td>Zoology</td>
<td>B.S. 1991</td>
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<table>
<thead>
<tr>
<th>Graduate Institution</th>
<th>Major</th>
<th>Degree &amp; Year</th>
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<tr>
<td>Old Dominion University</td>
<td>Ecological Sciences</td>
<td>Ph.D. 2003</td>
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</table>

<table>
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<tr>
<th>Postdoctoral Institution</th>
<th>Area</th>
<th>Inclusive Dates</th>
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<tbody>
<tr>
<td>Old Dominion University</td>
<td>Ecology</td>
<td>2003-2004</td>
</tr>
</tbody>
</table>

B. Appointments:

Associate Professor (tenured) (2014 – present), Fisheries and Aquatic Sciences, Univ. of Florida

US-UK Fulbright Scholar (2015 – 2016), Univ. of Exeter, UK

Assistant Professor (2010 – 2014), Fisheries and Aquatic Sciences, Univ. of Florida

C. Peer-reviewed publications:

Recent publications (since 2012):


D. Teaching:

1. Marine Ecological Processes (FAS 4270/6272, 3 cr., each Fall, face to face and online)
2. Field Ecology of Aquatic Organisms (FAS 4932/5276C, 4 cr., each Summer A, team-taught)
3. UF in Cuba: Tropical Marine and Island Ecology (FAS 4932/6932, 4 cr, each Summer A)
4. Aquatic Animal Conservation Issues (VME 4906/VME 6934, 3 cr., yearly, team-taught)
5. Aquatic Wildlife Health Issues (VME 4013/6011, 3 cr., yearly, team-taught)

E. Synergistic activities:

1. Organize biennial spiny lobster workshops in the Florida Keys that bring together lobster fishermen, fishery managers, scientists, and the general public. The meetings facilitate a mutual exchange of information and help promote dialogue and instill trust between stakeholder groups.
2. Chair/co-chair of the biennial North Florida Marine Science Symposium (2010-present).
3. Technical advisory committee and advisory panel member for the Southeast Florida Coral Reef Initiative (SEFCRI) (FL Department of Environmental Protection/NOAA partnership).
ANDREA DUTTON

Department of Geological Sciences
University of Florida
PO Box 112120
Gainesville, FL 32611
+1 352-392-3626 (work)
+1 352-392-9294 (fax)
E-mail: adutton@ufl.edu
Citizenship: USA & Australia

Education
2003 Ph.D., Dept. of Geological Sciences, Univ. of Michigan, Ann Arbor, MI, USA
2000  M.S., Dept. of Geological Sciences, Univ. of Michigan, Ann Arbor, MI, USA
1995  B.A., Amherst College, Amherst, MA, USA

Employment
2011 – present Assistant Professor, Dept. of Geological Sciences, University of Florida, Gainesville, FL, USA
2006 – 2010 Research Fellow, Research School of Earth Sciences, The Australian University, Canberra, ACT, Australia
2004 – 2006 Postdoctoral Fellow, Research School of Earth Sciences, The Australian University, Canberra, ACT, Australia
1997 – 2003 Graduate Research Assistant and Instructor, Department of Geological Sciences, University of Michigan, Ann Arbor, MI, USA
1995 – 1997 Science Teacher, St. Ann’s School, Brooklyn Heights, NY, USA

Recent Awards and Honors
2016 Fellow of the Geological Society of America
2016 University of Florida Term Professorship (3-yr term)
2016 Editors’ Citation for Excellence in Refereeing for Paleoceanography
2015 Fellow of the Florida Climate Institute (3-yr term)
2015 Excellence Awards for Assistant Professors
2015 University of Florida Global Fellow (1-yr term)

Professional Activities (selected examples from past several years)
2017-present Contributing Author, IPCC Special Report on Oceans & Cryosphere, Ch. 3
2017 Workshop lead organizer, PALSEA2 workshop, Playa del Carmen, Mexico
2017 Scientific Organizing Committee, SCAR workshop, Trieste, Italy
2017 Session Convenor, PAGES Open Science Meeting, Zaragoza, Spain
2017-present Scientific Committee, Center for Hydro-Generated Urbanism
2016 Panellist, NSF Proposal Review Panel
2016 Organizing Committee, PALSEA2 and HOLSEA workshop, Mt. Hood, Oregon
2015-present Editorial Board, Quaternary Geochronology
2015-present Steering Committee Quaternary Interglacials (QUIGs), a PAGES working group
2015 Organizing Committee, PALSEA2 workshop, Tokyo, Japan
2014-2017 Editorial board, Climate of the Past

Current Research Funding
NSF-EAR-IF (9/17–9/19) Early Career: Acquisition of a MC-ICP-MS for Research and Education in U-series Geochemistry and Applications in Geoscience ($693,780) Role: Lead PI.
NSF-OCE, P2C2 (6/17–5/19), Collaborative Research: P2C2 - Reconstructing rates and sources of sea-level change over the last ~150 thousand years from a new coral database (Total Budget: $505,284; Dutton portion: $108,538), Role: Co-PI
NSF-OCE, MGG (5/16–5/18), Rates, timing, & nature of sub-orbital sea-level change during MIS 5e (Total Award: $503,904). Role: Lead PI (Sole PI).
Curriculum vitae
Andrea Dutton

Current Research Funding (continued)
NSF-DIBBs (9/14-8/17) CIF21 DIBBs: Cyberinfrastructure for Interpreting and Archiving U-Series Geochronologic Data (Total award: $579,763; Dutton subaward: $87,121). Role: Co-PI.

Publications (selected examples from last three years) # denotes student author
Curriculum Vitae: Michael A. Gil

Employment
National Science Foundation (USA) Postdoctoral Research Fellow
Department of Environmental Science & Policy, University of California
Davis, California, USA
March 2016 – present

Education
University of Florida (UF), Ph.D., Biology, Advisor: Craig W. Osenberg
University of Texas at Austin (UT), B.S., Biology, Magna Cum Laude, Honors in Biology
Sea Education Association (SEA) Semester at Woods Hole, Dean's Scholar
2015
2008
2007

Publications (*co-author, †international collaborator, ‡advised undergraduate student, ††graduate student)

Peer-reviewed, published or in press:


Peer-reviewed, in review:

Gil, M.A.*, A.M. Hein, O. Spiegel*†, M.L. Baskett, and A. Sih. Social information can link individual behavior to ecological dynamics. [in review: Trends in Ecology & Evolution].

Jiao, J. †, S. Pilyugin, M.A. Gil and C.W. Osenberg. Mobility affects consumer-resource interactions across space and time. [in review: The American Naturalist].

Thesis and Technical Reports:


Branco Weiss Society in Science Fellowship
Dr. Michael A. Gil

Curriculum Vitae: Michael A. Gil


Popular articles:


<table>
<thead>
<tr>
<th>Previous Professional Experience</th>
<th>Previous Professional Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of California Berkeley, Gump Research Station Graduate Researcher, coral reef ecology</td>
<td>Mo’orea, French Polynesia May 2010-Aug. 2015</td>
</tr>
<tr>
<td>Centre de Recherches Insulaires et Observatoire de l’Environnement (CRIOE, French Research Station) Graduate Researcher; Lead on French-American collaboration</td>
<td>Mo’orea, French Polynesia Jan., June-Aug. 2013</td>
</tr>
<tr>
<td>Ocean Bridges, French-American Workshops 2010 &amp; 2011 Graduate Researcher; participant and collaborator</td>
<td>Mo’orea, French Polynesia Summers 2010 &amp; 2011</td>
</tr>
<tr>
<td>Jobos Bay National Estuarine Research Reserve Post-Baccalaureate Researcher, seagrass ecology</td>
<td>Aguirre, Puerto Rico May-June 2009</td>
</tr>
<tr>
<td>University of California Berkeley, Gump Research Station Post-Baccalaureate Researcher, coral reef ecology</td>
<td>Mo’orea, French Polynesia April 2009</td>
</tr>
<tr>
<td>University of Texas at Austin, Marine Science Institute Post-Baccalaureate Researcher, salt marsh ecology</td>
<td>Port Aransas, Texas, USA June-Sept. 2008</td>
</tr>
<tr>
<td>University of Texas at Austin, Department of Integrative Biology Undergraduate Research Assistant, freshwater ecology</td>
<td>Austin, Texas, USA Sept.-Dec. 2008, Jan.-May 2009</td>
</tr>
<tr>
<td>SEA Semester at Woods Hole, Expedition: Mexico to Tahiti Undergraduate Researcher, biological oceanography</td>
<td>Woods Hole, USA &amp; South Pacific Oct. 2007-Jan. 2008</td>
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<tr>
<td>University of Texas at Austin, Marine Science Institute Undergraduate Researcher, seagrass ecology</td>
<td>Port Aransas, Texas, USA June-July 2007</td>
</tr>
<tr>
<td>University of Texas at Austin &amp; Centro Ecológico Akumal Undergraduate Researcher/Student, seagrass/reef ecology</td>
<td>Akumal, Mexico April-June 2007</td>
</tr>
<tr>
<td>Lizard Island Research Station Undergraduate Researcher/Student, coral reef ecology</td>
<td>Lizard Island, Australia May-June 2005</td>
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</tbody>
</table>

Presentations

2016-17 24 presentations, including 22 invited oral presentations, 14 delivered to public audiences in Thailand, Aruba, Tanzania (TED Global), and the US

2015 2 oral presentations, including PhD exit seminar and invited keynote talk for coral reef stakeholders at the Caribbean Sailing Association meeting in St. Maarten

2014 9 presentations, including 3 oral and 2 poster presentations at national conferences (Society of Integrative and Comparative Biology, Gordon Predator-Prey Conference, Benthic Ecology Meeting, Western Society of Naturalists)
Curriculum Vitae: Michael A. Gil

2013 5 presentations, including 2 invited oral presentations and 1 oral presentation at a national conference (Benthic Ecology Meeting)
2007-12 7 presentations, including 4 oral presentations at national conferences (Florida Marine Biology Symposium, Benthic Ecology Meeting, Western Society of Naturalists) and 1 oral presentation at a Southeast Texas regional water management meeting

Teaching
Marine Ecology in Mo'orea (2014) and in Akumal (2016)  
Instructor  
University of Florida  
Summer 2014 & Spring 2016
Research-intensive field-based course for undergraduate and graduate students
Marine Botany in Akumal, Mexico  
Co-instructor  
University of Texas at Austin  
Research-intensive field-based course for undergraduate and graduate students
Foundations and Frontiers in Ecology  
Co-organizer and Instructor  
University of Florida  
Fall 2012
Graduate discussion on the milestones and cutting-edge works within core topics in ecology
General Ecology Laboratory  
Instructor (3 sections)  
University of Florida  
Fall 2010 & 2015
Teaches upper-division undergrads how to design, carry out and present empirical research
Integrative Principles of Biology II Laboratory  
Instructor (3 sections)  
University of Florida  
Spring 2010
Core biology laboratory for biology majors: organismal physiology & pop./community ecology

Mentoring Highlights
- Served as primary research mentor for 35 undergraduate students from UT & UF (including 24 female, 4 Hispanic, and 1 Pacific Islander)
- Advised 6 student conference presentations (UT & UF) and an undergraduate research thesis (UT)
- Advised students on successful applications for two National Science Foundation (USA) Graduate Research Fellowships, awarded to Julie Zill (U. of Hawai‘i at Mānoa) and Corinne Fuchs (U. of California, Santa Barbara); and a UF University Scholarship, awarded to Noah Hackney
- Delivered 5 discussion panels and presentations on science careers beyond college/university

Science Communication & Public Outreach
SciAll.org, Mass science communication campaign, Creator  
Website and associated YouTube channel (http://www.youtube.com/sciallorg) featuring ‘science behind the scenes’, intended to popularize science across a broad, international public audience
MarineBio.org, Conservation Society, Contributing Photographer  
Nonprofit promoting education of ocean science and conservation; http://marinebio.org/gallery/
mikegil.com, Professional research website and blog, Creator  
Connecting the public with my field research through writing, photography, and videography (see associated YouTube channel: http://www.youtube.com/mikegilofficial)
School Exchange & Journal, Plastics @ SEA, Writer and Photographer  
Answered science questions from 11 participating K-12 schools and contributed to North Pacific Expedition Journal to “bring the public along” on the adventure (http://sea.edu/plastics)

Service (Community)
Gator Nation Conservation, Founder/President  
Student service organization: park cleanups, invasive removals  
Gainesville, Florida, USA  
Sept. 2009-Dec. 2010
Aquarea Spring Diving for Science Program, Volunteer SCUBA Diver  
Maintained habitat at for federally endangered species  
San Marcos, Texas, USA  
March-Aug. 2008
Tribeta Biological Honor and Service Society, Member  
Habitat cleanups, charity meal preparation for families  
Austin, Texas, USA  
12th Annual Lake Travis Underwater Cleanup, Organizer  
Largest SCUBA/shoreline cleanup in Texas  
Austin, Texas, USA  
Sept. 2006
Branco Weiss Society in Science Fellowship
Dr. Michael A. Gil

**Curriculum Vitae: Michael A. Gil**

**SERVICE (UF DEPARTMENT OF BIOLOGY)**

- 2014-15 Biology Graduate Student Association (BGSA) Graduate Representative
- 2013-14 BGSA Vice President (elected; represented graduate students at faculty meetings)
- 2012-13 Undergraduate Research Assistantship Program (URAP) coordinator and judge
- 2010-13 BGSA Green Rep. (liaison between Dept. and UF Office of Sustainability)
- 2010-11 BGSA Graduate Research Forum Committee (organized weekly graduate seminar)
- 2010-11 BGSA Welcoming Committee (organized event to welcome Dept. back for new year)

**SERVICE (SCIENTIFIC PEER REVIEW)**


**SYNERGISTIC ACTIVITIES**

**Learning Assistantship Program, Dept. of Biology, University of Florida**

- Contributed active learning activities in community ecology for UF undergraduate student-led teaching program for general biology

**Connection Storymaker Workshop, Society for Integrative & Comparative Bio.**

- Randy Olson-led group honed storytelling skills for science communication

**HONORS**

- 2017 Named a **TED Fellow** (UF, UC Davis, SEA, Fast Company)
- 2013 Science outreach video "Want to Be a Marine Biologist?" selected 'Best of Winner', Midway Atoll, Papahānaumokuākea Marine National Monument
- 2012 1st Place, Best Oral Presentation at the 41st Annual Benthic Ecology Meeting in Norfolk, Virginia
- 2008 UT Dean's Honored Graduate (highest honor awarded by College to <1% of class)
- 2008 Inducted into Sigma Xi, Scientific Research Society
- 2008 Second Place in Biology, Best Student Poster at UT Undergraduate Research Forum
- 2008 UT Distinguished College Scholar for GPA/coursework years 2005-06, 2006-07, 2007-08
- 2007 Induction into the Phi Beta Kappa Society

**FELLOWSHIPS, SCHOLARSHIPS, AND GRANTS**

- 2018 National Geographic Society grant for research in Thailand ($20,520)
- 2015 NSF Postdoctoral Research Fellowship in Biology (March 2015-Feb. 2018; $138,000 USD)
- **Graduate school (totaling over $270,000 USD):**
  - 2013 Carl Storm Underrepresented Minority Fellowship for Gordon Research Conference ($600)
  - 2013 NSF award for participation in the 2014 Gordon 'Predator-Prey' Research Conference ($200)
  - 2012 Chateaubriand Fellowship, Embassy of France for research in French Polynesia ($10,000)
  - 2011 NSF Graduate Research Fellowship International Travel Award ($1,000)
  - 2011 Florida Sea Grant Nutrient Dynamics Fellowship ($19,000)
  - 2011 Ed Stolarz Memorial Fellowship in Marine Biology ($1,500)
  - 2010 UF Graduate Student Council Travel Awards for Spring 2011-13 ($750)
  - 2010 Ocean Bridges II Fellowship, for French-American research in French Polynesia ($5,500)
  - 2010 NSF Southeast Alliance for Graduate Education and the Professorate ($650)
  - 2010 UF Department of Biology Student Travel Award for Fall 2010 ($100)
  - 2010 NSF Graduate Research Fellowship ($122,500)
  - 2009 Ocean Bridges II Fellowship, for French-American research in French Polynesia ($9,000)
  - 2009 UF Alumni Fellowship ($100,000)
- **Undergraduate education (totaling over $67,000 USD):**
  - 2007 SEA Dean's Scholarship and Tuition Award (merit-based awards; $10,000)
  - 2007 Phi Beta Kappa, Alpha of Texas Award of Distinction ($500)
  - 2006 Presidential Endowed Scholarship for Natural Sciences (UT; $2,500)
  - 2005 UT Coop GOES Scholarship for Study Abroad in Australia (2005) & Mexico (2007; each $1,000)
  - 2004 Haraldson Foundation Scholarship (full, four-year tuition scholarship; $23,000)
  - 2004 Institute of Hispanic Culture of Houston Scholarship (academic merit based; $1,000)
Joan C. Herrera, Ph.D.

Employment (recent)

- Instructor, Department of Biological Sciences, University of Florida St. Petersburg (2014-present)
- Adjunct Assistant Professor/Visiting Lecturer, University of Florida (1998-2008; 2015-present)
- Curatorial Assistant, Invertebrate Paleontology, Florida Museum of Natural History (2001-2002)

Education

- Ph.D. August 1998, University of Florida, Zoology
- B.S. August 1978, University of Florida, Animal Science

Scholarships, Awards and Honors (selected)

- Courtesy Assistant Curator, Florida Museum of Natural History, University of Florida (2011-present)
- Full Curator, Encyclopedia of Life (2011-present)
- University of Florida Anderson Scholar Faculty Honoree (2004)
- Yardley Dissertation Fellowship, College of Liberal Arts and Science, University of Florida (1996)
- William W. Behrens, Jr./Florida Institute of Oceanography Award for outstanding student presentation in Marine Science/Oceanography at the Florida Academy of Sciences (1995)

Grants (selected)

- University of South Florida St. Petersburg, Online Course Development for BSC 2010. ($8,000) 2017-2018.
- NMFS, NOAA: Southeastern Area Monitoring and Assessment Program. ($1,500,000/5 years) PI 2008-2011, PM 2011-2014.
- SWG, USFWS: Historical and Modern Patterns of Biodiversity in Coral Reefs with an Emphasis on Species of Greatest Conservation Need. ($63,498.00) PI 2010-2012
- CWT, WFF: Accessing the wealth of data buried in the Fish and Wildlife Research Institute's biological specimen collection. ($15,000) 2009-2010
Presentations and Invited Lectures (selected)

- Specimen Information Services research incorporating SEAMAP data. Fisheries Independent Monitoring Annual Meeting, Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, St. Petersburg, FL (February, 2013)
- Marine Quest, Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, St. Petersburg, FL (Annually 2008-2014)

Publications (selected)

- Lawrence, John M., Janessa C. Cobb and Joan C. Herrera. (accepted with revision) Synonymy of *Astrolepcten nitidus* Verrill, 1915 with *Astrolepcten cingulatus* Sladen, 1883 and *Astrolepcten comptus* Verrill, 1915 with *Astrolepcten articulatus* (Say, 1825). *Bulletin of the Peabody Museum of Natural History*.
Biographical Sketch

JOHN M. JAEGER
Associate Professor
Department of Geological Sciences, University of Florida, P.O. Box 112120
Gainesville, FL 32611-2120
Tel: (352) 846-1381
e-mail: jmjaeger@ufl.edu

(a) Professional Preparation

Humboldt State University  Arcata, CA, USA  Oceanography  B.Sc. 1991
SUNY Stony Brook  Stony Brook, NY, USA  Marine
Environmental Science

SUNY Stony Brook  Stony Brook, NY, USA  Geological
Oceanography
Lehigh University  Bethlehem, PA, USA  Geology Post-
Doc.  1998-1999

(b) Appointments
2007-Present, Associate Professor, University of Florida
2000-2007, Assistant Professor, University of Florida

(c) Publications

Five Relevant Papers

Five Additional Papers
Meredith, L. N., E. J. Screaton, J. M. Jaeger, S. R. James, and T. Villaseñor (2017), The impact of rapid sediment accumulation on pore pressure development and dehydration reactions during shallow

(d) Synergistic Activities
- U.S. Advisory Committee for Scientific Ocean Drilling, Member, (2012-2015)
- U.S. Advisory Committee for Scientific Ocean Drilling, Chair, (2013-2016)
- NSF GeoPRISMS Steering and Oversight Committee, 2010-2013
- IODP Science Steering and Evaluation Panel, 2006-2009
- Member of Coastal Community Resiliency Initiative Focus Group, Department of Economic Opportunity, State of Florida, (2012-present)
BIOGRAPHICAL SKETCH

MATTHEW CHARLES SMITH
Senior Lecturer
University of Florida Dept. of Geological Sciences
241 Williamson Hall, Box 112120
Gainesville, FL 32611
(352) 392-2106, mcsmith@ufl.edu

Professional Preparation
1999 Ph.D. in Geology/Geochemistry, University of Florida, 1999.

Appointments
2011-present Senior Lecturer, Dept. of Geological Sciences, University of Florida, Gainesville, FL.
2007-2011 Lecturer, Department of Geological Sciences, University of Florida, Gainesville, FL.
2003-2007 Visiting Lecturer, Dept. of Geological Sciences, University of Florida, Gainesville, FL.
1999-2001 Postdoctoral Researcher in Igneous Petrology and Isotope Geochemistry, University of Hawaii School of Ocean and Earth Science and Technology.

Courses Taught
Introduction to the Geological Sciences (GLY1000), Introduction to Oceanography (OCE1001), Introduction to Earth Science (ESC1000), Geology of Florida Lab (GLY1150L), Physical Geology (GLY2010C), Environmental and Engineering Geology (GLY2030C), Earth Materials Special Topics (GLY4930), Igneous and Metamorphic Petrology (GLY4310C), Introduction to Earth Materials (GLY3202C), Geological Field Methods (GLY4750L), The Geology of Florida (GLY4155C), Topics in Earth and Space Science for Teachers (GLY6932).

Recent Awards and Honors
2017 UF Online Education Excellence Award
2017 UF College of Liberal Arts and Sciences Teacher of the Year Award, 2016-2017.
2016 UF Online Education Excellence Award
2014 Nominated for UF College of Liberal Arts and Sciences Teacher of the Year Award
2012 Teacher of the Year (as voted on by UF Geological Sciences graduating Class).

Current Grant Funding—None

Service to Profession (past 10 years)

2016-present Advisory board member for NSF-funded Geoscience Engagement and Outreach (GEO-paths) grant (UF-Santa Fe College collaborative grant). PIs-Heidi Lannon (SFC), Kathryn Stofer (UF).
2015-present CLAS Faculty collaborator on MSP Grant U-FUTuRES 2: University of Florida Unites Teachers to Reform Education in Science, UF PIs L.F. Hayes and R.M. Pringle, UF College of Education. (https://education.ufl.edu/science-education/u-futures/)
2012-2014 CLAS Faculty collaborator on MSP Grant U-FUTuRES: University of Florida Unites Teachers to Reform Education in Science, UF PIs L.F. Hayes and R.M. Pringle, UF College of Education. (https://education.ufl.edu/stem/ufutures/)
2011 Associate Editor and activity reviewer for On the Cutting Edge Collection on Teaching Petrology in the 21st Century
https://serc.carleton.edu/NAGTWorkshops/petrology/index.html
2009-2010 CLAS Faculty collaborator on MSP Grant: Florida PROMiSE: Partners to Rejuvenate & Optimize Mathematics and Science Education, UF PIs: S.J. Pape and M.J.

2007-2008 Supervisory Committee Member and contributing author for “Exploring Science Content”, UF Pls: C. Cavanaugh and K. Dawson, UF College of Education.(https://etc.usf.edu/reports/union1/index.html)

5 Most Recent Refereed Publications (self = bold, graduate student = g, other = &)

Field Experience
2016 Petrochemist and dive participant aboard the RV Atlantis, Siqueiros Fracture Zone, OASIS (Off-Axis Seamount Investigations at Siqueiros) cruise.
1995 Petrochemist and dive participant aboard the RV Atlantis II, Juan de Fuca Ridge (JdFR), NOAA Vents cruise Leg 1 (voyage 132-09).
1994 Petrochemist and camera pilot aboard the NOAA ship Discoverer, JdFR, NOAA Vents cruise Leg 1 (voyage DI-94-03).
1994 Scientific personnel and dive participant aboard the RV Atlantis II and DSV ALVIN, East Pacific Rise (EPR) at 9º-10ºN, AdVenture IV cruise (voyage 131-14).
1993 Scientific personnel aboard the NOAA ship Discoverer, JdFR, NOAA Vents cruise Leg 2.
1992 Petrochemist aboard the RV Atlantis II, EPR at 9º-10ºN, AdVenture III cruise (voyage 131-11).
1991 Petrochemist and dive participant aboard the RV Atlantis II and DSV ALVIN, JdFR, NOAA Vents cruise Leg 2 (voyage 125-29).
1991 Scientific personnel and dive participant aboard the RV Atlantis II and DSV ALVIN, EPR at 9º-10ºN, AdVenture cruise (voyage 125-24).
1990 Scientific personnel RV Atlantis II, NOAA Vents cruise on the Juan de Fuca Ridge, Leg 3 (voyage 125-11).
1990 Scientific personnel and camera pilot aboard the NOAA ship Discoverer, JdFR, NOAA Vents cruise Leg 2 (voyage DI-90-03).
1988 Two months field work in intertidal and shallow subtidal zones, Shoals Marine Lab, Appledore Island, NH.
1988 One month field work studying sedimentation processes in tidal mud flats, Jackson Estuarine Laboratory, Durham, NH.
1988 One month mapping and sampling in Maine for senior thesis.
1988 Two weeks mapping and sampling offshore in Maine aboard the R.V. Jere Chase
Biographic Sketch

Contact Information:
Fisheries and Aquatic Sciences Program  
School of Forest Resources and Conservation  
University of Florida  
Gainesville, FL 32611

Tel: (352) 846-0850  
Fax: (352) 392-1707  
e-mail: will.patterson@ufl.edu

Professional Preparation:
University of Virginia  History  B.A., 1991
Old Dominion University  Biological Sciences  M.S., 1995
University of South Alabama  Marine Sciences  Ph.D., 1999
Louisiana State University  Oceanography  Post-Doc, 1999-2001

Positions Held:
2016-  
Associate Professor, Fisheries and Aquatic Sciences, University of Florida
2011-2016  
Associate Professor, Department of Marine Sciences, University South Alabama
2007-2011  
Associate Professor, Department of Biology, University of West Florida
2004-2007  
Assistant Professor, Department of Biology, University of West Florida
2001-2003  
Asst. Research Professor, Department of Marine Sciences, U. of South Alabama

Selected Publications:


**Synergistic Activities in the Last 5 Years:**
Grant Funding: Florida Institute of Oceanography (FIO), Florida Fish and Wildlife Conservation Commission, Florida Fish and Wildlife Research Institute, Gulf of Mexico Research Initiative; MS/AL Sea Grant, NOAA-NMFS Marine Fisheries Initiative, NOAA-NMFS Cooperative Research Program, National Science Foundation, Pew Oceans-Lenfest, USA Center for Resiliency; Appointed Member, Gulf of Mexico Fishery Management Council's Standing Scientific and Statistical Committee (Chair 2013-15); *ad hoc* reviewer for 18 journals, two book publishers, and seven grant programs; Member, Editorial Board for *Reviews in Fisheries Science and Aquaculture* and Associate Editor for *Gulf of Mexico Science*.

**Collaborators in the Last 5 Years:**
Mike Allen, UF; Robert Allman, NMFS; Luiz Barbieri, FWRI; Beverly Barnett, NMFS; Jane Caffrey, UWF; Shannon Calay, NMFS; John Carlson, NMFS; Dave Chagaris, UF; Zhongxing Chen, Harvard; Jim Cowan, LSU; Phil Darby, UWF; Doug DeVries, NMFS; Gary Fitzhugh, NMFS; John Gold, TAMU; David Hollander, USF; Walter Ingram, NMFS; Margaret James, UF; Andy Kane, UF; Allan Koenig, USGS; Sue Lowerrie-Barbieri, Behzad Mamoudi, FWRI; FWRI-UF; John Mareska, AL MRD; Steve Murawski, USF; Bill Patterson, University of Saskatchewan; Clay Porch, NMFS; Jay Rooker, TAMU; Alan Shiller, USM; Tom Shirley, TAMU-CC; Richard Snyder, UWF; Dave Wells, TAMU

**Graduate and Post-Graduate Advisors:**
Ray Birdsong (MS), Cynthia Jones (MS), Jim Cowan (PhD), Chuck Wilson (Post-Doc)

**Advisees:**
Post-doctoral Fellows: Steven Garner (UF, 2017- )
Graduate Students (Committee Chair): Erin Bohaboy (UF, 2017- ); Beverly Barnett (UF, 2016- ); Gracie Barnes (USA, 2015-17), Kristen Dahl (UF, 2012- ), Steven Garner (USA, 2012- ), Justin Lewis (USA, 2012-2016), Michael Norberg (USA, 2012-15), Joshua Neece (UWF, 2010-13), Joseph Tarnecki (UWF, 2010-13), Rachel Scharer (UWF, 2009-12), Carrie Fioramonti (UWF, 2009-12), Cecelia Lounder (UWF, 2006-09), Kate Shepard (UWF, 2006-08), Dustin Addis (UWF, 2005-08), Beverly Barnett (UWF, 2005-2008), Suzanne Gibson (UWF, 2004-08), Michael Dance (UWF, 2004-2007), Nicole Morris (UWF, 2004-07), Sarah Jeffers (UWF, 2004-07), Craig Newton (USA, 2002-07), Todd Clardy (USA, 2002-06)
Undergraduate Students: Mentored 14 undergraduate Directed Studies, NSF Research Experience for Undergraduates, or Honor's Thesis Students since 2010.
CURRICULUM VITAE

GUSTAV PAULAY

a) Professional preparation
B.S. Biology, 1979, Yale University, magna cum laude, with distinction in biology
Ph.D. Zoology, 1988, University of Washington
Postdoctoral Fellow, 1990-1991, Dept. of Paleobiology, National Museum of Natural History

b) Professional appointments
2006- Curator, Florida Museum of Natural History, University of Florida
2006- Adjunct Professor, Dept. of Biology, University of Florida
2007-09 University of Florida Foundation Research Professor
2003-06 Associate Curator, Florida Museum of Natural History, University of Florida
2003-06 Adjunct Associate Professor, Dept. of Biology, University of Florida
2000-03 Assistant Curator, Florida Museum of Natural History, University of Florida
2000-03 Adjunct Assistant Professor, Dept. of Biology, University of Florida
1997-00 Director, Marine Laboratory, University of Guam
1996-00 Associate Professor, Marine Laboratory, University of Guam
1991-96 Assistant Professor, Marine Laboratory, University of Guam

c) Five relevant products
DOI: https://doi.org/10.17161/vo.6554

Five additional products

d) Synergistic activities
Marine biodiversity surveys: A major long-term goal of my lab and our collection is to document the littoral marine biota, especially of the tropics and coral reefs, in collaboration with a large network of engaged systematists. To this end we pursue field work broadly across the tropics, collect specimens, tissues, and images of most macroinvertebrate phyla, and make these collections and information broadly available through rapid curation, digitization and online access. We are involved in several large-scale (i.e., >500 spp/effort) marine biodiversity surveys. Major surveys include: 1) Guam (Paulay 2003; 5640 species), 2)

Collection development: I increase the utility and accessibility of invertebrate collections at the FLMLNH, by increasing holdings, soliciting researchers to study and improve identifications, and making collection information broadly available. Holdings are augmented through field surveys (above), and by rescuing and incorporating quality relinquished collections. Collection data are made available over the web (http://specifyportal.flimnh.ufl.edu/iz/, also through https://www.idigbio.org/); the >580,000 lots accessible electronically represent the third largest such resource globally for non-insect invertebrates. With NSF support we have eliminated all research collection backlog, are fully databased, and currently process ~20,000 lots per year. A Sloan Foundation-funded effort has led to subsampling ~25,000 samples representing many of the sequencable species in the collection, transfer of all subsamples to a cryogenic facility developed with NSF support, sequencing ~15,000 samples for COI, and making these publicly available through Barcode of Life Data Systems (BOLDSystems). The Moorea Biocode project has similarly funded sequencing ~8,000 samples for COI across all invertebrate phyla collected there. The collection is heavily used through visits and loans by traditional and molecular systematists alike (5-10,000 specimens loaned and 30-40 research visitors hosted annually).

Biodiversity informatics: I facilitate the development of online taxonomic resources. I am on the Steering Committee of the World Register of Marine Species, chair their Image and Award working groups, and serve as taxon editor for Holothuroidea (http://www.marinespecies.org/aphia.php?p=taxdetails&id=123083). The latter covers all 2500+ described species of sea cucumbers, all based on original descriptions. We are expanding this with the World Register of Deep-Sea Species to include images, distributional, and biological data (http://www.marinespecies.org/deepsea/). We have also created an echinoderm project on iNaturalist (http://www.inaturalist.org/projects/echinoderms), engaging with the public to assemble image and distributional data. Started two years ago, iNat echinoderms now has >450 members and >4000 observations.
Summary Vitae

NAME: Edward J. Phlips
POSITION: Professor
TELEPHONE: 352-273-3603
FAX: 352-846-1088
E-MAIL: phlips@ufl.edu

PROFESSIONAL ADDRESS:
Dept. of Fisheries and Aquatic Sciences
7922 N.W. 71st Street
Gainesville, Florida 32653

EDUCATION:

<table>
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<tr>
<th>University</th>
<th>Major</th>
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<tr>
<td>University of Miami, RSMAS</td>
<td>Marine Biology</td>
<td>1977-81</td>
<td>PhD</td>
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<tr>
<td>University of Miami, RSMAS</td>
<td>Biological Oceanogr.</td>
<td>1972-76</td>
<td>MS</td>
</tr>
<tr>
<td>University of California, SD</td>
<td>Biology</td>
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PROFESSIONAL EXPERIENCE
(A) Positions:

<table>
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<tr>
<th>Dates</th>
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<th>Position</th>
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<tbody>
<tr>
<td>2004-current</td>
<td>University of Florida</td>
<td>Professor &amp; Graduate Coordinator</td>
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<td>2001-04</td>
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<td>Professor</td>
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<tr>
<td>1994-00</td>
<td>University of Florida</td>
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<td>1988-93</td>
<td>University of Florida</td>
<td>Assistant Professor</td>
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<tr>
<td>1983-87</td>
<td>University of Florida</td>
<td>Assistant Research Scientist</td>
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<tr>
<td>1981-83</td>
<td>University of Miami (R.S.M.A.S.)</td>
<td>Post-doc</td>
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CURRENT TEACHING: Current graduate level class on Applied Phycology (FAS 6176) and graduate/undergraduate class on Algae Biology and Ecology (FAS4932/6176).

GRADUATE STUDENT ADVISEMENT - Served on 118 graduate student committees, including 38 as Chair (23 MS and 15 PhD).

CONTRACTS AND GRANTS as PI – Total - $10,817,794.

REPRESENTATIVE RECENT PUBLICATIONS – Of 136 total.


ANDREW R. ZIMMERMAN - CURRICULUM VITAE
Associate Professor, Department of Geological Sciences, University of Florida
241 Williamson Hall, P.O. Box 112120, Gainesville, FL 32611
phone: (352) 392-0070 fax: (352)392-9294
e-mail: azimmer@ufl.edu

Professional Preparation
The University of Chicago Geological Sciences, B.A. Honors 1987
The University of Michigan Marine Geochemistry M.S. 1989
College of William and Mary-Virginia Institute of Marine Science Marine Geochemistry Ph.D. 2000

Appointments
Associate Professor University of Florida 2011 - present
Assistant Professor University of Florida 2004 - 2011
Postdoctoral Research Associate Pennsylvania State University 2002 - 2003

Website: https://people.clas.ufl.edu/azimmer/  Google Scholar Link

RESEARCH

Research Specialty
Examinations of organic matter-mineral-microbe interactions and carbon cycling in soil, sediments, surface and ground water, in the present and through the geological past. Fire-produced organic matter cycling (black carbon) in the environment, biochar and contaminant sorption and degradation.

Selected Recent Refereed Publications

Zimmerman CV - Page 1 of 2


**TEACHING**

**Courses Taught**

  - OCE 1001: Introduction to Oceanography
  - IUF2100: Climate Change Science and Solutions
  - GLY 2038: Sustainability and the Changing Earth
  - GLY 5255: Organic Geochemistry and Geobiology

**HONORS**

- 2017-2018 Colonel Allen R and Margaret G. Crow Term Professor Award, University of Florida.
- Award of Commendation for exemplary service to the students of the Alachua County Public Schools. June 9, 2016.

**SELECTED ACTIVITIES**

Symposia Convener:

- The role of fire in the carbon cycle: quantification and characterization of emissions, fluxes and sequestration potential. American Geophysical Union, Fall 2016 Meeting, San Francisco, CA.

2) Department Public School Outreach Coordinator (Geogators: Founder). In the past year we delivered 28 separate earth science lessons, reaching a total of 858 students. More than half of these were at underserved public schools with high proportions of minority students.

3) Developing and researching use of computer-integrated student response systems for use in General Education Earth Science classrooms.

4) University of Florida Oil Spill Task Force – co-chair (2010).


Zimmerman CV - Page 2 of 2
Board of Governors, State University System of Florida

Request to Offer a New Degree Program
(Please do not revise this proposal format without prior approval from Board staff)

University of Florida
University Submitting Proposal

College of Agricultural and Life Sciences
Name of College(s) or School(s)
Marine Sciences

Academic Specialty or Field

Fall 2020
Proposed Implementation Term

School of Forest Resources and Conservation
Name of Department(s)/Division(s)
Marine Sciences

Complete Name of Degree

30.3201
Proposed CIP Code

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met prior to the initiation of the program.

Date Approved by the University Board of Trustees

President

Date

Signature of Chair, Board of Trustees

Date

Vice President for Academic Affairs

Date

Provide headcount (HC) and full-time equivalent (FTE) student estimates of majors for Years 1 through 5. HC and FTE estimates should be identical to those in Table 1 in Appendix A. Indicate the program costs for the first and the fifth years of implementation as shown in the appropriate columns in Table 2 in Appendix A. Calculate an Educational and General (E&G) cost per FTE for Years 1 and 5 (Total E&G divided by FTE).

<table>
<thead>
<tr>
<th>Implementation Timeframe</th>
<th>Projected Enrollment (From Table 1)</th>
<th>Projected Program Costs (From Table 2)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>HC</td>
<td>FTE</td>
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<tr>
<td>Year 1</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Year 2</td>
<td>128</td>
<td>128</td>
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<td>Year 3</td>
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<td>Year 4</td>
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<td>141</td>
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<tr>
<td>Year 5</td>
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<td>144</td>
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</tbody>
</table>

Note: This outline and the questions pertaining to each section must be reproduced within the body of the proposal to ensure that all sections have been satisfactorily addressed. Tables 1 through 4 are to be included as Appendix A and not reproduced within the body of the proposals because this often causes errors in the automatic calculations.

INTRODUCTION

I. Program Description and Relationship to System-Level Goals

   A. Briefly describe within a few paragraphs the degree program under consideration, including (a) level; (b) emphases, including majors, concentrations, tracks, or specializations; (c) total number of credit hours; and (d) overall purpose, including examples of employment or education opportunities that may be available to program graduates.

   a. Level:

      Bachelor of Science in Marine Sciences.

   b. Emphases, including majors, concentrations, tracks, or specializations:

      The B.S. in Marine Sciences degree program replaces the Interdisciplinary Studies-Marine Sciences major specializations that have been offered in parallel since 2012 through the Colleges of Liberal Arts and Sciences (CLAS) and Agricultural and Life Sciences (CALS) at the University of Florida (UF). Presently we have 120 undergraduates who are declared majors in the Interdisciplinary Studies Marine Sciences major between the two colleges. Our collaboratively administered Marine Sciences major is multidisciplinary and broad in scope; every student takes courses across the fields of biology, chemistry, geology, and physics of marine, estuarine, and coastal environments, as well as the conservation and management of marine resources. Our interdisciplinary approach allows students to tailor a curriculum that suits their interests and career goals by emphasizing the physical or biological sciences (CLAS track) or the fields of ecology, conservation, and management (CALS track).

   c. Total number of credit hours:

      The total number of credit hours required is 120.

   d. Overall purpose, including examples of employment or education opportunities that may be available to program graduates:

      The overall purpose of this degree program is to provide a comprehensive marine sciences education at UF and to develop highly qualified leaders who will address critical state, national, and world coastal and marine challenges. Our interdisciplinary approach to marine science education provides students with core scientific and quantitative skills for success and prepares students for a variety of rewarding academic and professional careers related to marine sciences. Employment and education opportunities are available to graduates in a wide variety of fields, including the physical sciences (e.g., marine geology, physical oceanography, ocean and coastal engineering, climatology, non-renewable resource exploration, hydrogeology), the biological sciences (e.g., marine biology, natural resource management, environmental restoration, aquaculture, aquatic animal medicine), human dimensions (e.g., education, outreach, tourism), policy and economics (e.g., hazard mitigation, ocean policy, law, insurance, fisheries economics), and quantitative sciences (e.g., stock assessment, population dynamics).
B. Please provide the date when the pre-proposal was presented to CAVP (Council of Academic Vice Presidents) Academic Program Coordination review group. Identify any concerns that the CAVP review group raised with the pre-proposed program and provide a brief narrative explaining how each of these concerns has been or is being addressed.

The Council of Academic Vice Presidents (CAVP) Academic Program Coordination review group discussed the degree program pre-proposal on April 14, 2017. The CAVP review group raised no concerns with the pre-proposed degree program; no official comments were recorded.

C. If this is a doctoral level program please include the external consultant’s report at the end of the proposal as Appendix D. Please provide a few highlights from the report and describe ways in which the report affected the approval process at the university.

N/A

D. Describe how the proposed program is consistent with the current State University System (SUS) Strategic Planning Goals. Identify which specific goals the program will directly support and which goals the program will indirectly support (see link to the SUS Strategic Plan on the resource page for new program proposal).

The mission of the State University System (SUS) includes the provision of undergraduate education of the highest quality to serve the needs of a diverse state and global society. UF, the flagship institution in the SUS, did not have a Marine Sciences degree program in support of this SUS mission, despite the needs and importance of Florida’s diverse ocean economy, until 2012 when the Interdisciplinary Studies Marine Sciences major was introduced. The proposed Marine Sciences degree program develops students’ knowledge, skills and aptitudes needed for success in the global society and marketplace and provides qualified graduates to help Florida’s ocean economy employers prosper and grow. This degree program directly supports the Teaching and Learning SUS Strategic Planning Goals, including the points of emphasis - excellence, productivity, and strategic priorities, as listed below.

SUS Goal: Strengthen Quality and Reputation of Academic Programs and Universities

Development of the proposed Marine Sciences degree program will help propel UF into the top public undergraduate institutions for marine science education in the state and the nation. This major is in high demand and attracts high performing students. Therefore, the proposed Marine Sciences degree program will contribute toward the excellence performance indicators of national rankings and programs, as well as the proportion of freshmen in the top 10% of their graduating high school class.

SUS Goal: Increase Degree Productivity and Program Efficiency

Development of the proposed Marine Sciences degree program will elevate UF’s teaching and learning productivity by attracting top students to UF from the state of Florida, the Southeastern US and the nation, thereby increasing the number of bachelor’s degrees awarded. The proposed degree program will also contribute toward other productivity performance indicators, including average time to degree, 4-year graduation rates, and bachelor’s degrees awarded to minorities. Since the initiation of the Interdisciplinary Studies - Marine Sciences major in 2012, students admitted as freshmen have completed their degrees in 3.8 years. In addition, the major attracts a high proportion of minority (20% identify as minority, 12% as Hispanic) and female students (75%).
SUS Goal: Increase the number of degrees awarded in STEM areas

When we initially established the Interdisciplinary Studies major in Marine Sciences at UF in 2012, we recruited students from other programs within the university. Many of these students may have already been declared as, or contemplating declaring in, a STEM subject. However, in the past few years, we have noted a surge in the number of students who are being recruited externally and are attracted to coming to UF specifically because of the presence of the Marine Sciences major and in light of the reputation and growth in the major.

E. If the program is to be included in a category within the Programs of Strategic Emphasis as described in the SUS Strategic Plan, please indicate the category and the justification for inclusion.

The Programs of Strategic Emphasis Categories:
1. Critical Workforce:
   • Education
   • Health
   • Gap Analysis
2. Economic Development:
   • Global Competitiveness
3. Science, Technology, Engineering, and Math (STEM)

Please see the Programs of Strategic Emphasis (PSE) methodology for additional explanations on program inclusion criteria at the resource page for new program proposal.

This 30.3201 B.S. in Marine Sciences will directly address the goal of increasing the number of degrees awarded in STEM. The proposed degree program represents a holistic integration of STEM fields including biology, geology, chemistry, and physics, as well as statistics, economics, policy, human dimensions, and resource management. Therefore, this STEM degree program will provide students with the core scientific and quantitative skills necessary for career success and will prepare students for occupations related to marine sciences, including marine geology, marine biology, physical oceanography, ocean engineering, coastal engineering, natural resource management, environmental restoration, climatology, aquaculture, non-renewable resource exploration, hydrogeology, hazard mitigation, tourism, ocean policy, law, and insurance. These are critical STEM areas of interest to the State of Florida. In terms of economic impacts, more than 440,000 jobs are directly created by, or indirectly supported by, ocean resource use activities in Florida. The ocean economy contributes more than $35 billion (2011) to Florida’s economy, or 5% of the state’s GDP. The state’s tourism, construction, and fisheries industries are all tied to aspects of ocean and coastal resources. Additionally, hundreds of miles of sandy beaches along the Florida coastline are a major draw for tourism, the state’s number one industry.

F. Identify any established or planned educational sites at which the program is expected to be offered and indicate whether it will be offered only at sites other than the main campus.

The degree program will be offered at the main campus of UF. Students will have the opportunity to study at marine field stations on both coasts of Florida; at the Nature Coast Biological Station in Cedar Key (Gulf Coast) and at the Whitney Laboratory for Marine Bioscience in Marineland (Atlantic Coast). Students will also have the opportunity to participate in a 4-day research cruise to the West Florida Shelf, onboard the Florida Institute of Oceanography (FIO) R/V Hogarth, as part of a 3-credit Field Marine Ecology course (FIO ship time and funding were secured for 2018 and 2019). Plans are underway to increase opportunities for students to study on board this state-of-the-art floating classroom. Study abroad courses in Cuba, Belize, San Salvador, Mexico, and the Bahamas are optional elective courses for the major.
INSTITUTIONAL AND STATE LEVEL ACCOUNTABILITY

II. Need and Demand

A. Need: Describe national, state, and/or local data that support the need for more people to be prepared in this program at this level. Reference national, state, and/or local plans or reports that support the need for this program and requests for the proposed program which have emanated from a perceived need by agencies or industries in your service area. Cite any specific need for research and service that the program would fulfill.

Given the scale of importance of Florida’s oceans and coasts to the state economy, training of students to enter the job market in marine science related positions plays a critical role in the vision of Florida’s future. Job growth in some of these fields, e.g. marine geology, is expected to be more than 10% in the next decade. Current entry level salaries range from $35,360 to more than $70,720. Because of the diversity of jobs that marine science majors will be equipped to tackle, it is difficult to pinpoint specific job growth statistics in that area. Nonetheless, given that more than half of the state population lives in coastal counties, the nexus between the health and sustainability of coastlines, coastal ecosystems, and the coastal economy, this job sector is envisioned to grow significantly along with economic and population growth in the state of Florida.

B. Demand: Describe data that support the assumption that students will enroll in the proposed program. Include descriptions of surveys or other communications with prospective students.

The proposed degree program will replace the current Interdisciplinary Studies-Marine Sciences majors that have been offered in parallel through CLAS and CALS since 2012. These coordinated programs have shown impressive growth, with 120 students currently enrolled (20 in CLAS, 100 CALS). Therefore, we have already demonstrated high demand for a Marine Sciences degree program at UF and in the SUS.

C. If substantially similar programs (generally at the four-digit CIP Code or 60 percent similar in core courses), either private or public exist in the state, identify the institution(s) and geographic location(s). Summarize the outcome(s) of communication with such programs with regard to the potential impact on their enrollment and opportunities for possible collaboration (instruction and research). In Appendix C, provide data that support the need for an additional program.

The proposed Marine Sciences degree program does not duplicate other degree programs in the SUS. No degrees have been granted in the SUS under the CIP Code 30.3201 Marine Science (searchable data starts in 1991). Related degree programs exist at four SUS institutions: Florida Gulf Coast University BS in Marine Science (03.0205 Water, Wetlands and Marine Resource Management), Florida International University BS in Marine Biology (26.1302 Marine Biology and Biological Oceanography), University of West Florida BS in Marine Biology (26.1302), and Florida Gateway College BAS in Water Resources Management (03.0205). Department chairs and program directors at these institutions have been provided opportunities to submit input; no comments on the potential impact on their enrollment have been forthcoming (See attached documentation).

D. Use Table 1 in Appendix A (1-A for undergraduate and 1-B for graduate) to categorize projected student headcount (HC) and Full Time Equivalents (FTE) according to primary sources. Generally undergraduate FTE will be calculated as 30 credit hours per year and graduate FTE will be calculated as 24 credit hours per year. Describe the rationale underlying enrollment projections. If students within the institution are expected to change majors to enroll in the proposed program at its inception, describe the shifts from disciplines that will likely occur.
Please refer to Table 1, Appendix A for the undergraduate projected student headcount and FTE. These numbers are based on the current enrollment in the Interdisciplinary Studies Marine Sciences major as a starting point. Some growth is envisioned as the Interdisciplinary Studies major was originally populated from students in other degree programs who switched over to Marine Sciences, but now we are seeing recruitment of incoming (external) students into the major, based on the initial successes of the program. Modest growth is projected over the next 5 years, to level off at about 150 students.

E. Indicate what steps will be taken to achieve a diverse student body in this program. If the proposed program substantially duplicates a program at FAMU or FIU, provide, (in consultation with the affected university), an analysis of how the program might have an impact upon that university’s ability to attract students of races different from that which is predominant on their campus in the subject program. The university’s Equal Opportunity Officer shall review this section of the proposal and then sign and date Appendix B to indicate that the analysis required by this subsection has been completed.

It should be noted that the proposed BS degree program does not duplicate programs at FAMU or FIU. Both universities had the opportunity to provide statements of impact at the pre-proposal stage. Recruitment and retention of students in the Marine Sciences degree program will follow the same standard practices and procedures of all programs in both CLAS and CALS to ensure its full availability to the diverse student body at UF. Both colleges are committed to educating a diverse student body and are actively involved in college level and campus-wide programs to ensure this goal. Enrollment in our Interdisciplinary Studies - Marine Sciences major already encompass students of diverse ethnic backgrounds and the major consistently attracts a remarkably high number of female students.

Despite what is an already strong commitment to diversity, we will continue to strengthen our commitment to racial and gender diversity in our classrooms. For example, the School of Forest Resources and Conservation (SFRC), in which the CALS Marine Sciences degree program will be housed, has recently hired a second Undergraduate Academic Advisor and Recruiter. She focuses on engaging with a diverse population of potential freshmen, as well as current UF students interested in pursuing the Marine Sciences major. In addition, the Undergraduate Academic Advisor and Recruiter assists with retention communication, social media, and student tracking.

Faculty in both CLAS and CALS are committed to increasing diversity on campus and in our majors. For example, SFRC has a Diversity Task Force charged with developing methods to support a more diverse faculty and undergraduate student body. This committee actively includes and seeks the input of undergraduate students. Moreover, faculty members in both CLAS and CALS are actively engaged in programs such as UF’s Minority Mentor Program, in recognition of the great importance of maintaining and promoting diversity. This type of service is, and will continue to be, actively encouraged and recognized.

III. Budget

A. Use Table 2 in Appendix A to display projected costs and associated funding sources for Year 1 and Year 5 of program operation. Use Table 3 in Appendix A to show how existing Education & General funds will be shifted to support the new program in Year 1. In narrative form, summarize the contents of both tables, identifying the source of both current and new resources to be devoted to the proposed program. (Data for Year 1 and Year 5 reflect snapshots in time rather than cumulative costs.)

In Table 2, we have summarized the funding sources for the degree program. Please note that, since we have already established the Marine Sciences program as an Interdisciplinary Studies major, no new faculty are required, and no reallocation of resources is technically required. This proposal, instead, is to transition this high-enrollment Interdisciplinary Studies major over to its own degree program. Nonetheless, we have
tabulated the costs associated with this degree program in Table 2, where the reallocated base in Year 1 is estimated at $354,600. The difference between Year 5 and Year 1 reflects 3% increases in salary per year and the addition of some teaching assistants to accommodate extra sections in some of the core courses required by the degree program. The reallocated base in Year 1 reflects a distribution between several different departments and colleges to provide the necessary instructional staff, as shown in Table 3. This reflects participation of faculty from the Departments of Geological Sciences, Biology, Coastal Engineering, FL Museum of Natural History, and the SFRC.

B. Please explain whether the university intends to operate the program through continuing education, seek approval for market tuition rate, or establish a differentiated graduate-level tuition. Provide a rationale for doing so and a timeline for seeking Board of Governors' approval, if appropriate. Please include the expected rate of tuition that the university plans to charge for this program and use this amount when calculating cost entries in Table 2.

The degree program will not be offered through continuing education on a cost-recovery basis. It will be a regular state funded UF degree program.

C. If other programs will be impacted by a reallocation of resources for the proposed program, identify the impacted programs and provide a justification for reallocating resources. Specifically address the potential negative impacts that implementation of the proposed program will have on related undergraduate programs (i.e., shift in faculty effort, reallocation of instructional resources, reduced enrollment rates, greater use of adjunct faculty and teaching assistants). Explain what steps will be taken to mitigate any such impacts. Also, discuss the potential positive impacts that the proposed program might have on related undergraduate programs (i.e., increased undergraduate research opportunities, improved quality of instruction associated with cutting-edge research, improved labs and library resources).

Funds for the new Marine Sciences degree program will be covered by the annual operating budgets of the participating departments, as provided by CLAS and CALS. There will be no negative impact on existing Interdisciplinary Studies - Marine Sciences majors; The Interdisciplinary Studies - Marine Sciences majors in CLAS and CALS will be closed, and these students moved into the new degree program, once it is approved and in place.

D. Describe other potential impacts on related programs or departments (e.g., increased need for general education or common prerequisite courses, or increased need for required or elective courses outside of the proposed major).

The impact of approximately 150 Marine Sciences students at UF by year five will be felt in participating departments. Other UF departments that will be affected include Chemistry, Mathematics, Physics, and Statistics. These departments teach many of the foundation courses in the physical sciences and mathematics for the degree program. Because it is anticipated that students in the Marine Sciences degree program would have otherwise selected a similar science offering at UF, these classes should experience only slightly increased enrollments. We do anticipate a sustained and potentially increased demand for the course “OCE 1001 Introduction to Oceanography,” which is taught in the Department of Geological Sciences. OCE 1001 is a core course for the major, and one that serves to attract students to the Marine Sciences major. It is currently offered in the summer (online) and fall semesters, but not in spring.

E. Describe what steps have been taken to obtain information regarding resources (financial and in-kind) available outside the institution (businesses, industrial organizations, governmental entities, etc.). Describe the external resources that appear to be available to support the proposed program.

No such resources are specifically required for the degree program, but there are additional external
opportunities that could enhance the undergraduate learning experience, as detailed in Section X. J.

IV. Projected Benefit of the Program to the University, Local Community, and State

Use information from Tables 1 and 2 in Appendix A, and the supporting narrative for “Need and Demand” to prepare a concise statement that describes the projected benefit to the university, local community, and the state if the program is implemented. The projected benefits can be both quantitative and qualitative in nature, but there needs to be a clear distinction made between the two in the narrative.

The proposed Marine Sciences degree program will benefit UF by attracting high performing students. In so doing, the proposed degree program will contribute to national productivity performance indicators, including average time to degree, 4-year graduation rates, and bachelor’s degrees awarded to minorities, helping to propel UF into the top public undergraduate institutions for marine science education in the state and nation.

The proposed Marine Sciences degree program will benefit the State of Florida by producing graduates who are able to compete and succeed in a broad variety of marine science related positions in Florida, the nation, and beyond. Students graduating from this program will be well prepared for positions or pursuit of graduate degrees in marine geology, marine biology, physical oceanography, ocean engineering, coastal engineering, natural resource management, environmental restoration, climatology, aquaculture, non-renewable resource exploration, hydrogeology, hazard mitigation, tourism, ocean policy, law, and insurance. In Florida, more than 440,000 jobs are directly created by, or indirectly supported by, ocean resource use activities. The ocean economy contributes more than $35 billion (2011) to Florida’s economy; the state’s tourism, construction, and fisheries industries are all tied to aspects of ocean and coastal resources. Job growth in many of these fields is expected to increase nationally by more than 10% in the next decade. Our projected enrollment of approximately 150 students will help meet this demand for students with the necessary core scientific and quantitative skills.

V. Access and Articulation – Bachelor’s Degrees Only

A. If the total number of credit hours to earn a degree exceeds 120, provide a justification for an exception to the policy of a 120 maximum and submit a separate request to the Board of Governors for an exception along with notification of the program’s approval. (See criteria in Board of Governors Regulation 6C-8.014)

The Bachelor of Science degree in Marine Sciences will require 120 credit hours.

List program prerequisites and provide assurance that they are the same as the approved common prerequisites for other such degree programs within the SUS (see link to the Common Prerequisite Manual on the resource page for new program proposal). The courses in the Common Prerequisite Counseling Manual are intended to be those that are required of both native and transfer students prior to entrance to the major program, not simply lower-level courses that are required prior to graduation. The common prerequisites and substitute courses are mandatory for all institution programs listed, and must be approved by the Articulation Coordinating Committee (ACC). This requirement includes those programs designated as “limited access.”

If the proposed prerequisites are not listed in the Manual, provide a rationale for a request for exception to the policy of common prerequisites. NOTE: Typically, all lower-division courses required for admission into the major will be considered prerequisites. The curriculum can require lower-division courses that are not prerequisites for admission into the major, as long as those courses are built into the curriculum for the upper-level 60 credit hours. If there are already common prerequisites for other degree programs with the same proposed CIP, every effort must be made to utilize the previously approved prerequisites instead of recommending an additional “track” of prerequisites for that CIP.
Additional tracks may not be approved by the ACC, thereby holding up the full approval of the degree program. Programs will not be entered into the State University System Inventory until any exceptions to the approved common prerequisites are approved by the ACC.

The following list of prerequisites are required of both native and transfer students prior to entrance to the Marine Sciences major in either CLAS or CALS. They are the same as the approved common prerequisites for other STEM degree programs within the SUS.

**MAC 2311 Analytic Geometry and Calculus I**  
**CHM 2045 & 2045L General Chemistry 1 and General Chemistry 1 Laboratory**  
**CHM 2046 & 2046L General Chemistry 2 and general Chemistry 2 Laboratory**  
**BSC 2010 & 2010L Integrated Principles of Biology 1 and Integrated Principles of Biology Laboratory 1**  
**BSC 2011 & 2011L Integrated Principles of Biology 2 and Integrated Principles of Biology Laboratory 2**

The UF Marine Sciences curriculum (CIP 30.3201) also requires completion of **OCE 1001 Introduction to Oceanography** by both native and transfer students, prior to entrance to the major in either CLAS or CALS. This course substitutes for GLY 1000/1000C Physical Geology, a prerequisite under the CIP 30.0205 Marine Science. The UF Marine Sciences Committee asserts that requirement of OCE 1001 Introduction to Oceanography contributes to success in upper division marine sciences courses by providing students with a foundation in not only the physical and geological characteristics of the Earth, but also the biological characteristics of the marine realm, the role of the ocean in shaping the global Earth environment, and an awareness of the ocean influence on human well-being.

The CLAS track requires both **PHY 2053 & 2053L Physics 1 with Laboratory for Physics 1 and PHY 2054 & 2054L Physics 2 with Laboratory for Physics 2** or both **PHY 2048 & 2048L Physics with Calculus 1 and Laboratory for Physics with Calculus 1 and PHY 2049 & 2049L Physics with Calculus 2 and Laboratory for Physics with Calculus 2** prior to entrance to the Marine Sciences major. **PHY 2053 & 2053L is an approved common prerequisite for other STEM degree programs within the SUS.** The CLAS track requires two semesters of Physics and provides the option of Physics with Calculus, as justified by the track’s greater emphasis on the physical, mathematical, and engineering sciences.

The CALS track requires **PHY 2004 & 2004L Applied Physics 1 and Laboratory for Applied Physics 1.** This course serves the CALS students entering the fields of ecology, conservation, and management by emphasizing the practical applications of basic physics, including the mechanics of motion, forces, energy, momentum, wave motion and heat. **PHY 2053 & 2053L Physics 1 with Laboratory for Physics 1 and PHY 2054 & 2054L Physics 2 with Laboratory for Physics 2 are required for the pre-vet curriculum and will substitute for the CALS track physics requirement.**

**B. If the university intends to seek formal Limited Access status for the proposed program, provide a rationale that includes an analysis of diversity issues with respect to such a designation.** Explain how the university will ensure that Florida College System transfer students are not disadvantaged by the Limited Access status. **NOTE:** The policy and criteria for Limited Access are identified in Board of Governors Regulation 6C-8.013. Submit the Limited Access Program Request form along with this document.

N/A
C. If the proposed program is an AS-to-BS capstone, ensure that it adheres to the guidelines approved by the Articulation Coordinating Committee for such programs, as set forth in Rule 6A-10.024 (see link to the Statewide Articulation Manual on the resource page for new program proposal). List the prerequisites, if any, including the specific AS degrees which may transfer into the program.

N/A

INSTITUTIONAL READINESS

VI. Related Institutional Mission and Strength

A. Describe how the goals of the proposed program relate to the institutional mission statement as contained in the SUS Strategic Plan and the University Strategic Plan (see link to the SUS Strategic Plan on the resource page for new program proposal).

Our proposed degree program in Marine Sciences supports the UF and SUS missions by providing premier undergraduate education to develop highly qualified leaders who will address critical state, national, and world challenges. This degree program specifically supports the goal of the 2025 System Strategic Plan to increase the number of degrees awarded in STEM disciplines of strategic emphasis. Additionally, this degree program brings together faculty from different departments and colleges within the university, facilitating increased research collaboration and research opportunities for students, another Strategic Priority for a Knowledge Economy of the SUS mission statement.

B. Describe how the proposed program specifically relates to existing institutional strengths, such as programs of emphasis, other academic programs, and/or institutes and centers.

The proposed interdisciplinary program will be collaboratively administered through CLAS and CALS and efficiently leverages the faculty, courses, and resources of the Departments of Geological Sciences and Biology, and the Fisheries and Aquatic Sciences program of the SFRC to provide a comprehensive marine sciences education at UF. Though UF is strong in the Marine Sciences, the faculty are spread between different colleges and departments. This major will help to better establish this presence on campus by uniting faculty and students engaged in Marine Sciences. This program will also take advantage of multiple UF coastal research stations and has a strong potential to interact with the UF Climate Institute, Water Institute, Emerging Pathogens Institute (EPI), the Land Use and Environmental Change Institute (LEUCI), and the FIO.

C. Provide a narrative of the planning process leading up to submission of this proposal. Include a chronology in table format of the activities, listing both university personnel directly involved and external individuals who participated in planning. Provide a timetable of events necessary for the implementation of the proposed program.

The planning of this program was thorough and comprehensive and dates to Fall 2010. In response to student interest, the CLAS Departments of Biology and Geological Sciences and the CALS SFRC-Fisheries and Aquatic Sciences independently began working on plans to develop an interdisciplinary marine sciences program. In cross-college discussions, it became evident that we were well-poised to offer a dynamic cross-college major, combining our disciplines and maximizing our teaching resources. Faculty members of the departments formed committees to develop curricula for Interdisciplinary Studies tracks in Marine Sciences. The committees worked quickly and presented plans to their respective faculties and college curriculum committees in Fall 2011, gaining approval. On December 20, 2011, the UF
University Curriculum Committee approved the proposal for the Interdisciplinary Studies - Marine Sciences major in CLAS and CALS. The first students were accepted into the major in Summer 2012.

Enrollment in the Interdisciplinary Studies - Marine Sciences major grew, providing incentive to develop the major into stand-alone degree programs in CLAS and CALS. Accordingly, a reorganized Marine Sciences Committee worked on a pre-proposal document throughout 2016-2017. The Board of Governors Council of Academic Vice Presidents work group discussed the pre-proposal for a BS in Marine Sciences on April 14, 2017, passing it with no concerns.

### Planning Process

<table>
<thead>
<tr>
<th>Date</th>
<th>Participants</th>
<th>Planning Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-11-10</td>
<td>CLAS faculty, administrators</td>
<td>Discussed creation of Marine Sciences Interdisciplinary major</td>
</tr>
<tr>
<td>10-14-10</td>
<td>CLAS and CALS faculty</td>
<td>Discussed integration of Marine Sciences Interdisciplinary major curriculum across colleges</td>
</tr>
<tr>
<td>3-16-2011</td>
<td>Faculty of Dept. of Biology and Dept. Geological Sciences</td>
<td>Approve to go ahead with development of the major</td>
</tr>
<tr>
<td>4-21-2011</td>
<td>Fisheries and Aquatic Sciences Program Advisory Committee, Fisheries and Aquatic Sciences faculty</td>
<td>Discussed need for Marine Sciences major</td>
</tr>
<tr>
<td>4-25-2011</td>
<td>CALS and CLAS faculty, staff, administrators</td>
<td>Discussed cross-college Interdisciplinary Studies tracks in Marine Sciences</td>
</tr>
<tr>
<td>9-27-11</td>
<td>School of Forest Resources and Conservation faculty, administrators</td>
<td>SFRC committee formed to develop curriculum for CALS track</td>
</tr>
<tr>
<td>10-10-11</td>
<td>CLAS Curriculum Committee</td>
<td>Approved CLAS Marine Sciences Interdisciplinary Studies Major proposal</td>
</tr>
<tr>
<td>11-1-2011</td>
<td>School of Forest Resources and Conservation Undergraduate Programs Committee</td>
<td>Approved CALS Marine Sciences Interdisciplinary Studies Major proposal</td>
</tr>
<tr>
<td>11-10-2011</td>
<td>School of Forest Resources and Conservation faculty</td>
<td>Approved CALS Marine Sciences Interdisciplinary Studies Major proposal</td>
</tr>
<tr>
<td>11-18-2011</td>
<td>CALS Curriculum Committee</td>
<td>Approved CALS Marine Sciences Interdisciplinary Studies proposal</td>
</tr>
<tr>
<td>12-20-2011</td>
<td>University Curriculum Committee</td>
<td>Approved cross-college Interdisciplinary Studies tracks in Marine Sciences</td>
</tr>
<tr>
<td>2-29-2012</td>
<td>CALS and CLAS faculty, staff</td>
<td>Cross-College Marine Sciences Committee formed</td>
</tr>
<tr>
<td>4-22-2013</td>
<td>Deans of CALs and CLAS</td>
<td>Requested provost place Marine Sciences BS on UF Work Plan</td>
</tr>
<tr>
<td>3-24-2017</td>
<td>Marine Sciences Committee</td>
<td>Submitted Pre-proposal to UF Provost</td>
</tr>
<tr>
<td>4-14-2017</td>
<td>Board of Governors Council of Academic Vice Presidents work group</td>
<td>Discussed and passed Pre-proposal</td>
</tr>
</tbody>
</table>

### Events Leading to Implementation

<table>
<thead>
<tr>
<th>Date</th>
<th>Implementation Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2019</td>
<td>Submission to Colleges/UCC</td>
</tr>
<tr>
<td>Winter 2019</td>
<td>Submission to Senate, Provost</td>
</tr>
<tr>
<td>Spring 2020</td>
<td>BOT approval and BOG notification</td>
</tr>
<tr>
<td>Fall 2020</td>
<td>First enrollment, Current Interdisciplinary students change to new degree program</td>
</tr>
</tbody>
</table>
VII. Program Quality Indicators - Reviews and Accreditation

Identify program reviews, accreditation visits, or internal reviews for any university degree programs related to the proposed program, especially any within the same academic unit. List all recommendations and summarize the institution's progress in implementing the recommendations.

Accreditation by an outside agency is not required. Instead, the degree program will be reviewed periodically by external experts and stakeholders and monitored by the UF Marine Sciences Committee, composed of faculty and staff from CLAS and CALS.

VIII. Curriculum

A. Describe the specific expected student learning outcomes associated with the proposed program. If a bachelor's degree program, include a web link to the Academic Learning Compact or include the document itself as an appendix.

Student Learning Outcomes (SLOs):
1. Demonstrate competence in the basic terminology, concepts, methodologies and theories used within the marine sciences.
2. Analyze information in the marine sciences and develop reasoned solutions to problems using the processes and applications of scientific inquiry.
3. Discriminate ethical behavior from unethical behavior in scientific research.
4. Communicate knowledge, ideas and reasoning clearly, effectively and objectively in written or oral forms appropriate to the marine sciences.

CLAS Academic Learning Compact: https://catalog.ufl.edu/UGRD/colleges-schools/UGLAS/IS_BS07/#academiclearningcompacttext

CLAS Academic Learning Compact: https://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/IDS_BS17/#academiclearningcompacttext

B. Describe the admission standards and graduation requirements for the program.

There are no admission standards that are different for this particular degree program, relative to the normal admission standards. The degree program requires 60-67 credits of coursework completed with a minimum grade of C. At least 30 credits of coursework must be completed at UF. Students must also meet standard graduation requirements at the university and college levels.

C. Describe the curricular framework for the proposed program, including number of credit hours and composition of required core courses, restricted electives, unrestricted electives, thesis requirements, and dissertation requirements. Identify the total numbers of semester credit hours for the degree.

The proposed degree program requires 60-67 credits of coursework in the major and 120 total credit hours. The CLAS and CALS tracks were developed in parallel and are complementary; the curriculum provides the core scientific and quantitative skills necessary for success. Lower-division courses build a strong foundation in basic sciences and math while upper-division courses provide opportunity for specialization.

Students in CLAS complete an upper-division core that integrates the physical and biological sciences, mathematics, and engineering. They work closely with a faculty advisor to create an individualized curriculum of at least 12 credits of approved electives.

Students in CALS complete an upper-division core that concentrates on biological and ecological marine
science essentials while also giving students a critical understanding of how statistics and economics are integrated into marine science and resource management. Students work closely with a faculty advisor to create an individualized curriculum plan of at least 18 approved elective credits and 15-16 hours of planned credits. These can include courses on resource management, human dimensions, conservation, quantitative population assessment and others.

D. Provide a sequenced course of study for all majors, concentrations, or areas of emphasis within the proposed program.

**Sequenced course of study for the CLAS track in the proposed degree program:**

**Semester 1**
- CHM 2045 & 2045L General Chemistry 1 and General Chemistry 1 Laboratory (Critical Tracking; State Core Gen Ed Physical Sciences)
- IDS 1161 What is the Good Life (Gen Ed Humanities)
- Select one: MAC 2311 Analytic Geometry and Calculus 1 (Critical Tracking), MAC 1147 PreCalculus Algebra and Trigonometry (State Core Gen Ed Mathematics)
- OCE 1001 Introduction to Oceanography (Critical Tracking; Gen Ed Physical Sciences)

**Semester 2**
- CHM 2046 & 2046L General Chemistry 2 and General Chemistry 2 Laboratory (Critical Tracking; Gen Ed Physical Sciences)
- Select one: Elective, MAC 2311 Analytic Geometry and Calculus 1 (if needed)
- State Core Gen Ed Composition; Writing Requirement
- State Core Gen Ed Humanities
- State Core Gen Social and Behavioral Sciences

**Semester 3**
- BSC 2010 & 2010L Integrated Principles of Biology 1 and Integrated Principles of Biology Laboratory 1 (Critical Tracking; Gen Ed Biological Sciences)
- GLY 3083C Fundamentals of Marine Sciences (Gen Ed Physical Sciences)
- Select one: MAC 2312 Analytic Geometry and Calculus 2, STA 2023 Introduction to Statistics 1 (Gen Ed Mathematics)
- Elective (3000 level or above, not in major)
- Gen Ed Humanities

**Semester 4**
- BSC 2011 & 2011L Integrated Principles of Biology 2 and Integrated Principles of Biology Laboratory 2 (Critical Tracking; Gen Ed Biological Sciences)
- Select one: PHY 2053 & 2053L Physics 1 and Laboratory for Physics 1 (Critical Tracking; Gen Ed Physical Sciences), PHY 2048 & 2048L Physics with Calculus 1 and Laboratory for Physics with Calculus 1 (Critical Tracking)
- Elective (3000 level or above, not in major)
- Gen Ed Social and Behavioral Sciences

**Semester 5**
- Select one: PHY 2054 & 2054LPhysics 2 and Laboratory for Physics 2 (Critical Tracking; Gen Ed Physical Sciences), PHY 2049 & 2049L Physics with Calculus 2 and Laboratory for Physics with Calculus 2 (Critical Tracking)
- ZOO 4926 Special Topics in Zoology (Marine Ecology) or FAS 4270 Marine Ecological Processes
- Elective
- Foreign language

 Semester 6
- GLY 4726 Geochemical Oceanography
- ZOO 4403C Marine Biology
- Gen Ed Composition: Writing requirement
- Foreign language

 Semester 7
- Approved elective
- Electives (3000 level or above, not in major)
- Marine sciences core elective
- Gen Ed Social and Behavioral Sciences

 Semester 8
- Approved electives
- Elective
- Elective (3000 level or above, not in major)

*Sequenced course of study for the CALS track in the proposed degree program:*

 Semester 1
- CHM 2045 & 2045L General Chemistry 1 and General Chemistry 1 Laboratory (Critical Tracking; State Core Gen Ed Biological and Physical Sciences)
- IDS 1161 What is the Good Life (Gen Ed Humanities)
- OCE 1001 Introduction to Oceanography (Critical Tracking; Gen Ed Biological Sciences and Physical Sciences)
- State Core Gen Ed Social and Behavioral Sciences
- Elective

 Semester 2
- CHM 2046& 2046L General Chemistry 2 and General Chemistry 2 Laboratory (Critical Tracking; Gen Ed Biological Sciences and Physical Sciences)
- MAC 2311 Analytic Geometry and Calculus 1 (Critical tracking; State Core Gen Ed Mathematics)
- State Core Gen Ed Composition; Writing Requirement
- State Core Gen Ed Humanities

 Semester 3
- Select one: AEB 3103 Principles of Food and Resource Economics, ECO 2023 Principles of Microeconomics, ECO 2013 Principles of Macroeconomics (Gen Ed Social and Behavioral Sciences)
- BSC 2010 & 2010L Integrated Principles of Biology 1 and Integrated Principles of Biology Laboratory 1 (Critical Tracking; Gen Ed Biological Sciences and Physical Sciences)
- Gen Ed Composition; Writing Requirement
- MAC 2312 Analytic Geometry and Calculus 2 (recommended elective)
Semester 4
- BSC 2011 & 2011L Integrated Principles of Biology 2 and Integrated Principles of Biology 2 Laboratory (Critical Tracking; Gen Ed Biological Sciences and Physical Sciences)
- PHY 2004 & 2004L Applied Physics 1 and Laboratory for Applied Physics 1 (Critical Tracking; Gen Ed Biological Sciences and Physical Sciences)
- STA 2023 Introduction to Statistics 1 (Gen Ed Mathematics)
- FAS 2024 Global and Regional Perspectives in Fisheries (Recommended elective)

Semester 5
- AEC 3030C Effective Oral Communication or SPC 2608 Introduction to Public Speaking
- Select one: FNR 3410C Natural Resource Sampling, STA 3024 Introduction to Statistics 2, STA 4210 Regression Analysis, STA 4222 Sample Survey Design
- Elective

Semester 6
- FAS 4932 Topics in Fisheries and Aquatic Sciences (Biology and Ecology of Algae)
- GLY 3083C Fundamentals of Marine Sciences (Gen Ed Biological and Physical Sciences)
- ZOO 4205C Invertebrate Biodiversity
- Approved electives

Semester 7
- Select one: AEC 3033C Research and Business Writing in Agricultural and Life Sciences (Writing Requirement), ENC 2210 Technical Writing (Writing Requirement), ENC 3254 Professional Writing in the Discipline (Writing Requirement)
- FAS 4202 Biology of Fishes
- Selection one: FAS 4270 Marine Ecological Processes, ZOO 4926 Special Topics in Zoology (Marine Ecology)
- FNR 4660 Natural Resource Policy and Economics
- Elective

Semester 8
- Approved electives
- Electives

E. Provide a one- or two-sentence description of each required or elective course.

CLAS track

CLAS Required Courses

BSC 2010 Integrated Principles of Biology 1. The first of a two-semester sequence that prepares students for advanced biological sciences courses and allied fields. Studies the origin of life systems; of biological molecules and organization of living things at the subcellular, cellular and organismic levels; and of the activities of living forms in obtaining and utilizing energy and materials in growth, maintenance and reproduction.
BSC 2010L Integrated Principles of Biology Laboratory 2. Laboratory experiments designed to accompany BSC 2010.

BSC 2011 Integrated Principles of Biology 2. The second of a two-semester sequence that prepares students for advanced biological sciences courses and allied fields. Examination in living things of the principles of information storage, transmission and utilization at the cell, organism and population levels; of the mechanisms of evolutionary change in the diversification of living things and their life styles; of population growth and regulation; and of energy flow and biogeochemical cycling in the biosphere.

BSC 2011L Integrated Principles of Biology Laboratory 2. Laboratory experiments designed to accompany BSC 2011.

CHM 2045 General Chemistry 1. Stoichiometry, atomic and molecular structure, the states of matter, reaction rates and equilibria.

CHM 2045L General Chemistry 1 Laboratory. Laboratory experiments designed to reflect the topics presented in CHM 2045.

CHM 2046 General Chemistry 2. Acids and bases, additional aspects of chemical equilibria, thermodynamics, electrochemistry, complex ions and descriptive chemistry.

CHM 2046L General Chemistry 2 Laboratory. Laboratory experiments designed to reflect the topics presented in CHM 2046.

FAS 4270 Marine Ecological Processes. The ecology of marine organisms and habitats with focus on how general ecological principles, and those unique to the marine environment, drive patterns and processes.

GLY 3083C Fundamentals of Marine Sciences. Introduces the basic disciplines of marine sciences, including geology, chemistry, physics, biology and conservation, with an emphasis on marine research. Includes three mandatory Saturday field trips.

GLY 4726 Geochemical Oceanography. Focuses on chemical properties and processes in the oceans, exploring the links between chemistry, biology, geology, and global change within a marine context. Topics include elemental composition and speciation, biogeochemical cycles, chemical and isotopic tracers, chemistry of marine sediments, and oceanic uptake of anthropogenic carbon.

IDS 1161 What is the Good Life. Examines the enduring question, “What is the Good Life”, from the perspectives of the humanities. Topics include the cost of the good life, how people have chosen to live as members of local and global communities, and conceptions and expressions of beauty, power, love, and health.

MAC 1147 Precalculus algebra and Trigonometry. College algebra, functions, coordinate geometry, exponential and logarithmic functions, and trigonometry.

MAC 2311 Analytic Geometry and Calculus I. Introduces analytic geometry; limits; continuity; differentiation of algebraic, trigonometric, exponential and logarithmic functions; applications of the derivative; inverse trigonometric functions; differentials; introduction to integration; and the fundamental theorem of calculus.
MAC 2312 Analytic Geometry and Calculus 2. Techniques of integration; applications of integration; differentiation and integration of inverse trigonometric, exponential and logarithmic functions; sequences and series.

OCE 1001 Introduction to Oceanography. Explores the geological, physical, and biological characteristics of Earth's marine realm. Includes discussion of scientific methods, the history of oceanography, and emphasizes understanding of the mutual interactions between humans and the ocean.

PHY 2048 Physics with Calculus 1. The first of a two-semester sequence of physics for scientists and engineers. The course covers Newtonian mechanics and includes motion, vectors, Newton's laws, work and conservation of energy, systems of particles, collisions, equilibrium, oscillations and waves.

PHY 2048L Laboratory for Physics with Calculus 1. Laboratory experience for PHY 2048 illustrating the practical applications of Newtonian mechanics.

PHY 2049 Physics with Calculus 2. The second of a two-semester sequence of physics for scientists and engineers. Content includes Coulomb's law, electric fields and potentials, capacitance, currents and circuits, Ampere's law, Faraday's law, inductance, Maxwell's equations, electromagnetic waves, ray optics, interference and diffraction.

PHY 2049L Laboratory for Physics with Calculus 2. Laboratory experience for PHY 2049 illustrating the practical applications of Coulomb's law, electric fields and potentials, capacitance, currents and circuits, Ampere's law, Faraday's law, inductance, Maxwell's equations, electromagnetic waves, ray optics, interference and diffraction.

PHY 2053 Physics 1. First semester of introductory physics de-emphasizing calculus. Structure and properties of matter; kinematics, dynamics and statics; momentum and energy; rotation, elasticity; vibration; fluids; temperature and expansion, heat transfer, thermal behavior of gases; wave motion and sound.

PHY 2053L Laboratory for Physics 1. Laboratory experience for PHY 2053 illustrating the practical applications of the structure and properties of matter; kinematics, dynamics and statics; momentum and energy; rotation, elasticity; vibration; fluids; temperature and expansion, heat transfer, thermal behavior of gases; wave motion and sound.

PHY 2054 Physics 2. Second semester of introductory physics de-emphasizing calculus. Electric charge, fields and circuits; electromagnetism, applied electricity; geometrical optics, wave optics, applied optics; electrons and photons; atoms and nuclei.

PHY 2054L Laboratory for Physics 2. Laboratory experience for PHY 2054 illustrating the practical applications of electric charge, fields and circuits; electromagnetism, applied electricity; geometrical optics, wave optics, applied optics; electrons and photons; atoms and nuclei.

STA 2023 Introduction to Statistics 1. Graphical and numerical descriptive measures. Simple linear regression. Basic probability concepts, random variables, sampling distributions, central limit theorem. Large and small sample confidence intervals and significance tests for parameters associated with a single population and for comparison of two populations. Use of statistical computer software and computer applets to analyze data and explore new concepts.
ZOO 4403C Marine Biology. Survey of major marine taxa, systematics of local marine fauna and flora, with familiarization of the marine environment. Laboratory emphasizes field work and independent projects.

ZOO 4926 Special Topics in Zoology (Marine Ecology). Provides students with a conceptual understanding of ecology with an emphasis on marine community ecology in tropical coral reefs. Immerse students in field research, from conceptualization to final product including presentations and reports.

CLAS Core Electives

EGN 4932 Special Topics (Physical Oceanography). Covers selected, rotating topics in physical oceanography.

GLY 2010C Physical Geology. Materials, structures and surface features of the earth and processes which have produced them. Related laboratory demonstrations and experiences.

GLY 2100C Historical Geology. Evolution of the earth and its life, including the major physical events and evolutionary changes recorded in the geologic past. Related laboratory, demonstrations and exercises.

GLY 3074 Oceans and Global Climate Change. Examines the role the oceans play in determining climate and regulating global climate change on a range of timescales from decades to millions of years.

GLY 3105C Evolution of Earth and Life. Advanced examination of the geologic history of planet earth with an emphasis on North America.

GLY 3202C Earth Materials. Overview of the origin and occurrence of earth materials with a particular emphasis on the identification and classification of minerals and rocks. Activities involve lecture and a fully integrated laboratory component where students learn to identify and classify minerals and rocks through both macroscopic and microscopic investigation.

CLAS Approved Electives

EGN 4932 Special Topics (Physical Oceanography). Covers selected, rotating topics in physical oceanography.

ESC 3075 Deltas and Humans. Examines the historical relationship between humans and deltas, outlining possible coastal management plans in response to sea level rise.

FAS 4202C Biology of Fishes. The general biology of fishes, with emphasis on trends in their evolution, integrative and sensory biology, physiology, feeding ecology, reproduction, growth and population dynamics as they relate to fisheries.

FAS 4305C Introduction to Fishery Science. Principles of fish management in freshwater and marine systems. Includes field and laboratory techniques for aquatic habitat and fishery resource assessment, aquaculture practices and consideration of contemporary issues pertinent to sport and commercial uses of renewable fisheries resources.

FAS 4932 Special Topics in Fisheries and Aquatic Sciences (Marine Adaptations). Examines and compares the physiological adaptations of marine, coastal, and estuarine organisms to environmental conditions.

GLY 3074 Oceans and Global Climate Change. Examines the role the oceans play in determining climate and regulating global climate change on a range of timescales from decades to millions of years.

GLY 3105C Evolution of Earth and Life. Advanced examination of the geologic history of planet earth with an emphasis on North America.

GLY 3202C Earth Materials. Overview of the origin and occurrence of earth materials with a particular emphasis on the identification and classification of minerals and rocks. Activities involve lecture and a fully integrated laboratory component where students learn to identify and classify minerals and rocks through both macroscopic and microscopic investigation.

GLY 3603C Paleontology. Investigation of the history of life on earth, including aspects of invertebrate and vertebrate paleontology, micropaleontology and paleobotany.

GLY 4450 Geophysics. Introduces the basic types of geophysical data used to characterize the subsurface. Learn about seismic refraction and reflection, gravity, magnetics, heat flow and electromagnetic methods.

GLY 4552C Sedimentary Geology. Basic disciplines important in understanding the origin and classification of sedimentary rocks including sedimentary petrology, sedimentology and stratigraphy.

GLY 4734 Coastal Morphology and Processes. Examines the nature and variety of coastal processes, and the origin and modification of environmental changes along coasts, including human activities in the coastal zone.

GLY 4930 Special Topics in Geology (Estuarine Systems). Lecture, conferences, or laboratory sessions covering selected topics of current interest in modern geology.

OCE 3016 Introduction to Coastal and Oceanographic Engineering. Introduces important coastal and oceanographic processes. Geophysical fluid motions; waves and tides; air-sea interaction; pollutant transport; coastal hydraulic and sedimentary processes.

ZOO 4205C Invertebrate Biodiversity. Comparative biology of invertebrates, emphasizing morphology, evolution, ecology and life history.

CLAS Additional Electives, with Instructor Permission

EOC 6196 Littoral Processes. Shoreline developments; nearshore hydrodynamics; sediment transport phenomena by waves and wind; methods of determining littoral transport quantities; effects of groins, jetties, and other coastal structures on littoral processes.

EOC 6934 Advanced Topics in Coastal and Oceanographic Engineering. Waves; wave-structure interaction; coastal structures; ocean structures; sediment transport; instrumentation; advanced data analysis techniques; turbulent flow and its applications.

FAS 5276C Field Ecology of Aquatic Organisms. Understanding principles of fish and shellfish ecology through field studies. Intensive study in lakes, rivers, and coastal marshes to gain understanding of how fish and shellfish interact with their environment. Requires extensive field trips.
FAS 6176 Algae Biology and Ecology. Covers the biology and ecology of aquatic algae, including evolution, classification, structure, photosynthesis, growth, and reproduction. Emphasis on the ecological role of algae in different aquatic ecosystems, their impacts, and their applications.


GLY 5558C Sedimentology. Lecture and discussion of major sedimentary processes active in coastal and continental margin settings, focus on relating processes with sedimentary facies. Class work augmented with frequent field trips.

GLY 5736 Marine Geology. Detailed introduction to the origin and evolution of ocean basins, ocean margins, and oceanic sediments and microfossils, including a paleoceanographic history of the marine realm.

GLY 5786L Topics in Field Geology (Bahamas). Visits to selected sites and regions of outstanding geologic value and interest.

GLY 6075 Global Climate Change: Past, Present, and Future. Evolution of the Earth’s climate through geologic time, including discussion of modern climatology and methods of paleoclimate interpretations.

GLY 6425 Tectonics. Evolution and formation of mid-ocean ridges, seamounts, hot spots, island arcs, back-arc basins, passive margins, and mountain chains.

GLY 6932 Special Topics in Geology (Chemical Biomarkers in Aquatic Systems). Lectures, conferences, or laboratory sessions covering selected topics of current interest in modern geology.

OCP 6050 Physical Oceanography. Structure of ocean basins; physical and chemical properties of seawater; basic physical laws used in oceanography; ocean current; thermohaline effects; numerical models; heat budget.

OCP 6168 Data Analysis Techniques for Coastal and Ocean Engineers. Data editing, fundamentals of spectral analysis, subsurface and surface signal analysis, directional spectral analysis.

OCP 6295 Estuarine and Shelf Hydrodynamics I. Kinematics and dynamics of estuaries, small scale motions, tidal hydrodynamics, nontidal circulations, shelf waves, estuary and shelf interactions, mathematical models.

ZOO 6456C Ichthyology. Examines the diversity of fishes in the southeastern U.S. with an emphasis on Florida. In addition to phylogenetic relationships and identification, lectures, labs and research will emphasize the morphological, behavioral, and ecological adaptations of fishes living in different environments.

ZOO 6406 Biology of Sea Turtles. All aspects of biology of sea turtles and how their biology effects their conservation.
CALS track

CALS Required Courses

AEB 3103: Principles of Food and Resource Economics. Introduces the field of food and resource economics, the principles of economics as applied to agriculture, and the economic problems of the agricultural industry and the individual farmer.

AEC 3030C Effective Oral Communication. Strategies and techniques for effective presentations in the food, agricultural and natural resource professions. Emphasis on oral and visual techniques for formal and informal situations including leadership and group settings.

AEC 3033C Research and Business Writing in Agricultural and Life Sciences. Establishes the importance of effective communication to success in both the educational and professional environments; emphasizes writing as a primary form of communication; examines the elements of effective written communication in organizational and scholarly areas; and explores the causes of ineffective writing and ways to correct them.

BSC 2010 Integrated Principles of Biology 1. The first of a two-semester sequence that prepares students for advanced biological sciences courses and allied fields. Studies the origin of life systems; of biological molecules and organization of living things at the subcellular, cellular and organismic levels; and of the activities of living forms in obtaining and utilizing energy and materials in growth, maintenance and reproduction.

BSC 2010L Integrated Principles of Biology Laboratory 1. Laboratory experiments designed to accompany BSC 2010.

BSC 2011 Integrated Principles of Biology 2. The second of a two-semester sequence that prepares students for advanced biological sciences courses and allied fields. Examination in living things of the principles of information storage, transmission and utilization at the cell, organism and population levels; of the mechanisms of evolutionary change in the diversification of living things and their life styles; of population growth and regulation; and of energy flow and biogeochemical cycling in the biosphere.

BSC 2011L Integrated Principles of Biology Laboratory 2. Laboratory experiments designed to accompany BSC 2011.

CHM 2045 General Chemistry 1. Stoichiometry, atomic and molecular structure, the states of matter, reaction rates and equilibria.

CHM 2045L General Chemistry 1 Laboratory. Laboratory experiments designed to reflect the topics presented in CHM 2045.

CHM 2046 General Chemistry 2. Acids and bases, additional aspects of chemical equilibria, thermodynamics, electrochemistry, complex ions and descriptive chemistry.

CHM 2046L General Chemistry 2 Laboratory. Laboratory experiments designed to reflect the topics presented in CHM 2046.

ECO 2013 Principles of Macroeconomics. The nature of economics, economic concepts and institutions; growth, unemployment and inflation; money and banking; economic policies; and the international economy.
ECO 2023 Principles of Microeconomics. Theories of production, determination of prices and distribution of income in regulated and unregulated industries. Attention is also given to industrial relations, monopolies and comparative economic systems.

ENC 2210 Technical Writing. Surveys the forms and methods of communication used in business, industry and government, including nonformal and formal reports, letters, resumes and proposals.

ENC 3254 Professional Writing in the Discipline. A communication course adjusted to a specific professional discipline, the discipline to be determined by need. Covers major elements of organizational communication with emphasis on composition of reports, proposals, letters and memos, manuals, and oral presentations. Course materials and assignments are relevant to the specific discipline.

FAS 4202C Biology of Fishes. The general biology of fishes, with emphasis on trends in their evolution, integrative and sensory biology, physiology, feeding ecology, reproduction, growth and population dynamics as they relate to fisheries.

FAS 4270 Marine Ecological Processes. The ecology of marine organisms and habitats with focus on how general ecological principles, and those unique to the marine environment, drive patterns and processes.

FAS 4932 Topics in Fisheries and Aquatic Sciences (Biology and Ecology of Algae). Management, use, and control of freshwater and marine algae and aquatic microorganisms. Overview of associated products, processes, and problems and economic implications.


FNR 4660 Natural Resource Policy and Economics. Factors in evolution of forest, range, and wildlife natural resources administration and policies in the United States; policy components; policy formation, implementation, change processes; and economic criteria for evaluating the effectiveness of policies.

GLY 3083C Fundamentals of Marine Sciences. Introduces the basic disciplines of marine sciences, including geology, chemistry, physics, biology and conservation, with an emphasis on marine research.

IDS 1161 What is the Good Life. Examines the enduring question, "What is the Good Life?" from the perspectives of the humanities. Topics include the cost of the good life, how people have chosen to live as members of local and global communities, and conceptions and expressions of beauty, power, love and health.

MAC 2311 Analytic Geometry and Calculus I. Introduces analytic geometry; limits; continuity; differentiation of algebraic, trigonometric, exponential and logarithmic functions; applications of the derivative; inverse trigonometric functions; differentials; introduction to integration; and the fundamental theorem of calculus.

OCE 1001 Introduction to Oceanography. Explores the geological, physical, and biological characteristics of Earth's marine realm. Includes discussion of scientific methods, the history of oceanography, and emphasizes understanding of the mutual interactions between humans and the ocean.
PHY 2004 Applied Physics 1. Emphasizes the practical applications of basic physics to a range of professions, including architecture, agricultural sciences, building construction and forest resources. Mechanics of motion, forces, energy, momentum, wave motion and heat.

PHY 2004L Laboratory for Applied Physics 1. Laboratory experience illustrating the practical applications of basic physics, including the mechanics of motion, forces, energy, momentum, wave motion and heat.

SPC 2608 Introduction to Public Speaking. Theory and practice presenting public speeches, determining communication purpose(s) and adapting to organization, evidence, language and other message characteristics for designated audiences.

STA 2023 Introduction to Statistics 1. Graphical and numerical descriptive measures. Simple linear regression. Basic probability concepts, random variables, sampling distributions, central limit theorem. Large and small sample confidence intervals and significance tests for parameters associated with a single population and for comparison of two populations. Use of statistical computer software and computer applets to analyze data and explore new concepts.


STA 4210 Regression Analysis. Simple linear regression and multiple linear regression models. Inference about model parameters and predictions, diagnostic and remedial measures about the model, independent variable selection, multicollinearity, autocorrelation and nonlinear regression. SAS implementation of the above topics.

STA 4222 Sample Survey Design. An introduction to the design of sample surveys and the analysis of survey data, the course emphasizes practical applications of survey methodology. Topics include sources of errors in surveys, questionnaire construction, simple random, stratified, systematic and cluster sampling, ratio and regression estimation, and a selection of special topics such as applications to quality control and environmental science.

ZOO 4205C Invertebrate Biodiversity. Comparative biology of invertebrates, emphasizing morphology, evolution, ecology and life history.

ZOO 4926 Special Topics in Zoology (Marine Ecology). Provides students with a conceptual understanding of ecology with an emphasis on marine community ecology in tropical coral reefs. Immerses students in field research, from conceptualization to final products including presentations and reports.

CALS Approved Electives

AEB 3450 Introduction to Natural Resource and Environmental Economics. Introduces natural and environmental resource economics. Emphasizes understanding economic concepts such as resource scarcity, market failure, externality, property rights and common property resources and their application to studies of forest, land, water, energy and coastal resources.

CHM 2200 Fundamentals of Organic Chemistry. An elementary course embracing the more important aspects of organic chemistry. Intended for students in programs requiring only one semester of organic chemistry. Not intended for pre-med, pre-dentistry or pre-vet students.
CHM 2200L Fundamentals of Organic Chemistry Laboratory. Organic laboratory experiments to accompany CHM 2200.

EGN 4932 Special Topics (Physical Oceanography). Structure of ocean basins; physical and chemical properties of seawater; basic physical laws used in oceanography; ocean current; thermohaline effects; numerical models; heat budget.

FAS 2024 Global and Regional Perspectives in Fisheries. Fish biology, ecology and habitats relevant to fisheries on both a global and regional (Florida) scale. Follows the fisheries occurring from cold mountain rivers to the depths of the oceans, with special topics (e.g., artificial reefs, fisheries bycatch and aquaculture). Intended for non-science and science majors.

FAS 4305C: Introduction to Fishery Science. Principles of fish management in freshwater and marine systems. Includes field and laboratory techniques for aquatic habitat and fishery resource assessment, aquaculture practices and consideration of contemporary issues pertinent to sport and commercial uses of renewable fisheries resources.


FAS 4932 Topics in Fisheries and Aquatic Sciences (Advanced Open Water SCUBA). Recreational SCUBA training and experience, in accordance with the National Association of Underwater Instructors (NAUI) standards.

FAS 4932 Topics in Fisheries and Aquatic Sciences (Applied Fisheries Statistics). Population sampling and estimation, statistical assumptions and robustness, mark-recapture, growth, and empirical modeling of populations.

FAS 4932 Topics in Fisheries and Aquatic Sciences (Field Ecology of Aquatic Organisms). Understanding principles of fish and shellfish ecology through field studies. Intensive study in lakes, rivers, and coastal marshes to gain understanding of how fish and shellfish interact with their environment.

FAS 4932 Topics in Fisheries and Aquatic Sciences (Invasion Ecology of Aquatic Animals). A comprehensive overview of invasion ecology, highlighting aspects related to aquatic animals, including ecological concepts and debates underlying this developing field.

FAS 4932 Topics in Fisheries and Aquatic Sciences (Marine Adaptations). Compares the physiological adaptations of marine, coastal, and estuarine organisms to environmental conditions across levels of organization, from ecological and organismal to cellular and molecular.

FAS 4932 Topics in Fisheries and Aquatic Sciences (Science Diver). Scientific and research SCUBA training and experience, in accordance with the National Association of Underwater Instructors (NAUI) standards.

FOR 3202 Society and Natural Resources. Local-to-global and individual-to-institutional perspectives on natural resource values, sustainability, diversity, and social change with consideration of potential paths for working with complex human and natural resource systems.

FOR 4941 Internship in Natural Resources. Supervision by a faculty member and a post-internship report are required.

GEO 4300 Environmental Biogeography. Description and explanation of spatial patterns of biodiversity and the underlying biophysical factors of human-environment interactions. Investigates past and present distributions of organisms and how patterns of environmental variation influence organisms. How biogeography is used to design nature reserves and how forecasting climate change may affect organisms and explain human adaptations to environmental variability.

GIS 3072C Geographic Information Systems. Addresses GIS concepts, data sources, spatial references: GIS data modeling, management, and editing; surface modeling; and vector and raster analysis. Provides practical examples, tutorials, and projects serving the geomatics, natural resource management, and planning fields.

GLY 3074 Oceans and Global Climate Change. Examines the role the oceans play in determining climate and regulating global climate change on a range of timescales from decades to millions of years.

GLY 4726 Geochemical Oceanography. Focuses on chemical properties and processes in the oceans, exploring the links between chemistry, biology, geology, and global change within a marine context. Topics include elemental composition and speciation, biogeochemical cycles, chemical and isotopic tracers, chemistry of marine sediments, and oceanic uptake of anthropogenic carbon.

GLY 4734 Coastal Morphology and Processes. Examines the nature and variety of coastal processes, and the origin and modification of environmental changes along coasts, including human activities in the coastal zone.

MAC 2312 Analytical Geometry and Calculus 2. Techniques of integration; applications of integration; differentiation and integration of inverse trigonometric, exponential and logarithmic functions; sequences and series.

OCE 3016 Introduction to Coastal and Oceanographic Engineering. Introduces important coastal and oceanographic processes. Geophysical fluid motions; waves and tides; air-sea interaction; pollutant transport; coastal hydraulic and sedimentary processes.

PCB 4043C General Ecology. Ecological processes and organization in terrestrial and aquatic habitats. Laboratory and field exercises emphasize techniques of ecological analysis.

PCB 4674 Evolution. Processes and mechanisms of evolution, including population genetics, speciation, patterns of evolution and molecular evolution.

STA 4210 Regression Analysis. Simple linear regression and multiple linear regression models. Inference about model parameters and predictions, diagnostic and remedial measures about the model, independent variable selection, multicolinearity, autocorrelation and nonlinear regression. SAS implementation of the above topics.

STA 4211 Design of Experiments. The basic principles of experimental design: analysis of variance for experiments with a single factor; randomized blocks and Latin square designs: multiple comparison of treatment means; factorial and nested designs; analysis of covariance; response surface methodology.

STA 4222 Sample Survey Design. An introduction to the design of sample surveys and the analysis of survey data, the course emphasizes practical applications of survey methodology. Topics include sources of errors in surveys, questionnaire construction, simple random, stratified, systematic and cluster sampling, ratio and regression estimation, and a selection of special topics such as applications to quality control and environmental science.

SYD 4510 Environment and Society. Social foundations of environmental problems and social responses to environmental issues, including contestation, conflicts and movements.

VME 4012 Aquatic Animal Conservation Issues. Controversial conservation issues surrounding aquatic species, from invertebrates to marine mammals.

VME 4013 Aquatic Wildlife Health Issues. Introduces the natural history, anatomy, physiology, behavior and health issues of aquatic wildlife: marine mammals, sea turtles, crocodiles and some fish and invertebrates.

WIS 3553C Introduction to Conservation Genetics. Types of molecular polymorphisms found in nature, including how genetic information is organized, what evolutionary and demographic forces act to shape genetic polymorphisms, and how and why genetics are useful in population conservation and management.

WIS 4203C Landscape Ecology and Conservation. Central constructs and methods of landscape ecology are applied to wildlife ecology and conservation.


WIS 4523 Human Dimensions of Natural Resource Conservation. Local and international models are used to provide an interdisciplinary overview of the theory and practice of conservation education, environmental communication and integrated resource management and conservation.


ZOO 4403C Marine Biology. Survey of major marine taxa, systematics of local marine fauna and flora, with familiarization of the marine environment. Laboratory emphasizes field work and independent projects.

ZOO 4405 Sea Turtle Biology and Conservation. The biology of sea turtles and their roles in marine ecosystems, focusing on current major issues in sea turtle biology and challenges in their conservation and management.
CALS Additional Electives, with Instructor Permission

**FAS 6337C Fish Population Dynamics.** Analyzing fish populations for management purposes. Methods for estimating population parameters such as growth, recruitment, and mortality. Using population parameters and computer models to predict yield and catch composition, and bioenergetics approaches for fisheries management problems.

**GLY 6075 Global Climate Change: Past, Present, and Future.** Evolution of the Earth’s climate through geologic time, including discussion of modern climatology and methods of paleoclimate interpretations.

**OCP 6295 Estuarine and Shelf Hydrodynamics 1.** Kinematics and dynamics of estuaries, small scale motions, tidal hydrodynamics, nontidal circulations, shelf waves, estuary and shelf interactions, mathematical models.

**ZOO 6406 Biology of Sea Turtles.** All aspects of biology of sea turtles and how their biology effects their conservation.

**ZOO 6456C Ichthyology.** Examines the diversity of fishes in the southeastern U.S. with an emphasis on Florida. In addition to phylogenetic relationships and identification, lectures, labs and research will emphasize the morphological, behavioral, and ecological adaptations of fishes living in different environments.

**F.** For degree programs in the science and technology disciplines, discuss how industry-driven competencies were identified and incorporated into the curriculum and indicate whether any industry advisory council exists to provide input for curriculum development and student assessment.

Industry-driven competencies were identified by external boards: The Biology Leadership Circle, the Geological Sciences External Advisory Board, and the Fisheries and Aquatic Sciences Program Advisory Council. Membership on these advisory councils includes industry, state, and federal agency leaders. Our curriculum and Student Learning Outcomes were developed to ensure that students receive exceptional training in the competencies identified by the councils, including professional communication, critical thinking, leadership, and ethical behavior. Annual Academic Assessment Reports evaluate student achievement in these areas and results are discussed within the Marine Sciences Committee (faculty from CLAS and CALS) and with the external boards to ensure that industry-driven competencies are successfully incorporated into the marine sciences curriculum.

**G.** For all programs, list the specialized accreditation agencies and learned societies that would be concerned with the proposed program. Will the university seek accreditation for the program if it is available? If not, why? Provide a brief timeline for seeking accreditation, if appropriate.

Accreditation by an outside agency is not required. The program will be periodically reviewed by external experts and monitored by the Marine Sciences Committee, composed of faculty from CLAS and CALS.
H. For doctoral programs, list the accreditation agencies and learned societies that would be concerned with corresponding bachelor’s or master’s programs associated with the proposed program. Are the programs accredited? If not, why?

N/A

I. Briefly describe the anticipated delivery system for the proposed program (e.g., traditional delivery on main campus; traditional delivery at branch campuses or centers; or nontraditional delivery such as distance or distributed learning, self-paced instruction, or external degree programs). If the proposed delivery system will require specialized services or greater than normal financial support, include projected costs in Table 2 in Appendix A. Provide a narrative describing the feasibility of delivering the proposed program through collaboration with other universities, both public and private. Cite specific queries made of other institutions with respect to shared courses, distance/distributed learning technologies, and joint-use facilities for research or internships.

The delivery of the proposed degree program will be primarily on the main campus, but will also include field trips and additional off-campus opportunities for study including the Semester of Immersion offered through the Department of Biology that includes numerous elective courses for the Marine Science degree. Several of the courses will also include online components to the coursework with some optional fully online courses. No new collaborations with other universities will be required to implement this degree program.

IX. Faculty Participation

A. Use Table 4 in Appendix A to identify existing and anticipated full-time (not visiting or adjunct) faculty who will participate in the proposed program through Year 5. Include (a) faculty code associated with the source of funding for the position; (b) name; (c) highest degree held; (d) academic discipline or specialization; (e) contract status (tenure, tenure-earning, or multi-year annual [MYA]); (f) contract length in months; and (g) percent of annual effort that will be directed toward the proposed program (instruction, advising, supervising internships and practica, and supervising thesis or dissertation hours).

See Table 4, Appendix A.

B. Use Table 2 in Appendix A to display the costs and associated funding resources for existing and anticipated full-time faculty (as identified in Table 4 in Appendix A). Costs for visiting and adjunct faculty should be included in the category of Other Personnel Services (OPS). Provide a narrative summarizing projected costs and funding sources.

See Table 2 in Appendix A.

C. Provide in the appendices the abbreviated curriculum vitae (CV) for each existing faculty member (do not include information for visiting or adjunct faculty).

Please see Appendix C.

D. Provide evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service. Such evidence may include trends over time for average course load, FTE productivity, student HC in major or service courses, degrees granted, external funding attracted, as well as qualitative indicators of excellence.
The Department of Geological Sciences (CLAS) has 20 full time teaching and research faculty who are all involved with undergraduate and graduate education at some level. The Department offers BS and BA degrees in Geology and a BA degree in Environmental Geoscience. There are currently 66 residential undergraduate majors and 45 UF Online majors in the Department. The number of undergraduate majors has more than tripled since 2010. Well over half of the faculty in the department currently have external grant funding from state and federal agencies for research that totals about $5.5 million. Funding at this level has been steady for over 10 years.

The Department of Biology (CLAS) has 28 full time research and teaching faculty in Gainesville who are all involved with undergraduate and graduate education at some level. The Department offers BS and BA degrees in Biology and BS degrees in Botany and Zoology. There are currently 2243 residential undergraduate majors and 60 UF Online undergraduate majors in Biology, 35 in Botany and 87 in Zoology. The number of undergraduate majors in Biology has been climbing steadily, such that it is now the largest undergraduate major at UF. About 75% of the research faculty in the department currently have external grant funding from state and federal agencies for research that totals about $3.8 million.

The School of Forest Resources and Conservation (SFRC), in CALS, is comprised of three major programs, each with established majors: Forest Resources and Conservation (FRC), Fisheries and Aquatic Sciences (FAS), and Geomatics (GEM). The proposed Marine Sciences degree program is most closely aligned with the FAS program, though key elements of the others are pertinent. The SFRC has 47 tenure-track and 2 non-tenure track faculty who are state-funded and another 24 faculty who are either joint appointments with other UF departments or are grant-funded. Of all these, the FAS program has 24 tenure-track, 3 joint and 5 non-tenure track faculty. All School faculty are engaged in undergraduate and/or graduate education at some level. The School offers B.S. degrees in FRC, GEM and Natural Resource Conservation (NRC), and has been the home of the UF-CALS track of the Marine Sciences (MAR) major since its inception. Undergraduate enrollments in Fall 2017 were FRC=62, GEM=63, NRC=99, and MAR=95. Enrollments in all majors have increased over the past decade, substantially so for NRC and the CALS MAR track. Graduate enrollments (Ph.D., M.S. and non-thesis Masters) have similarly increased over the same period; in Fall 2017 total graduate enrollments were FRC=98, GEM=30, and FAS=80. The School also offers 9 graduate certificates online, with 139 active certificate students. The SFRC is now the second largest producer of student credit hours in UF’s College of Agricultural and Life Sciences, among 16 departments and schools, up from ninth highest in 2008-2009. Total School expenditures for FY2017-2018 were $23.61 million, of which $13.13 million were appropriated and $7.43 million were federal and state grants. Grant expenditures since 2012 have varied annually between, $7.43 and $11.88 million.

X. Non-Faculty Resources

A. Describe library resources currently available to implement and/or sustain the proposed program through Year 5. Provide the total number of volumes and serials available in this discipline and related fields. List major journals that are available to the university’s students. Include a signed statement from the Library Director that this subsection and subsection B have been reviewed and approved.

The Libraries of the University of Florida form the largest information resource system in the state of Florida. The libraries hold over 6,000,000 print volumes, 1,400,000 e-books, 170,000 full-text electronic journals, and 1000 electronic databases. The George A. Smathers Libraries of the University of Florida, a system of six research libraries, includes libraries for sciences, humanities & social sciences, architecture & fine arts, education and health sciences. The UF Levin School of Law supports a related, but independent law library. Books and periodicals, related to marine science are located primarily in the Marston Science Library.

Electronic Books, journals and many key databases, such as Web of Science, BIOSIS Citation Index, Proquest SciTech Collection and others, are available via the internet to UF students, faculty and staff. Many relevant databases are multidisciplinary and are funded centrally. The UF libraries expend over $5
Million yearly on electronic resources. Listed below are some of the important journals available at UF for use by students pursuing a marine science degree:

- Biogeochemistry
- Coral Reefs
- Hydrobiologia
- Journal of Experimental Marine Biology and Ecology
- Marine Biodiversity Records
- Marine Biology
- Marine Biotechnology
- Marine Ecology
- Marine Environmental Research
- Marine Geology
- Nature
- Oceanography
- Paleoceanography
- Progress in Oceanography
- Science

All students, faculty, and staff may use interlibrary loan services. The Libraries hold memberships in a number of consortia, and in institutions such as the Center for Research Libraries, ensuring access to materials not held locally. A service, known as “Uborrow” allows UF patrons to easily borrow materials from any other Florida state university or college library. Library patrons initiate unmediated requests via a union catalog, and materials are delivered to Gainesville within a few days. Uborrow access is often faster (with a longer circulation period) than with traditional interlibrary loan.

With monies allocated through the Provost and the UF budgeting process, the library materials budget is determined by the Dean of Libraries in consultation with the Associate Dean for Scholarly Resources & Research Services and subject specialist librarians. The subject specialist for the biological/life sciences, with input from Department of Biology, the Department of Geological Sciences, and the School of Forest Resources and Conservation faculty, determines acquisition priorities for the year. Standing subscriptions to journal literature and databases make up the majority of purchasing. Online research guides for all UF disciplines and many specific topics are available from the library website http://library.ufl.edu. Many online tutorials for specific databases are also available. Additionally, the UF Libraries hosts workshops, lectures and events throughout the year.

B. Describe additional library resources that are needed to implement and/or sustain the program through Year 5. Include projected costs of additional library resources in Table 2 in Appendix A. Please include the signature of the Library Director in Appendix B.

No additional resources beyond the current allocation and normal growth in holdings already in place to support current programs are necessary to implement or sustain the undergraduate degree program in Marine Sciences.

C. Describe classroom, teaching laboratory, research laboratory, office, and other types of space that are necessary and currently available to implement the proposed program through Year 5.

The current Marine Sciences Interdisciplinary Studies major uses classroom space that is available within the participating departments and across campus, as necessary, for instructional purposes. This includes small (~20 people) to large (~200 people) classrooms, as well as instructional laboratory space. There are numerous research laboratories distributed across campus that are relevant to Marine Sciences as well as field-based research stations such as the Whitney Laboratory for Marine Bioscience on the Atlantic coast and the Seahorse Key Marine Laboratory and Nature Coast Biological Station on the Gulf coast. This diversity of strong research programs provides a wealth of opportunities to participate in research at the undergraduate level across a wide spectrum of marine science topics.
D. Describe additional classroom, teaching laboratory, research laboratory, office, and other space needed to implement and/or maintain the proposed program through Year 5. Include any projected Instruction and Research (I&R) costs of additional space in Table 2 in Appendix A. Do not include costs for new construction because that information should be provided in response to X (E) below.

N/A

E. If a new capital expenditure for instructional or research space is required, indicate where this item appears on the university's fixed capital outlay priority list. Table 2 in Appendix A includes only Instruction and Research (I&R) costs. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase as a result of the program, describe and estimate those expenses in narrative form below. It is expected that high enrollment programs in particular would necessitate increased costs in non-I&R activities.

N/A

F. Describe specialized equipment that is currently available to implement the proposed program through Year 5. Focus primarily on instructional and research requirements.

The teaching and research laboratories are well-equipped with the necessary equipment, instrumentation, and computers to carry out the coursework required towards the degree program, as well as providing additional opportunities for more in-depth research experiences. We also have access to vessels to be used for instructional purposes to facilitate field studies. In summary, all major equipment is in place to support the new degree program and no new equipment will be required.

G. Describe additional specialized equipment that will be needed to implement and/or sustain the proposed program through Year 5. Include projected costs of additional equipment in Table 2 in Appendix A.

N/A

H. Describe any additional special categories of resources needed to implement the program through Year 5 (access to proprietary research facilities, specialized services, extended travel, etc.). Include projected costs of special resources in Table 2 in Appendix A.

N/A

I. Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5. Include the projected costs in Table 2 in Appendix A.

Students in the degree program will be eligible to compete for existing scholarships offered by both colleges.

J. Describe currently available sites for internship and practicum experiences, if appropriate to the program. Describe plans to seek additional sites in Years 1 through 5.

Internship programs currently available through the University of Florida, as well as state and federal partners, are ideally suited for undergraduate students in the Marine Sciences degree program. At the University, internships are potentially available through the IFAS Dean of Research Summer Internship program, the UF Whitney Laboratory, and the UF/IFAS Nature Coast Biological Station. In addition to UF sponsored programs, internships are available from:
• NOAA (https://coast.noaa.gov/fellowship/undgrad_opportunities.html), and
• FWC (http://myfwc.com/research/about/careers/internships-volunteers/opportunities).
and numerous opportunities collated by:
• Sea Grant (https://www.marinecareers.net/internships-and-fellowships).
APPENDIX B

Please include the signature of the Equal Opportunity Officer and the Library Director.

_________________________________________  __________________________
Signature of Equal Opportunity Officer        Date

_________________________________________  __________________________
Signature of Library Director                  Date

This appendix was created to facilitate the collection of signatures in support of the proposal. Signatures in this section illustrate that the Equal Opportunity Officer has reviewed section II.F of the proposal and the Library Director has reviewed sections X.A and X.B.
APPENDIX B

Please include the signature of the Equal Opportunity Officer and the Library Director.

Signature of Equal Opportunity Officer

7/26/19

Date

Signature of Library Director

7/17/19

Date

This appendix was created to facilitate the collection of signatures in support of the proposal. Signatures in this section illustrate that the Equal Opportunity Officer has reviewed section II.E of the proposal and the Library Director has reviewed sections X.A and X.B.
## Cover Sheet: Request 13713

**ALS 6XXXC**

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<tr>
<td>Department</td>
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<td>CALS - Wildlife Ecology and Conservation 514947000</td>
<td>Eric Hellgren</td>
<td>This request application includes 2 letters of support from Statistics faculty members, and constitute curriculum consults for the proposed course, Dr. Baiser has taught this course several times - it has an excellent reputation, is highly desired by CALS graduate students, and is ready for a permanent course number, Eric Hellgren</td>
<td>3/6/2019</td>
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</table>

**Letter of support Dr. Michaillidis.pdf**  
**Letter of support Dr. Winner.pdf**  
3/4/2019  
3/4/2019

No document changes

Graduate Curriculum Committee

No document changes

University Curriculum Committee Notified

No document changes

Statewide Course Numbering System

No document changes

Graduate School Notified

No document changes

Office of the Registrar

No document changes

College Notified

No document changes
Course|New for request 13713

Info
Request: ALS 6XXX
Description of request: I am requesting a permanent course number for Multivariate Statistics for Agricultural and Life Sciences
Submitter: Benjamin Baiser bbaiser@ufl.edu
Created: 4/18/2019 11:29:19 AM
Form version: 2

Responses
Recommended Prefix ALS
Course Level 6
Number xxx
Category of Instruction Intermediate
Lab Code C
Course Title Multivariate Statistics for Agricultural and Life Sciences
Transcript Title Multivarstats Aglife
Degree Type Graduate

Delivery Method(s) On-Campus
Co-Listing No
Co-Listing Explanation none
Effective Term Fall
Effective Year 2019
Rotating Topic? No
Repeatable Credit? No

Amount of Credit 3

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 3
Course Description This course provides students with a conceptual and practical understanding of the application of multivariate statistics in the agricultural and life sciences. Topics covered include ordination, clustering, and discrimination. The prerequisites are an introductory statistics course and some experience with the R language (although the latter is not strictly necessary).
Prerequisites STA 6093
Co-requisites none
Rationale and Placement in Curriculum Multivariate Statistics for Agricultural and Life Sciences is an intermediate graduate statistics course that is tailored toward students who have already collected their data. An understanding of univariate statistics and the R programming language and environment for statistical computing and graphics are necessary to get the most out of this course. This is the reasoning behind the prerequisite STA 6093.
Course Objectives The overarching goals of this course is for students to gain proficiency in selecting, implementing, interpreting, and disseminating results from multivariate analyses. Specifically, students will 1) learn the appropriate application of ordination, clustering, and discrimination techniques for different multivariate data structures and questions, 2) learn how to import, manipulate, and analyze multivariate data in R, 3) learn how to interpret and present results from multivariate analysis through figures and text.
Course Textbook(s) and/or Other Assigned Reading Borcard, D., Gillet, F., & Legendre, P. (2011). Numerical ecology with R. Springer.

Weekly Schedule of Topics *Lecture # Topic
1 Intro to multivariate statistics
Multivariate Data: screening, transformations, distance measures
Ordination 1: Principal Components Analysis (PCA)
Ordination 2: Principal Coordinates Analysis (PCoA) and Correspondence Analysis, Non-Metric Multidimensional Scaling (NMDS)
Cluster Analysis 1: Clustering Methods
Cluster Analysis 2: Choosing Clustering Methods and Visualization
Testing for groups: perMANOVA, Mantel's test
Discriminant Analysis/MANOVA
Classification and Regression Trees (CART)
Constrained Ordination
Constrained Ordination continued/Variance partitioning
Final Project Discussion
Advanced Topics
Comparison of Techniques

Links and Policies
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Projects: Two projects will assess your skills in ordination (project 1) and clustering (project 2) techniques. Specific directions for each project will be given during the semester.
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It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see:

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• Counseling Services
• Groups and Workshops
• Outreach and Consultation
• Self-Help Library
• Wellness Coaching

• U Matter We Care, www.umatter.ufl.edu/

• Career Connections Center, First Floor JWRU, 392-1601, https://career.ufl.edu/.

Residential Course: https://scr.dso.ufl.edu/policies/student-honor-code-studentconduct-code/

Online Course: http://www.distance.ufl.edu/student-complaint-process

Grading Scheme

# of points

% of Grade
Class attendance and participation 30

25%
In-lab assignments

30

25%
Projects (2)
30

25%
Final Project

30

25%
Total Points

120 100%

Grading Scale: A > 92%, A- = 90-91.9%, B+ = 87-89.9%, B = 82-86.9%, B- = 80-81.9%; C+ = 77-79.9%, C = 72-76.9%, C- = 70-71.9%, D+ = 67-69.9%, D = 62-66.9%, D- = 60-61.9%, F<60%

Instructor(s) Benjamin Baiser
January 4, 2019

Dear Curriculum Committee,

I am writing in support of Dr. Benjamin Baiser's course "Applied Multivariate Statistics for the Agricultural and Life Sciences" (currently WIS 6934) becoming a permanent course. Dr. Baiser and I recently sat down to discuss the similarities and differences between his course and my course, STA 6707: "Analysis of Multivariate Data". It is clear that Dr. Baiser's course differs significantly from mine in several ways. To begin with, the courses serve two different portions of the student base. WIS 6934 serves students in the Agricultural and Life Sciences (e.g., Wildlife Ecology, Forestry, Fisheries, Soils and Water, Agronomy, etc.) while STA 6707 serves primarily graduate students in Statistics, Mathematics and Econometrics. Both courses are filled to capacity each time they are given, so there is clearly a need for these two different applications of multivariate statistics. Second, Dr. Baiser's course has a dedicated lab component which my course does not. Third, the types of multivariate approaches differ between the two courses. Dr. Baiser teaches several techniques that are geared towards the analysis of ecological data (e.g., Correspondence Analysis, Canonical Correlation Analysis, distance-based Redundancy Analysis). Finally, Dr. Baiser uses datasets from the agricultural and Life Sciences which facilitates the learning of students who are familiar with such types of data.

In sum, I conclude that Dr Baiser's course "Applied Multivariate Statistics for the Agricultural and Life Sciences" is a distinctly different offering from STA 6707: "Analysis of Multivariate Data" and provides important statistical training to graduate students in the life sciences that is not elsewhere available in the UF graduate curriculum.

Please contact me directly if you have any further questions.

Sincerely,

George Michailidis
Director UF Informatics Institute
Professor of Statistics and Computer Science
University of Florida
January 17, 2019

Dear Curriculum Committee,

This letter is in support of the course (currently WIS 6934) “Applied Multivariate Statistics for the Agricultural and Life Sciences” taught by Dr. Benjamin Baiser to be set up as a permanent course. I have taught the undergraduate/graduate sections of STA 4702/5701 “Multivariate Statistical Methods (4702) / Applied Multivariate Methods (5701)” in Spring 2017 and in the current semester (Spring 2019). The classes have each had approximately 50 undergraduate and 10 graduate students.

Undergraduates tend to be Statistics and Math majors along with several Business, Psychology, and Engineering students. In 2017, the graduate students were from: Agriculture (1), Education (1), Engineering (2), Health & Human Performance (1), Health Professions (1), Liberal Arts & Sciences (1), Medicine (1), and Interdisciplinary Studies (1).

This course involves a matrix based approach to multivariate methods and covers details of the distributional properties (multivariate normal distribution) of the models. The applications include: Inferences for a mean vector, comparisons among several mean vectors, multivariate linear regression, principal components analysis, factor analysis, canonical correlation analysis, discriminant analysis, and cluster analysis.

My feeling is that the courses are taught to students of different backgrounds and academic directions. Further, 4702/5701 is primarily aimed at undergraduate students in Statistics and Math, and a general cross-section of graduate students from across many colleges at UF.

Sincerely Yours,

Larry Winner
<table>
<thead>
<tr>
<th>Department</th>
<th>Name and Title</th>
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<tbody>
<tr>
<td>Statistics</td>
<td>Mike Davel, Professor and Chair</td>
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</tbody>
</table>

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<tr>
<th>Phone Number</th>
<th>E-mail</th>
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<tbody>
<tr>
<td>273 3960</td>
<td><a href="mailto:davelm@ufl.edu">davelm@ufl.edu</a></td>
</tr>
</tbody>
</table>

**Comments:**
The proposed course is at a different level and for a different audience than the multivariate courses taught in the Department of Statistics, STA 4703, 5703, 6703, as documented in the letters from Michailidis and Winsor. So the department is supportive of the course but does not think it should have an STA prefix given the lack of sufficient depth and rigor.

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**Department** | **Name and Title**
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**Phone Number** | **E-mail**
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**Comments**

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**Department** | **Name and Title**
---|---

**Phone Number** | **E-mail**
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**Comments**

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ALS6XXXC Multivariate Statistics for Agricultural and Life Sciences (3 credits)
Fall Semester
Tuesday: Period 4 (McCarty B 3096), Thursday: Periods 3 and 4 (McCarty B 3086)

Instructor:
Benjamin Baiser
Assistant Professor
Department of Wildlife Ecology and Conservation
office: Building 116, Mowry Rd
tel: (352) 392-1947
e-mail: bbaiser@ufl.edu

Office hours: Thursday 1-2pm

Course Description:
This course provides students with a conceptual and practical understanding of the application of multivariate statistics in the life sciences. This course consists of a one period lecture and a two period computer lab (which may also contain a lecture) where students will put to use the techniques learned in lecture using R, the open source language for statistical computing and graphics. The prerequisites are an introductory statistics course and some experience with the R language (although the latter is not strictly necessary).

Course Objectives:
The overarching goals of this course is for students to gain proficiency in selecting, implementing, interpreting, and disseminating results from multivariate analyses. Specifically, students will 1) learn the appropriate application of ordination, clustering, and discrimination techniques for different multivariate data structures and questions, 2) learn how to import, manipulate, and analyze multivariate data in R, 3) learn how to interpret and present results from multivariate analysis through figures and text.

Course Schedule:

Course Schedule is subject to change

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<tr>
<th>*Lecture #</th>
<th>Topic</th>
<th>Readings</th>
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<tbody>
<tr>
<td>1</td>
<td>Intro to multivariate statistics</td>
<td>McGarigal et al., Ch. 1</td>
</tr>
<tr>
<td>2</td>
<td>Multivariate Data: screening, transformations, distance measures</td>
<td>Borcard et al. , Ch. 2 &amp; 3 (pgs. 31-45)</td>
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<td>3</td>
<td>Ordination 1: Principal Components Analysis (PCA)</td>
<td>McGarigal et al., Ch. 2 (pgs.19-55) Peres-Neto et al. 2003</td>
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<td>Ordination 2: Principal Coordinates Analysis (PCoA) and Correspondence Analysis, Non-Metric Multidimensional Scaling (NMDS)</td>
<td>Borcard et al. , Ch. 5 (pgs. 132-145)</td>
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<td>5 Project Due</td>
<td>Cluster Analysis 1: Clustering Methods</td>
<td>McGarigal et al., Ch. 3</td>
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<td>Lecture</td>
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<td>Cluster Analysis 2: Choosing Clustering Methods and Visualization</td>
<td>Borcard et al., Ch. 4 (pgs. 53-79)</td>
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<td>7</td>
<td>Testing for groups: perMANOVA, Mantel's test</td>
<td>McCune and Grace, Ch.24 &amp; 27</td>
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<td>Discriminant Analysis/MANOVA</td>
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<td>Project Due</td>
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<td>De'ath &amp; Fabricius 2000</td>
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<td>Constrained Ordination</td>
<td>Borcard et al., Ch. 6</td>
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<td>Constrained Ordination continued/Variance partitioning</td>
<td>Borcard et al., Ch. 6 Cushman &amp; McGarigal 2002</td>
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<td>12</td>
<td>Final Project Discussion</td>
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<td>13</td>
<td>Advanced Topics: TBD</td>
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<tr>
<td>14</td>
<td>Comparison of Techniques</td>
<td>McGarigal et al. Ch. 6</td>
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</table>

*each lecture has an associated lab

**Important Dates:**
Friday, September 21: Project 1 is due

Friday, October 19: Project 2 is due

Friday, December 7: Final Project is due

**Course Readings:**
Required:


*online version available for free from UF Library

**Grading:**

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<th># of points</th>
<th>% of Grade</th>
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<td>Class attendance and participation</td>
<td>30</td>
<td>25%</td>
</tr>
<tr>
<td>In-lab assignments</td>
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</tbody>
</table>
Final Project 30 25%

Total Points 120 100%

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• Online Course: http://www.distance.ufl.edu/student-complaint-process
Cover Sheet: Request 13683

HOS 5XXX Root and Rhizosphere Ecology

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<th>7/30/2019 10:48:06 AM</th>
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Course|New for request 13683

Info

Request: HOS 5XXX Root and Rhizosphere Ecology
Description of request: I am requesting a code for the course Root and Rhizosphere Ecology. The course has been taught last year and encountered positive feedback from the students.

Submitter: Lorenzo Rossi l.rossi@ufl.edu
Created: 7/30/2019 10:58:30 AM
Form version: 3

Responses
Recommended Prefix HOS
Course Level 6
Number XXX
Category of Instruction Intermediate
Lab Code None
Course Title Root and Rhizosphere Ecology
 Transcript Title Rhizosphere Ecology
Degree Type Graduate

Delivery Method(s) Online
Co-Listing No
Co-Listing Explanation N/A
Effective Term Fall
Effective Year 2020
Rotating Topic? No
Repeatable Credit? No

Amount of Credit 3

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 4
Course Description The course provides a complete view of the rhizosphere and its unique functioning that implies numerous, strong and complex interactions between plant roots, soil constituents and microorganisms.
Prerequisites BOT 2010 or BSC 2010
Co-requisites N/A

Rationale and Placement in Curriculum This is a new advanced course which examines the interactions between plant root apparatus and the environment. It is not being offered to other departments at UF and will allow students from different departments to identify the role of plant roots in the global context of soil development and atmosphere composition and recommend modern research techniques for field and lab studies on plant roots.

Course Objectives - To critically appraise the current literature on root and rhizosphere biology and ecology and to present and discuss recent plant root science articles in a form of a journal club.
- To develop an understanding of unique biochemical processes in roots and the rhizosphere.
- To discuss modern research techniques for field and lab studies on plant roots.
- To promote integration of different disciplines, such as plant physiology, biochemistry, natural product chemistry, molecular biology, genomics and, chemical ecology, to study root and rhizosphere processes.
- To raise awareness about environmental concerns which affect roots (e.g., interaction between plant roots and heavy metals, engineered nanoparticles, emerging pathogens, etc.).

Course Textbook(s) and/or Other Assigned Reading Recommended textbooks

Required readings

Weekly Schedule of Topics Course organization
The module material of a given week will be made available the Friday of the week before. Quizzes and discussion posts must be submitted by midnight of the Friday of a given module's week.
Module 0: Introduction to the course
Module 1: Definition of the rhizosphere and origin of roots
Module 2: Root structure, functions, and modifications
Module 3: Regulation of root growth
Module 4: Classification and function of root-derived products
Module 5: Root exudates and mineral nutrition
Module 6: Root system architecture and nutrient acquisition
Module 7: Legume-Rhizobia symbiosis
Module 8: Mycorrhizal fungi and nutrient acquisition
Module 9: Rhizobacteria that promote plant growth
Module 10: Drought and salt stress
Module 11: Heat and flooding stress
Module 12: Stress from trace metals and emerging contaminants
Module 13: Stresses caused by pathogens
Module 14: Modern research techniques for field experiments
Module 15: Modern research techniques for laboratory experiments

Course schedule
8/20/2019  Week 1 – Module 1 – Definition of the rhizosphere/1
8/22/2019  Week 1 – Module 1 – Definition of the rhizosphere/2
8/23/2019  Week 1 – Module 1 – Quiz #1, Discussion #1
8/28/2019  Week 2 – Module 2 – Root structure and development/1
8/28/2019  Week 2 – Module 2 – Root structure and development/2
8/30/2019  Week 2 – Module 2 – Quiz #2, Discussion #2
9/2/2019    Labor Day
9/3/2019  Week 3 – Module 3 – Regulation of root growth/1
9/5/2019  Week 3 – Module 3 – Regulation of root growth/2
9/8/2019  Week 3 – Module 3 – Quiz #3, Discussion #3
9/9/2019  Week 4 – Module 4 – Classification and function of root-derived products/1
9/11/2019  Week 4 – Module 4 – Classification and function of root-derived products/2
9/13/2019  Week 4 – Module 4 – Quiz #4, Discussion #4
9/16/2019  Week 5 – Module 5 – Root exudates and mineral nutrition/1
9/18/2019  Week 5 – Module 5 – Root exudates and mineral nutrition/2
9/20/2019  Week 5 – Module 5 – Quiz #5, Discussion #5
9/23/2019  Week 6 – Module 6 – Root system architecture and nutrient acquisition/1
9/25/2019  Week 6 – Module 6 – Root system architecture and nutrient acquisition/2
9/27/2019  Week 6 – Module 6 – Quiz #6, Discussion #6
9/27/2019  First Exam (Modules 1-5)
9/30/2019  Week 7 – Module 7 – Legume-Rhizobia symbiosis/1
10/2/2019  Week 7 – Module 7 – Legume-Rhizobia symbiosis/2
10/3/2019  Week 7 – Module 7 – Quiz #7, Discussion #7
10/4/2019  Homecoming – Go Gators!
10/7/2019  Week 8 – Module 8 – Mycorrhizal fungi and nutrient acquisition/1
10/9/2019  Week 8 – Module 8 – Mycorrhizal fungi and nutrient acquisition/2
10/11/2019  Week 8 – Module 8 – Quiz #8, Discussion #8
10/14/2019  Week 9 – Module 9 – Rhizobacteria that promote plant growth /1
10/16/2019  Week 9 – Module 9 – Rhizobacteria that promote plant growth /2
10/18/2019  Week 9 – Module 9 – Quiz #9, Discussion #9
10/21/2019  Week 10 – Module 10 – Drought and salt stress/1
10/23/2019  Week 10 – Module 10 – Drought and salt stress/2
10/25/2019  Week 10 – Module 10 – Quiz #10, Discussion #10
10/28/2019  Week 11 – Module 11 – Heat and flooding stress/1
10/30/2019  Week 11 – Module 11 – Heat and flooding stress/2
11/1/2019  Week 11 – Module 11 – Quiz #11, Discussion #11
11/4/2019  Mid-Term Exam (Modules 6-10)
11/4/2019  Week 12 – Module 12 – Stresses from metals and emerging contaminants/1
11/6/2019  Week 12 – Module 12 – Stresses from metals and emerging contaminants/2
11/8/2019  Week 12 – Module 12 – Quiz #12, Discussion #12
11/11/2019  Veterans Day
11/12/2019  Week 13 – Module 13 – Stresses caused by pathogens/1
11/14/2019  Week 13 – Module 13 – Stresses caused by pathogens/2
11/15/2019  Week 13 – Module 13 – Quiz #13, Online discussion #13
11/18/2019  Week 14 – Module 14 – Modern research techniques for field experiments/1
11/20/2019  Week 14 – Module 14 – Modern research techniques for field experiments/2
11/22/2019  Week 14 – Module 14 – Quiz #14, Discussion #14
11/25/2019  Week 15 – Module 15 – Modern research techniques for laboratory experiments/1
11/27/2019  Holiday break
11/29/2019  Happy Thanksgiving!
12/2/2019  Week 15 – Module 15 – Modern research techniques for laboratory experiments/2
12/4/2019  Week 15 – Module 15 – Quiz #15, Discussion #15
12/11/2019  Final Exam (Modules 11-15)

Links and Policies Attendance and Make-up Policy
Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
• UF Attendance policy, https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Academic Honesty
As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."
It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action.
• For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sscr/process/student-conduct-honor-code

Software Use
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and
rules, disciplinary action will be taken when appropriate.

Services for Students with Disabilities
Students with disabilities requesting accommodations should first register with the Disability Resource Center by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

- Disability Resource Center, 0001 Reid Hall, (352) 392-8565, www.dso.ufl.edu/drc

Campus Helping Resources
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- Counseling and Wellness Center, 3190 Radio Road, 392-1575, www.counseling.ufl.edu
  Counseling Services

Groups and Workshops
Outreach and Consultation
Self-Help Library
Wellness Coaching
- U Matter We Care, www.umatter.ufl.edu
- Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161.
- University Police Department, 392-1111 (or 9-1-1 for emergencies), www.police.ufl.edu

Additionally, if you would like orientation on choosing a major, finding an internship, or planning your career, I encourage you to use the university’s on-campus resources.

- Career Connections Center, CR-100 Reitz Union, 392-1601, https://career.ufl.edu/

Course Evaluation Process
Student assessment of instruction is an important part of the effort to improve teaching and learning. At the end of the semester, you are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at:

- Course evaluations, www.evaluations.ufl.edu

Evaluations are typically open during the last two or three weeks of the semester. You will be notified of the specific times when evaluations for this course are open. Summary results of these assessments are available to students at:

- Evaluations summary, www.evaluations.ufl.edu/results

Student Complaints
You can file and resolve any complaints about your experience in this course in the following site:

- Student complaints in residential courses, https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/
- Student complaints in online courses, http://distance.ufl.edu/student-complaint-process/

Grading Scheme Assignment breakdown Points x Number of assignments = Total Points

<table>
<thead>
<tr>
<th>Points</th>
<th>Assignment breakdown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 Quizzes</td>
<td>50 x 15 = 750</td>
<td></td>
</tr>
<tr>
<td>15 Discussions</td>
<td>50 x 15 = 750</td>
<td></td>
</tr>
<tr>
<td>3 Exams</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

250 x 3 = 750
Total = 2250

Critical dates

First Exam 9/27/2019 (Modules 1-5)
Mid Term Exam 11/4/2019 (Modules 6-10)
Final Exam 12/11/2019 (Modules 11-15)
GRADING SCALE
A  =  94 - 100 %
A- =  < 94 - 90 %
B+ =  < 90 - 87 %
B  =  < 87 - 84 %
B- =  < 84 - 80 %
C+ =  < 80 - 77 %
C  =  < 77 - 74 %
C- =  < 74 - 70 %
D+ =  < 70 - 67 %
D  =  < 67 - 64 %
D- =  < 64 - 61 %
E  =  < 61 %

Passing Grade Points
A    4.0
A-   3.67
B+   3.33
B    3.0
B-   2.67
C+   2.33
C    2.0
C-   1.67
D+   1.33
D    1.0
D-   0.67
S    0

Instructor(s) Dr. Lorenzo Rossi
External Consultation Results (departments with potential overlap or interest in proposed course, if any)

<table>
<thead>
<tr>
<th>Department</th>
<th>Name and Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agronomy</td>
<td>Diane Rowland, Professor and Interim Chair</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phone Number</th>
<th>E-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>352-273-3408</td>
<td><a href="mailto:dlrowland@ufl.edu">dlrowland@ufl.edu</a></td>
</tr>
</tbody>
</table>

Comments
I see no potential overlap with our existing courses dealing with root physiology. I worked with Dr. Rossi to make sure our root content in our Ecophysiology course would complement the content in this new course and we encouraged our students to take his course as the next in sequence. We are very excited to have this course available in the suite of graduate courses in physiology.
Dear Members of the Curriculum Committee,

Following your suggestions and comments I completely revised the syllabus and I requested a consultation from the Agronomy Department. Both files are attached.

Here are my point-by-point replies to your comments:

- **An outside consultation from the Agronomy Department is required.**
  The consultation had been obtained and it is now attached

- **The proposed course number needs to be changed to the 6000 level. The category of instruction on the UCC form indicates this is a joint graduate/undergraduate course. If that is the case, an undergraduate new course submission must be made at the same time as the proposed graduate level course. If this is not a joint taught course an edit must be made to the UCC form.**
  The course number has been changed to a 6000. Since this is not a joint taught course an edit has been made to the UCC form as well.

- **The proposed credit amount and weekly contact hours do not match. A three-credit course needs to have three weekly contact hours.**
  The problem has been fixed. Now the proposed syllabus has three weekly contact hours.

- **The verbs used in the course objectives are acceptable, but weak. These need to be changed to reflect the rigor expected from a graduate level course.**
  Verbs have been changed and a journal club has been added.

- **In the assignment breakdown section of both the UCC form and syllabus there is a mathematical error (250 x 3 = 1500 is incorrect).**
  The math error has been fixed

- **The committee also requires an overall grammatical check for the entire submission.**
  An overall grammatical check has been made by Dr. Ronald Cave (UF/IFAS IRREC Center Director)
Instructor: Dr. Lorenzo Rossi

Webpage: https://ufl.instructure.com/courses/357898

Contact Information:
- Email: use the Canvas e-mail (the most efficient) or l.rossi@ufl.edu
- Phone: 772-577-7341.
- Office hours: online conferencing via Canvas/Zoom every Friday 11am-12pm (or by request)

Lectures: 100% Online course. Each week, there is a block of content available with specific due dates.

Course Description: The aim of this course is to provide a complete view of the rhizosphere and its unique functioning that implies numerous strong and complex interactions among plant roots, soil constituents, and microorganisms. Furthermore, the course not only aims to address current knowledge and achievements but also outlines the future challenges that confront rhizosphere studies. Topics incorporate how roots and the rhizosphere respond to different environments, including multiple interactions among soils, plant roots, microbes, mycorrhizae, and fauna, soil heterogeneity, biogeochemical cycles, abiotic stresses, and emerging contaminants.

Course prerequisites: BOT 2010 or BSC 2010

Knowledge prerequisites: This is an advanced course that examines the interactions between the plant root apparatus and the environment. To be successful in this course, students should have a general knowledge of biology, botany, microbiology, and soil chemistry.

Course objectives:
- To critically appraise the current literature on root and rhizosphere biology and ecology and to present and discuss recent plant root science articles in a form of a journal club.
- To develop an understanding of unique biochemical processes in roots and the rhizosphere.
- To discuss modern research techniques for field and lab studies on plant roots.
- To promote integration of different disciplines, such as plant physiology, biochemistry, natural product chemistry, molecular biology, genomics and, chemical ecology, to study root and rhizosphere processes.
- To raise awareness about environmental concerns which affect roots (e.g., interaction between plant roots and heavy metals, engineered nanoparticles, emerging pathogens, etc.).
LEARNING OBJECTIVES

After successful completion of this course, students will be able to:

- Identify the role of plant roots in the global context of soil development and atmosphere composition.
- Classify and recognize root-derived products.
- Compare different root system architectures.
- Describe root responses to biotic and abiotic stresses.
- Explain key root-rhizosphere interactions, from beneficial microorganisms to detrimental nematodes.
- Recommend modern research techniques for field and lab studies on plant roots.
- Locate, appraise, and assimilate evidence from scientific studies related to plant root science.

COURSE MATERIALS

Recommended textbooks


Required readings

EVALUATION OF LEARNING

<table>
<thead>
<tr>
<th>Assignment</th>
<th>% of grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 15 Weekly Quizzes/Discussions</td>
<td>70</td>
<td>1500</td>
</tr>
<tr>
<td>2) First Exam</td>
<td>10</td>
<td>250</td>
</tr>
<tr>
<td>3) Mid-Term Exam</td>
<td>10</td>
<td>250</td>
</tr>
<tr>
<td>4) Final Exam</td>
<td>10</td>
<td>250</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>2250</td>
</tr>
</tbody>
</table>

Quizzes

At the end of each module, a specific quiz will assess the student’s learning. Ten questions related to the module will be available. Students will have 2 attempts to answer the questions properly. Up to 5 points will be rewarded for a correct response to each question, for a total of 50 points per quiz.

Discussions

At the end of each week, a discussion board with a specific prompt will be ready for the students. Students will not be able to read posts made by other students until after they have already completed and submitted their own post. Each submitted post should consist of 500 words or less and must address all parts of the prompt. Each student will also be expected to post a reply to at least two other students’ posts to receive full credit. Please note that points will not be assigned separately for discussion comments and discussion posts. Students will either receive all potential points for making an original post and posting two comments, or they will receive nothing for skipping either part of the assignment. Poor quality submissions will receive partial credit.

The grading procedures of the discussion will follow this rubric.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Ratings</th>
<th>Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Response to Prompt</td>
<td>25.0 to &gt;10.0 pts Response addresses all parts of the prompt in a convincing and clear manner, and consists of 500 words or less</td>
<td>25.0 pts</td>
</tr>
<tr>
<td></td>
<td>10.0 to &gt;0.0 pts Response only addresses some parts of the prompt and/or is significantly more than 500 words</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.0 pts Response not submitted; or all expectations of discussion thread not met</td>
<td></td>
</tr>
<tr>
<td>Reply to Peers</td>
<td>25.0 pts Student responds to at least 2 peers with substantive comments that further the conversation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.0 pts Student does not respond to at least 2 peers with substantive comments that further the conversation; or all expectations of discussion thread not met</td>
<td>25.0 pts</td>
</tr>
</tbody>
</table>

Exams

1) First Exam Modules 1-5
2) Mid-Term Exam Modules 6-10
3) Final Exam Modules 11-15

All three exams will have 5 questions. Fifty points will be available for each question, for a total of 250 points. Students will have 7 days to start the exam and, once they started, they will have 24 hrs to complete it.
Assignment breakdown

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points x Number of assignments = Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 Quizzes</td>
<td>50 x 15 = 750</td>
</tr>
<tr>
<td>15 Discussions</td>
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</tr>
<tr>
<td>3 Exams</td>
<td>250 x 3 = 750</td>
</tr>
<tr>
<td>Total</td>
<td>2250</td>
</tr>
</tbody>
</table>

Critical dates

- First Exam: 9/27/2019 (Modules 1-5)
- Mid Term Exam: 11/4/2019 (Modules 6-10)
- Final Exam: 12/11/2019 (Modules 11-15)

GRADING SCALE

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>94 - 100 %</td>
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<tr>
<td>A-</td>
<td>&lt; 94 - 90 %</td>
</tr>
<tr>
<td>B+</td>
<td>&lt; 90 - 87 %</td>
</tr>
<tr>
<td>B</td>
<td>&lt; 87 - 84 %</td>
</tr>
<tr>
<td>B-</td>
<td>&lt; 84 - 80 %</td>
</tr>
<tr>
<td>C+</td>
<td>&lt; 80 - 77 %</td>
</tr>
<tr>
<td>C</td>
<td>&lt; 77 - 74 %</td>
</tr>
<tr>
<td>C-</td>
<td>&lt; 74 - 70 %</td>
</tr>
<tr>
<td>D+</td>
<td>&lt; 70 - 67 %</td>
</tr>
<tr>
<td>D</td>
<td>&lt; 67 - 64 %</td>
</tr>
<tr>
<td>D-</td>
<td>&lt; 64 - 61 %</td>
</tr>
<tr>
<td>E</td>
<td>&lt; 61 %</td>
</tr>
</tbody>
</table>

Passing Grade Points

- A: 4.0
- A-: 3.67
- B+: 3.33
- B: 3.0
- B-: 2.67
- C+: 2.33
- C: 2.0
- C-: 1.67
- D+: 1.33
- D: 1.0
- D-: 0.67
- S: 0

Additional information on current UF grading policies for assigning grade points can be found here:

Course organization

The module material of a given week will be made available the Friday of the week before. Quizzes and discussion posts must be submitted by midnight of the Friday of a given module’s week.

Module 0: Introduction to the course
Module 1: Definition of the rhizosphere and origin of roots
Module 2: Root structure, functions, and modifications
Module 3: Regulation of root growth
Module 4: Classification and function of root-derived products
Module 5: Root exudates and mineral nutrition
Module 6: Root system architecture and nutrient acquisition
Module 7: Legume-Rhizobia symbiosis
Module 8: Mycorrhizal fungi and nutrient acquisition
Module 9: Rhizobacteria that promote plant growth
Module 10: Drought and salt stress
Module 11: Heat and flooding stress
Module 12: Stress from trace metals and emerging contaminants
Module 13: Stresses caused by pathogens
Module 14: Modern research techniques for field experiments
Module 15: Modern research techniques for laboratory experiments

Course schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Week</th>
<th>Module</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>8/20/2019</td>
<td>1</td>
<td>1</td>
<td>Definition of the rhizosphere/1</td>
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<tr>
<td>8/22/2019</td>
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<td>Definition of the rhizosphere/2</td>
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<tr>
<td>8/23/2019</td>
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<td>Quiz #1, Discussion #1</td>
</tr>
<tr>
<td>8/26/2019</td>
<td>2</td>
<td>2</td>
<td>Root structure and development/1</td>
</tr>
<tr>
<td>8/28/2019</td>
<td>2</td>
<td>2</td>
<td>Root structure and development/2</td>
</tr>
<tr>
<td>8/30/2019</td>
<td>2</td>
<td>2</td>
<td>Quiz #2, Discussion #2</td>
</tr>
<tr>
<td>9/2/2019</td>
<td>Labor Day</td>
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<tr>
<td>9/3/2019</td>
<td>3</td>
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<td>Regulation of root growth/1</td>
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<td>9/5/2019</td>
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<td>Regulation of root growth/2</td>
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<td>9/6/2019</td>
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<td>Quiz #3, Discussion #3</td>
</tr>
<tr>
<td>9/9/2019</td>
<td>4</td>
<td>4</td>
<td>Classification and function of root-derived products/1</td>
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<tr>
<td>9/11/2019</td>
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<td>4</td>
<td>Classification and function of root-derived products/2</td>
</tr>
<tr>
<td>9/13/2019</td>
<td>4</td>
<td>4</td>
<td>Quiz #4, Discussion #4</td>
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<td>9/16/2019</td>
<td>5</td>
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<td>Root exudates and mineral nutrition/1</td>
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<tr>
<td>9/18/2019</td>
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<td>5</td>
<td>Root exudates and mineral nutrition/2</td>
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<td>Root system architecture and nutrient acquisition/1</td>
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<tr>
<td>9/25/2019</td>
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<td>Root system architecture and nutrient acquisition/2</td>
</tr>
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<td>9/27/2019</td>
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<td>Quiz #6, Discussion #6</td>
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<td>First Exam (Modules 1-5)</td>
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<tr>
<td>9/30/2019</td>
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<td>Legume-Rhizobia symbiosis/1</td>
</tr>
<tr>
<td>10/2/2019</td>
<td>7</td>
<td>7</td>
<td>Legume-Rhizobia symbiosis/2</td>
</tr>
<tr>
<td>10/3/2019</td>
<td>7</td>
<td>7</td>
<td>Quiz #7, Discussion #7</td>
</tr>
<tr>
<td>10/4/2019</td>
<td></td>
<td></td>
<td>Homecoming – Go Gators!</td>
</tr>
<tr>
<td>10/7/2019</td>
<td>8</td>
<td>8</td>
<td>Mycorrhizal fungi and nutrient acquisition/1</td>
</tr>
<tr>
<td>10/9/2019</td>
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<td>8</td>
<td>Mycorrhizal fungi and nutrient acquisition/2</td>
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<td>10/11/2019</td>
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<td>Quiz #8, Discussion #8</td>
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<tr>
<td>10/14/2019</td>
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<td>9</td>
<td>Rhizobacteria that promote plant growth /1</td>
</tr>
<tr>
<td>10/16/2019</td>
<td>9</td>
<td>9</td>
<td>Rhizobacteria that promote plant growth /2</td>
</tr>
</tbody>
</table>
10/18/2019  Week 9 – Module 9 – Quiz #9, Discussion #9  
10/21/2019  Week 10 – Module 10 – Drought and salt stress/1  
10/23/2019  Week 10 – Module 10 – Drought and salt stress/2  
10/25/2019  Week 10 – Module 10 – Quiz #10, Discussion #10  
10/28/2019  Week 11 – Module 11 – Heat and flooding stress/1  
10/30/2019  Week 11 – Module 11 – Heat and flooding stress/2  
11/1/2019  Week 11 – Module 11 – Quiz #11, Discussion #11  
11/4/2019  Mid-Term Exam (Modules 6-10)  
11/4/2019  Week 12 – Module 12 – Stresses from metals and emerging contaminants/1  
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11/22/2019  Week 14 – Module 14 – Quiz #14, Discussion #14  
11/25/2019  Week 15 – Module 15 – Modern research techniques for laboratory experiments/1  
11/27/2019  Holiday break  
11/29/2019  Happy Thanksgiving!  
12/2/2019  Week 15 – Module 15 – Modern research techniques for laboratory experiments/2  
12/4/2019  Week 15 – Module 15 – Quiz #15, Discussion #15  
12/11/2019  Final Exam (Modules 11-15)  

COURSE POLICIES

Attendance and Make-up Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

- UF Attendance policy, [https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx)

Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action.
• For more information regarding the Student Honor Code, please see:
  http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code

Software Use
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements
governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual
violer. Because such violations are also against university policies and rules, disciplinary action will be taken
when appropriate.

Services for Students with Disabilities
Students with disabilities requesting accommodations should first register with the Disability Resource Center by
providing appropriate documentation. Once registered, students will receive an accommodation letter which must
be presented to the instructor when requesting accommodation. Students with disabilities should follow this
procedure as early as possible in the semester.
  • Disability Resource Center, 0001 Reid Hall, (352) 392-8565, www.dso.ufl.edu/drc/

Campus Helping Resources
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to
utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling
services at no cost for currently enrolled students. Resources are available on campus for students having personal
problems or lacking clear career or academic goals, which interfere with their academic performance.
  • Counseling and Wellness Center, 3190 Radio Road, 392-1575, www.counseling.ufl.edu
    Counseling Services
    Groups and Workshops
    Outreach and Consultation
    Self-Help Library
    Wellness Coaching
  • U Matter We Care, www.umatter.ufl.edu
  • Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161.
  • University Police Department, 392-1111 (or 9-1-1 for emergencies), www.police.ufl.edu

Additionally, if you would like orientation on choosing a major, finding an internship, or planning your career, I
encourage you to use the university’s on-campus resources.
  • Career Connections Center, CR-100 Reitz Union, 392-1601, https://career.ufl.edu/

Course Evaluation Process
Student assessment of instruction is an important part of the effort to improve teaching and learning. At the end of the semester, you are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at:

- Course evaluations, www.evaluations.ufl.edu

Evaluations are typically open during the last two or three weeks of the semester. You will be notified of the specific times when evaluations for this course are open. Summary results of these assessments are available to students at:

- Evaluations summary, www.evaluations.ufl.edu/results

Student Complaints
You can file and resolve any complaints about your experience in this course in the following site:

- Student complaints in residential courses, https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/
- Student complaints in online courses, http://distance.ufl.edu/student-complaint-process/
Cover Sheet: Request 13538

WIS6XXX Data Carpentry for Biologists

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Course|New for request 13538

Info
Request: WIS6XXX Data Carpentry for Biologists
Description of request: Add the course on data management, manipulation, and analysis in R that I have been teaching for the last 4 years to the catalog.
Submitter: Ethan White ethanwhite@ufl.edu
Created: 6/17/2019 12:04:33 PM
Form version: 2

Responses
Recommended Prefix WIS
Course Level 6
Number XXX
Category of Instruction Intermediate
Lab Code None
Course Title Data Carpentry for Biologists
Transcript Title Data Carpentry
Degree Type Graduate

Delivery Method(s) On-Campus
Co-Listing No
Co-Listing Explanation This course is not co-listed.
Effective Term Fall
Effective Year 2019
Rotating Topic? No
Repeatable Credit? No

Amount of Credit 3

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 3
Course Description An introduction to data management, manipulation, and analysis, with an emphasis on biological problems. Class consists of short introductions to new concepts followed by hands-on computing exercises using R and SQLite, but the concepts apply to programming languages and databases more generally. No background in computing is required.
Prerequisites None.
Co-requisites None.
Rationale and Placement in Curriculum Computers are increasingly essential to the study of all aspects of biology. Data management skills are needed for entering data without errors, storing it in a usable way, and extracting key aspects of the data for analysis. Basic programming is required for everything from accessing and managing data, to statistical analysis, to modeling. Dr. White was hired as part of the preeminence initiative in part to teach this material to biologists in CALS and across campus.
Course Objectives * Create well structured databases
* Extract information from databases
* Write simple computer programs in R
* Automate data analysis
* Apply these tools to address biological questions
* Apply general data management and analysis concepts to other programming languages and database management systems

Course Textbook(s) and/or Other Assigned Reading No text books is required. A list of readings is provided on the course website:
http://datacarpentry.org/semester-biology/schedule/
Weekly Schedule of Topics Week Language Lesson
1 SQL Data Entry and Storage
2 R Introduction to R and RStudio
3 R Working with Data
4 R Data Visualization
5 R Working with Spatial Data
6 R Computational Projects
7 R Programming Fundamentals 1
8 R Programming Fundamentals 2
9 R Putting It All Together
10 R Version Control
11 R Getting Data
12 R Knitr
13 SQL Working with Databases
14 R tidyr
15 R Image Processing and Analysis
16 R Web Applications Using Shiny

Links and Policies The full syllabus for the course is available at http://datacarpentry.org/semester-biology/syllabus/ and attached to this request.

Policies and links sections are pasted below:

Attendance Policy

Attendance will not be taken or factor into the grades for this class. However, experience suggests that students who regularly miss class struggle to learn the material.

Quiz/Exam Policy

There are no quizzes or exams in this course.

Make-up policy

Life happens and therefore there is an automatic grace period of 48 hours for the submission of late assignments with no need to request an extension. However, it is highly recommended that you submit assignments on time when possible because assignments build on one another and it can be hard to catch up if you fall behind. Reasonable requests for longer extensions will also be granted. Assignments turned in after the 48 hour grace period without an extension will be be graded with a 20% penalty.

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Course Technology

Students are required to provide their own laptops and to install free and open source software on those laptops (see Setup for installation instructions). Support will be provided by the instructor in the installation of required software. If you don’t have access to a laptop please contact the instructor and they will do their best to provide you with one.

Materials and Supplies Fees

There are no materials and supplies fees for this course.

UF Policies

University Policy on Accommodating Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating
faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation 0001 Reid Hall, 352-382-8565, www.dso.ufl.edu/dso
My policy: If you are in my class I want to help you learn and will happily work with you to make the learning environment equitable for you and others.

Online Course Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

University Policy on Academic Misconduct

Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at http://www.dso.ufl.edu/students.php.

Netiquette and Communication Courtesy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats.

Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

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Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:
http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

Grading Policies

Grading for this course is based on 13 equally weighted assignments. Exercises in assignments will be graded as follows:
• Produces the correct answer using the requested approach: 100%
• Generally uses the right approach, but a minor mistake results in an incorrect answer: 90%
• Attempts to solve the problem and makes some progress using the core concept: 50%
• Answer demonstrates a lack of understanding of the core concept: 0%

Grading scale
• A 93-100
• A- 90-92.9
• B+ 87-89.9
• B 83-86.9
• B- 80-82.9
• C+ 77-79.9
• C 73-76.9
• C- 70-72.9
• D+ 67-69.9
• D 60-66.9
• E <60

UF grading policies for assigning grade points
https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

Health and Wellness

U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.
Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, 392-1575.
Sexual Assault Recovery Services (SARS): Student Health Care Center, 392-1161.
University Police Department: 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical support: 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://ss.at.ufl.edu/help.shtml.
Library Support: http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.
Teaching Center: Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.
Student Complaints

Grading Scheme Grading Policies

Grading for this course is based on 13 equally weighted assignments.

Exercises in assignments will be graded using the following rubric:

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Generally uses the right approach, but a minor mistake results in an incorrect answer: 90%
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Answer demonstrates a lack of understanding of the core concept: 0%

Grading scale

A 93-100  
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C 73-76.9  
C- 70-72.9  
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D 60-66  
E <60

UF grading policies for assigning grade points

https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

Instructor(s) Ethan White
External Consultation Results (departments with potential overlap or interest in proposed course, if any)

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<tr>
<td>Biology</td>
<td>Marta L. Wayne, Professor &amp; Chair</td>
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<tr>
<td>352-392-9925</td>
<td><a href="mailto:mlwayne@ufl.edu">mlwayne@ufl.edu</a></td>
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Comments

These are great courses taught by outstanding faculty. Although there is some overlap between material of these courses and some that we teach, there is not sufficient overlap to cause any concern.
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<tr>
<td>School of Forest Resources &amp; Conservation</td>
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**Phone Number**  
3528-846-0850

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<tr>
<td><a href="mailto:ttredbaker@ufl.edu">ttredbaker@ufl.edu</a></td>
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**Comments**  
SFRC sees no conflict with the Data Carpentry course.

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Syllabus · Data Carpentry for Biologists

Syllabus · Data Carpentry for Biologists

Course

Data Carpentry for Biologists
WIS 6934, 3 Credits, Fall 2018

Instructor

Dr. Ethan White
Office: Room 1 in Building 150 (just north of Newins-Zeigler)
Email (best way to contact us): ethanwhite@ufl.edu
Phone: 352-294-2081

Location

Times

Tuesdays, 12:50-1:40
Fridays, 11:45-1:40

Office Hours

Times: Monday 2-3:15
Location: Newins-Zeigler 203

Or by appointment. Note: my schedule gets very busy during the semester so please try to schedule appointments as far in advance as possible. In general it will be very difficult to set up appointments less than 24 hours in advance.

Teaching Assistant

Andrew Marx
Email: andrewjmarx@ufl.edu
Website

The syllabus and other relevant class information and resources will be posted at http://www.datacarpentry.org/semester-biology. Changes to the schedule will be posted to this site so please try to check it periodically for updates.

Course Communications

Email: ethanwhite@ufl.edu

Required Texts

There is no required text book for this class.

All needed material is openly available on the course website. If you are interested in additional reading on the topics we are covering I highly recommend R for Data Science, which is freely available on the web.

Course Description

An introduction to data management, manipulation, and analysis, with an emphasis on biological problems. Class consists of short introductions to new concepts followed by hands on computing exercises using R and SQLite, but the concepts apply to programming languages and databases more generally. No background in computing is required.

Prerequisite Knowledge and Skills

Knowledge of basic biology.

Purpose of Course

In this course you will learn all of the fundamental aspects of computer programming that are necessary for conducting biological research. By the end of the course you will be able to use these tools to import data into R, perform analysis on that data, and export the results to graphs, text files, and databases. By learning how to get the computer to do your work for you, you will be able to do more science faster.

Course Objectives and Goals

Students completing this course will be able to:

- Create well structured databases
- Extract information from databases
- Write simple computer programs in R
- Automate data analysis
- Apply these tools to address biological questions
• Apply general data management and analysis concepts to other programming languages and database management systems

How this course relates to the Student Learning Outcomes in Wildlife Ecology and Conservation

This course contributes to the ‘Quantitative Skills’ and ‘Conducting and Analyzing Independent/Original Research’ Student Learning Outcomes specified in the Ph.D. and MS in Wildlife Ecology and Conservation Academic Assessment Plans, by providing students the skills and knowledge they need to manage and analyze the data used in research.

Teaching Philosophy

This class is taught using a flipped, learner-centered, approach, because learning to program and work with data requires actively working on computers. Flipped classes work well for all kinds of content, but I think they work particularly well for computer oriented classes. If you’re interested in knowing more take a look at this great info-graphic.

Instructional Methods

As a flipped classroom, students are provided with either reading or video material that they are expected to view/read prior to class. Classes will involve brief refreshers on new concepts followed by working on exercises in class that cover that concept. While students are working on exercises the instructor will actively engage with students to help them understand material they find confusing, explain misunderstandings and help identify mistakes that are preventing students from completing the exercises, and discuss novel applications and alternative approaches to the data analysis challenges students are attempting to solve. For more challenging topics class may start with 20-30 minute demonstrations on the concepts followed by time to work on exercises.

Course Policies

Attendance Policy

Attendance will not be taken or factor into the grades for this class. However, experience suggests that students who regularly miss class struggle to learn the material.

Quiz/Exam Policy

There are no quizzes or exams in this course.
Make-up policy

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Materials and Supplies Fees

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University Policy on Accommodating Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

My policy: If you are in my class I want to help you learn and will happily work with you to make the learning environment equitable for you and others.
Online Course Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

University Policy on Academic Misconduct

Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at http://www.dso.ufl.edu/students.php.

Netiquette and Communication Courtesy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats.

Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code
Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

Grading Policies

Grading for this course is based on 13 equally weighted assignments.

Exercises in assignments will be graded as follows:

- Produces the correct answer using the requested approach: 100%
- Generally uses the right approach, but a minor mistake results in an incorrect answer: 90%
- Attempts to solve the problem and makes some progress using the core concept: 50%
- Answer demonstrates a lack of understanding of the core concept: 0%

Grading scale

- A 93-100
- A- 90-92.9
- B+ 87-89.9
- B 83-86.9
- B- 80-82.9
- C+ 77-79.9
- C 73-76.9
- C- 70-72.9
- D+ 67-69.9
- D 60-66.9
- E <60

UF grading policies for assigning grade points

https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/
Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

Health and Wellness

U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, 392-1575.

Sexual Assault Recovery Services (SARS): Student Health Care Center, 392-1161.

University Police Department: 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical support: 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.


Library Support: http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.


Student Complaints


Course Schedule

The detailed course schedule is available on the course website at: http://www.datacarpentry.org/semester-biology/schedule.
An abbreviated version of the schedule by week is as follows:

1. Data Entry and Storage
2. Introduction to R and RStudio
3. Working with Data
4. Data Visualization
5. Working with Spatial Data
6. Computational Projects
7. Programming Fundamentals 1
8. Programming Fundamentals 2
9. Putting it all together
10. Version Control
11. Getting Data
12. Knitr
13. Working with Databases
14. tidyr
15. Image Processing and Analysis
16. Web Applications Using Shiny
# Cover Sheet: Request 12953

**Applied Wildlife Forensic Genetics**

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<thead>
<tr>
<th>Info</th>
<th>Value</th>
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<tr>
<td>Process</td>
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<td>Submitter</td>
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<td>8/20/2018 8:10:33 PM</td>
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<td>CALS - Wildlife Ecology and Conservation 514947000</td>
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<td>Recycled at the CALS CC meeting in January. Please do not approve until all issues identified by the CALS CC have been addressed.</td>
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<td>Applied Wildlife Forensic Genetics Syllabus FINAL.docx</td>
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<td>From Jason Byrd in Maples Center for Forensic Science: &quot;However, I was [not] able to access the document at the link provided in the below communication. It is either removed, or not accessible outside of CALS. I used a prior approved format. As long as CALS has not changed the syllabus template, we should be ok. If they have, if someone can forward a copy of the current template, I will make the needed changes. If the template/format is OK, this should be ready to go.&quot;</td>
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| No document changes | College               | Pending | CALS - College of Agricultural and Life Sciences |              |                                                                       | 5/28/2019     |

No document changes

<p>| No document changes | Graduate Curriculum Committee |              | | | | | | | |</p>
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Course|New for request 12953

Info

Request: Applied Wildlife Forensic Genetics
Description of request: Add new course in the area of forensic wildlife genetics.
Submitter: Jason Byrd jhbyrd@ufl.edu
Created: 5/23/2019 10:20:55 AM
Form version: 5

Responses
Recommended Prefix WIS
Course Level 6
Number XXX
Category of Instruction Intermediate
Lab Code None
Course Title Applied Wildlife Forensic Genetics
Transcript Title App Wildlife For Gen
Degree Type Graduate

Delivery Method(s) Online
Co-Listing No
Co-Listing Explanation None
Effective Term Earliest Available
Effective Year Earliest Available
Rotating Topic? No
Repeatable Credit? No

Amount of Credit 3

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 3

Course Description Provides the student with understanding of forensic genetics applied to wildlife conservation, DNA distribution in populations, mechanisms for evolutionary change, population genetics in solving forensic problems, genetic markers in forensics, and DNA utilization to investigate crimes against endangered and threatened species. Will prepare students for the Forensic Genetics Capstone course.
Prerequisites VME 6573 Applications of DNA for Companion Animal and Wildlife Cases
Co-requisites None

Rationale and Placement in Curriculum This additional elective course in the area of wildlife forensic genetics will provide the student with a more in-depth background on the use of genetics in the forensic sciences to manage and combat wildlife crime.

Course Objectives Learning Objectives:

1: Upon completion of Module 1, students will be able to discern and explain the mechanisms and requirements for the course, and the scope and relevance of the material to be covered.
   Enabling objectives:
   Students will be able to:
   • Fulfill requirements of the discussion board by posting
   • Discuss and analyze the relationship between this course and previous courses, and define their own knowledge and experience relevant to the course

2: Upon completion of Module 2, students will be able to interpret and explain basic concepts of population genetics and their relationship to and use in wildlife forensics.
   Enabling objectives:
   Students will be able to:
   • Analyze how DNA is naturally distributed among species, populations, and individuals
   • Demonstrate the Hardy-Weinberg principle and list its assumptions
• Calculate F-statistics, given heterozygosity values
• Summarize the ways that gene frequencies change in populations
• Recognize and discriminate among species, subspecies, populations, Evolutionarily Significant Units, and Management Units

Establish the use of population genetics in a wildlife forensics conservation case study

3: Upon completion of Module 3, students will be able to choose appropriate molecular markers and statistical analyses for different wildlife forensics problems.
Enabling objectives:
Students will be able to:
• Formulate and distinguish among different molecular markers used in wildlife forensics
• Apply the appropriate statistics for analysis of wildlife forensic DNA for different scenarios.

4: Upon completion of Module 4, students will be able to critically evaluate the use of wildlife forensic DNA in wildlife crimes and conservation.
Enabling objectives:
Students will be able to:
• Review and analyze case studies for appropriate use of population genetics and statistics
• Compare and contrast different types of analyses in case studies according to their goals
• Describe the uses of wildlife forensic genetics for different situations

Weekly Schedule of Topics Week 1 Module 1: Introduction and Overview.
Week 2-6 Module 2: Population and Conservation genetics
Week 7-11 Module 3: Statistics for Wildlife Forensic DNA
Week 12-14 Module 4: Applications of Wildlife Forensic Genetics
Week 15 Final self-evaluation Integrating all previous material.

Links and Policies No additional links other than those at syllabus.ufl.edu
Grading Scheme Grading:
Students will be graded on six quizzes and two module exams, and seven assignments. The quizzes will account for 18%, assignments will account for 45%, module exams will account for 27%, and the final self-evaluation will account for 10% of the student’s final grade. Students will receive individual feedback on grades on assignments. The comments of the professor can be viewed on the assignment submission page for the corresponding module found on the last page of each module. Students can check their progress in the course by viewing their grade records via the course interface.

Description of module assessments:
Module 1: Online assignment with discussion
Module 2: 4 quizzes, 2 written assignments with discussion, 1 calculation assignment, module exam
Module 3: 2 quizzes, module exam
Module 4: 3 assignments with discussion

Course Assignments:
There will be 2 comprehensive module exams, 6 formative assessments in the form of quizzes and one practice calculation, 6 written discussion board questions, and a final reflective self-evaluation essay that will determine the student’s grade.

Self-evaluation essay: this will be a written essay of 5-10 pages comparing and contrasting the differences between conservation genetics and wildlife forensics describing a theoretical real-life scenario that will effectively incorporate the material covered throughout the semester. In addition, it will include the students’ thoughts on how they could/would want to contribute to the field and where they think wildlife forensic genetics field might be headed in the future. This assignment will have an accompanying grading rubric.

All written assignments must be completed in your own words. Cutting and pasting from the internet or class notes is not acceptable and may be considered to be plagiarism. Failure to complete an assignment in your own words may result in you receiving a score of zero for the written assignment. When sending course assignments, include your name and please make sure your assignments are
labeled clearly. Always keep a copy of your course assignments in case you need to resend it. Also, you may want it for revision purposes later.

Points breakdown:
Module 1: Online discussion assignment (4 points for post, 2 points for discussion of posts by others) = 6 points
Module 2: 4 quizzes (3 points each), 3 assignments (6 points each), module exam (10 points) = 40 points
Module 3: 2 quizzes (3 points each), module exam (14 points) = 20 points
Module 4: 3 online discussion assignments (6 points for each assignment, 2 points for discussion of posts by others) = 24 points
Final evaluation: 10 points
Total Points: 100

Point Assignments:
Discussions = 6 discussions x 2 points each = 12 points total (12% of total)
Module quizzes = 6 quizzes x 3 points each = 18 points total (18% of total)
Written module assignments = 6 x 5 points each = 30 points total (30% of total)
Module 2 calculation assignment = 6 points = 6 points total (6% of total)
Module 2 exam = 10 points (10% of total)
Module 3 exam = 14 points (14% of total)
Final evaluation = 10 points (10% of total)
Total for the Course: 100 points

Grades will be assigned as follows:
100-93.4% A
93.3-90.0% A-
89.9-86.7% B+
86.6-83.4% B
83.3-80.0% B-
79.9-76.7% C+
76.6-73.4% C
73.3-70.0% C-
69.9-66.7% D+
66.6-63.4% D
63.3-60.0% D-
<59.9% and below = E

Percent Grade | Grade Points | Course Points
--- | --- | ---
100-93.4 | A | 4.00 100-93.4
93.3-90.0 | A- | 3.67 93.3-90.0
89.9-86.7 | B+ | 3.33 89.9-86.7
86.6-83.4 | B | 3.00 86.6-83.4
83.3-80.0 | B- | 2.67 83.3-80.0
79.9-76.7 | C+ | 2.33 79.9-76.7
76.6-73.4 | C | 2.00 76.6-73.4
73.3-70.0 | C- | 1.67 73.3-70.0
69.9-66.7 | D+ | 1.33 69.9-66.7
66.6-63.4 | D | 1.00 66.6-63.4
60.0 - 62.9 | D- | 0.67 60.0 - 62.9
0 - 59.9 | E | 0.00 0 - 59.9

Registrar's Grade Policy regulations:
http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html
Instructor(s) Kim Frazier, MS
External Consultation Results (departments with potential overlap or interest in proposed course, if any)

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<thead>
<tr>
<th>Department</th>
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</tr>
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<tbody>
<tr>
<td>Biology</td>
<td>Marta L. Wayne, Professor &amp; Chair</td>
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<table>
<thead>
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<tbody>
<tr>
<td>352-392-9925</td>
<td><a href="mailto:mlwayne@ufl.edu">mlwayne@ufl.edu</a></td>
</tr>
</tbody>
</table>

Comments

Re: WIS6XXX, Applied Wildlife Forensic Genetics
While there is some overlap with our courses, the overlap is not extensive and the focus of this class is sufficiently different such that we are happy to approve it.
Applied Wildlife Forensic Genetics
WIS - XXXX
Course Syllabus

Instructor: Kim Frazier, MS

Office hours: Contact instructor by email.

Email: Frazier_kimberly@hotmail.com

Phone: 307-761-0202

Website: https://wildlife.forensics.med.ufl.edu/

Text (Required):


(Text from Introduction to Forensic Genetics for Companion and Animals and Wildlife)

*Additional readings from relevant literature will be provided on the course website.

Prerequisite: Introduction of Applications of DNA for Companion Animal and Wildlife Cases

Course Description:

Provides the student with understanding of forensic genetics applied to wildlife conservation, DNA distribution in populations, mechanisms for evolutionary change, population genetics in solving forensic problems, genetic markers in forensics, and DNA utilization to investigate crimes against endangered and threatened species. Will prepare students for the Forensic Genetics Capstone course.

Course Goals:

This course builds upon material learned in the Introduction to Forensic Genetics for Companion Animals and Wildlife course. This course will give the student a basic understanding of forensic genetics as it is applied to wildlife conservation. Topics will include how DNA is distributed in natural populations, mechanisms for evolutionary change in populations, the Hardy-Weinberg principle and F-statistics, how population genetics is used to solve forensics problems and support conservation, genetic markers used in forensics and their statistical analysis, and how DNA is used forensically to investigate
crimes related to endangered and threatened animals and plants. This course will prepare students to take the Forensic Genetics Capstone course.

**Learning Objectives:**

1: Upon completion of Module 1, students will be able to discern and explain the mechanisms and requirements for the course, and the scope and relevance of the material to be covered.

   Enabling objectives:
   Students will be able to:
   - Fulfill requirements of the discussion board by posting
   - Discuss and analyze the relationship between this course and previous courses, and define their own knowledge and experience relevant to the course

2: Upon completion of Module 2, students will be able to interpret and explain basic concepts of population genetics and their relationship to and use in wildlife forensics.

   Enabling objectives:
   Students will be able to:
   - Analyze how DNA is naturally distributed among species, populations, and individuals
   - Demonstrate the Hardy-Weinberg principle and list its assumptions
   - Calculate F-statistics, given heterozygosity values
   - Summarize the ways that gene frequencies change in populations
   - Recognize and discriminate among species, subspecies, populations, Evolutionarily Significant Units, and Management Units
   - Establish the use of population genetics in a wildlife forensics conservation case study

3: Upon completion of Module 3, students will be able to choose appropriate molecular markers and statistical analyses for different wildlife forensics problems.

   Enabling objectives:
   Students will be able to:
   - Formulate and distinguish among different molecular markers used in wildlife forensics
   - Apply the appropriate statistics for analysis of wildlife forensic DNA for different scenarios.

4: Upon completion of Module 4, students will be able to critically evaluate the use of wildlife forensic DNA in wildlife crimes and conservation.

   Enabling objectives:
   Students will be able to:
   - Review and analyze case studies for appropriate use of population genetics and statistics
   - Compare and contrast different types of analyses in case studies according to their goals
- Describe the uses of wildlife forensic genetics for different situations

**Topics:**

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<th>Modules</th>
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<td>Week 1</td>
<td><strong>Module 1:</strong> Introduction and Overview.</td>
<td>Overview of class objectives, requirements and expectations. Review of animal forensics. What are uses of forensic genetics related to wildlife and wild plants? What kinds of problems/crimes can wildlife forensic genetics address? Why do we need to understand population and conservation genetics to solve wildlife forensics problems?</td>
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<tr>
<td>Week 2</td>
<td><strong>Module 2:</strong> Population and Conservation genetics</td>
<td>Genetic variation in natural populations. Random mating populations. Hardy-Weinberg principle</td>
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<tr>
<td>Week 3</td>
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<td>Natural selection, mutation, small populations and genetic drift</td>
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<td>Week 4</td>
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<td>Population subdivision and F-statistics</td>
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<td>Week 5</td>
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<td>Units of conservation: Evolutionary Significant Units and Management Units. Role of genetics and genetic factors in determination of conservation status</td>
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<td>Week 6</td>
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<td>Context: How is population genetic theory used to solve wildlife forensic problems and/or support conservation of wildlife and wild plants?</td>
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<td>Week 7</td>
<td><strong>Module 3:</strong> Statistics for Wildlife Forensic DNA</td>
<td>Review of molecular markers. Uses of different markers to identify species, populations, families, individuals.</td>
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<td>Week 8</td>
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<td>Genetic sampling.</td>
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<td>Week 11</td>
<td>Module 3 exam</td>
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<td>Week 12</td>
<td><strong>Module 4: Applications of Wildlife Forensic Genetics</strong> Trafficking and trade in wild plants and animals.</td>
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<td>Week 13</td>
<td>Poaching and Hunting: Use of forensic genetics to determine hunting infractions.</td>
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<td>Week 14</td>
<td>Problem Animals: Use of forensic genetics in wildlife attacks on humans and problem animals</td>
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<tr>
<td>Week 15</td>
<td>Final Self-evaluation Essay Integrating all Previous Material</td>
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**Grading:**
Students will be graded on six quizzes and two module exams, and seven assignments. The quizzes will account for 18%, assignments will account for 45%, module exams will account for 27%, and the final self-evaluation will account for 10% of the student’s final grade. Students will receive individual feedback on grades on assignments. The comments of the professor can be viewed on the assignment submission page for the corresponding module found on the last page of each module. Students can check their progress in the course by viewing their grade records via the course interface.

Description of module assessments:
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**Points breakdown:**
Module 1: Online discussion assignment (4 points for post, 2 points for discussion of posts by others) = 6 points
Module 2: 4 quizzes (3 points each), 3 assignments (6 points each), module exam (10 points) = 40 points
Module 3: 2 quizzes (3 points each), module exam (14 points) = 20 points
Module 4: 3 online discussion assignments (6 points for each assignment, 2 points for discussion of posts by others) = 24 points
Final evaluation: 10 points
Total Points: **100**

**Point Assignments:**
Discussions = 6 discussions x 2 points each = 12 points total (12% of total)
Module quizzes = 6 quizzes x 3 points each = 18 points total (18% of total)
Written module assignments = 6 x 5 points each = 30 points total (30% of total)
Module 2 calculation assignment = 6 points = 6 points total (6% of total)
Module 2 exam = 10 points (10% of total)
Module 3 exam = 14 points (14% of total)
Final evaluation = 10 points (10% of total)

Total for the Course: **100 points**

Grades will be assigned as follows:
100-93.4% A
93.3-90.0% A-
89.9-86.7% B+
86.6-83.4% B
83.3-80.0% B-
79.9-76.7% C+
76.6-73.4% C
73.3-70.0% C-
69.9-66.7% D+
66.6-63.4% D
63.3-60.0% D-
<59.9% and below = E

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Registrar’s Grade Policy regulations: [http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html](http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html)

**Getting Started:**
This course is instructed in Canvas. To get started, briefly introduce yourself via the Canvas discussion board located in the left-hand menu on the homepage of the course. Once you have responded to the Introduction you will then go to the first module. Read through the course content and any required reading listed in the module introduction. Do not hesitate to contact your instructor at any time if you need guidance; if you are unsure about the focus of the assignment; if you have assignment questions or questions relating to the course content. If you don’t tell us you need help, we can’t help you!

**Revision and Notes:**
As you go through the semester, keep copies of important emails, bulletins and assignments you may use for revision as these will be purged from the course at the end of the semester. We recommend you make a copy of the course modules since this will be the only access you will get to these materials. We will not be able to provide you with copies of course content once the course is removed from your account.

**Assignment Deadlines:**
Please review the information regarding the policy for missed deadlines in the section on Instructional Policies. In some courses content modules may be released before the scheduled calendar date to help those who need to work ahead because of work commitments, court appearances, and work related travel. If a module is released ahead of time,
the deadline for the assignment and exam will remain the same as it is on the course calendar.

**Communication:**
The email feature in Canvas should always be used contact the faculty or staff if you have a problem of a personal nature. If you are having technical problems with the course content (downloads, etc) or you are unable to access your course interface, please contact the UF Help Desk. We don’t want any of you to be offline for any length of time. Contact us as soon as you can so we can check it out and help you. If you are experiencing difficulty with your access to the Canvas email feature then please use your UFL email address and send an email from standalone email software. In that email, make sure you give your name and the name of your course. Please respond to all emails from your instructor or TA. When we email you we are usually contacting you because we want to help you. If you have a question about your grade, an exam, or assignment question, please email us and we’ll be happy to help you.

**Discussion Board:**
The course discussion board can be used to post content related questions and assignment materials when necessary. Please ask me questions any time; I am here to help you. Please do not use the community forum to ask specific questions about your current course content, assignments etc. It’s VERY important that you read all the discussion bulletins that have been posted. I will use this site to post important information relating to content or exam changes, deadlines etc. Since postings can accumulate quickly, please login each day to stay on top of these postings or you may miss important information.

**Makeup Policy:**

Students are responsible for satisfying all academic objectives as defined by the instructor. Absences count from the first class meeting.

In general, acceptable reasons for absence from or failure to participate in class include illness, serious family emergencies, special curricular requirements (e.g., judging trips, field trips, professional conferences), military obligation, severe weather conditions, religious holidays, and participation in official university activities such as music performances, athletic competition or debate. Absences from class for court-imposed legal obligations (e.g., jury duty or subpoena) must be excused. Other reasons also may be approved.

Students shall be permitted a reasonable amount of time to make up the material or activities covered in their absence.

Students cannot participate in classes unless they are registered officially or approved to audit with evidence of having paid audit fees. The Office of the University Registrar provides official class rolls to instructors.
If a student does not participate in at least one of the first two class meetings of a course or laboratory in which they are registered, and he or she has not contacted the department to indicate his or her intent, the student can be dropped from the course. Students must not assume that they will be dropped, however. The department will notify students if they have been dropped from a course or laboratory.

The university recognizes the right of the individual professor to make attendance mandatory. After due warning, professors can prohibit further attendance and subsequently assign a failing grade for excessive absences.

https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

**Grade Changes:**
Grades will be changed only when a grading error has been made. If you think an error has been made, you should email the instructor as soon as possible. Your entire assignment will then be re-graded.

**Instructional Policy:**
This course is part of the distance education program at the University of Florida. Instead of traditional lecture format, the medium for communication between course instructors, teaching assistants and students will be via Canvas, a user friendly Web-based classroom management tool.

**Attendance Policy:** Students must participate in the bulletin board discussions, and are required to visit the course website daily for important updates and bulletins. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

**Class Participation:** Students are expected to constructively join in bulletin board discussions with appropriate preparation, to post interesting and relevant information on the class bulletin board, and to interact professionally with their classmates.

**Performance Expectations:** Students are expected to produce quality work of a standard comparable to any graduate level didactic course. Bulletin postings and discussions must be legible, constructive and appropriate. Students are required to think for themselves and will be expected to complete assignments that require the application of logic and reasoning skills when the answer may not be found in a book or the course notes.

**Plagiarism:** Plagiarism includes any attempt to take credit for another person’s work. This includes quoting directly from a book or web site, without crediting the source. Sources should always be referenced, a link to the website added, or quotation marks placed around the material. However, we expect more than simply cutting and pasting in this graduate level course. Students are expected to review, evaluate and comment on material they research, rather than simply copying relevant material. Your work will be graded accordingly.
Assignments: While we understand that our students have other work and personal commitments, we expect every effort to be made to meet these deadlines. If for some reason, because of circumstances beyond your control, you are unable to meet an assignment deadline, students should e-mail the professor and explain the situation in advance. Being consistently late in submitting assignments disrupts the discussion of topics on the bulletin board and will therefore result in loss of marks for that assignment up to a full letter grade. If you email us we will work with you around the deadline. If you have outstanding assignments at the end of the semester we will send you a follow up email as a reminder and as a means to determine your plans for completion. If you do not respond to us before the final day of classes you will be assigned a grade based on the completed assignments.

Drop Dates: consult the UF Calendar of Critical Dates at http://www.forensicscience.ufl.edu/Students/Dates.asp
Students must inform us that they are withdrawing from a course to ensure appropriate tuition reimbursement. Deleting yourself from the course roster does not officially withdraw you from a course.

Important Dates:
For Assignment deadlines - see the course Calendar in Canvas.
For other important dates, consult the UF Calendar of Critical Dates and http://www.registrar.ufl.edu/

Additional information on the University of Florida Grades and Grading Policies may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/gradcs.aspx

“Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting the accommodation”

University’s Honesty Policy (cheating and use of copyrighted materials)
Academic Integrity – Students are expected to act in accordance with the University of Florida policy on academic integrity (see Student Conduct Code, the Graduate Student Handbook or this web site for more details:

Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.
Academic Honesty
As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.” You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."
It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code.

Services for Students with Disabilities
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

Online Course Evaluation Process
Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

Campus Helping Resources
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.
University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,
www.counseling.ufl.edu/cwc/
Counseling Services
Groups and Workshops
Outreach and Consultation
Self-Help Library
Wellness Coaching

U Matter We Care, www.umatter.ufl.edu/
Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/

Do not wait until you reach a crisis to come in and talk with us. We have helped many
students through stressful situations impacting their academic performance. You are not
alone so do not be afraid to ask for assistance.

Student Complaints:
Residential Course: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf
Online Course: http://www.distance.ufl.edu/student-complaint-process
Cover Sheet: Request 13576

ALS 3XXX

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University

Curriculum

Committee

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Statewide

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Office of the Registrar

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Student

Academic

Support

System

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Catalog

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College

Notified

No document changes
Course|New for request 13576

Info

Request: ALS 3XXX
Description of request: We have added an edited document and a letter from Horticulture Sciences that addresses the concerns of the committee. We look forward to your review.

Submitter: Anna Prizzi aprizzi@ufl.edu
Created: 2/4/2019 10:42:48 AM
Form version: 1

Responses
Recommended Prefix ALS
Course Level 3
Number XXX
Category of Instruction Intermediate
Lab Code None
Course Title Home and Community Gardening: Collegiate Master Gardener
Transcript Title Home&Comm Gardening
Degree Type Baccalaureate

Delivery Method(s) Online
Co-Listing No
Co-Listing Explanation NA
Effective Term Fall
Effective Year 2019
Rotating Topic? No
Repeatable Credit? No

Amount of Credit 3

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 3

Course Description The Florida Master Gardener Program trains UF/IFAS Extension volunteers to provide horticultural education to residents and communities. Students will receive training to become a Master Gardener, and learn, horticulture, Integrated Pest Management, plant pathology, and garden planning. This online class is composed of digital lectures, discussions, and hands-on activities.

Prerequisites BSC 2005 or BSC 2010 OR Permission of Instructor

Co-requisites NA

Rationale and Placement in Curriculum This course is ideal for students interested in home gardening, community gardening, community development, public health, public education, Extension, urban sociology, urban landscape design, and sustainability. After completing this course, students will be qualified to become a Florida Master Gardener. If they wish to pursue this, they must work through the State Master Gardener Office and their County Extension Office within two years, identifying any formal steps to take for certification and contributing 75 volunteer hours and 10 learning hours within the first year of training. Certified Master Gardeners serve their communities by answering gardening questions from local residents, participating in community and school garden projects, supporting youth activities, and more.

Course Objectives
- Explain the basic principles of horticulture in Florida, including native species and ecosystem considerations, soil health and management, plant biology and selection, and garden planning and maintenance.
- Critique the possibilities and limitations of Extension and its role in communicating science to the community.
- Discuss agro-ecological principles related to food production, and their role in home and community gardens.
- Apply the principles of integrated pest management and plant pathology in order to make recommendations for pests and disease management in home and community gardens.
identify the elements necessary to develop successful home landscapes and community gardens.

Course Textbook(s) and/or Other Assigned Reading Florida Master Gardener Student Manual. University of Florida Institute of Food and Agricultural Sciences, 2018. ISBN: 978-0-578-21363

Additional readings will include selected scientific papers, such as Extension Community Development: Building Strong, Vibrant Communities, Journal of Extension, October 2014, Volume 52:5 https://www.joe.org/joe/2014october/comm1.php

These additional readings will be used as part of reflection assignments.

Weekly Schedule of Topics Week 1: Welcome, Master Gardener Overview and Orientation
- Readings - Text Chapter 1
- Assignment - Reflection 1 (2 parts) For full credit, be sure to respond to all the questions. Part 1: Discuss your relationship with gardening and plants, and share why you took this class. Some questions to get you started: What interests you about plants and gardening? What are your core/central values and ideas around food production, landscaping, and gardening? What is your experience and history with plants, agriculture, gardening, food preparation, landscaping? What interested you about this class and what do you hope to get out of it?

Part 2: Based on the module, readings in the text, and the article Extension Community Development: Building Strong, Vibrant Communities, do things like community and school gardens play a role in Community Development? As one of the most well-known programs and “faces” of Extension, what role do you feel Master Gardeners play in supporting Extension and Community Development?

Week 2: Florida Friendly Landscaping and Agroecology
- Reading - Text Chapter 2
- Assignment - Experiential Learning Activity 1 – Right Plant, Right Place (see instructions in Announcements)
- Quiz 1

Week 3: Botany
- Reading – Text Chapter 3
- Assignment - Experiential Learning Activity 2 – Plant Parts, Life Cycle, and Processes (see instructions in Announcements)
- Quiz 2

Week 4 – Soils and Nutrients
- Readings – Text Chapter 4
- Assignment – Reflection 2

Think about the publication you just read, and reflect on what you learned. What was new information for you? Do you think protecting water quality is important? Why or why not? Share relevant examples from your experience. How would you apply the ideas in this reading in your current living situation if you had control – eg. apartment complex landscape, home landscape, campus landscape? What advice might you give friends or family about adjustments they could make to help protect water quality?

Week 5 – Entomology
- Reading – Text Chapter 5
- Assignment - Experiential Learning Activity 3 – Bug ID (see instructions in Announcements)
- Quiz 3

Week 6 – Nematology and Integrated Pest Management
- Readings – Text Chapter 6 and 7
- Assignment - Experiential Learning Activity 4 – IPM Remedy (see instructions in
Announcements)
- Quiz 4

Week 7 Plant Pathology
- Reading – Text Chapter 8
- Assignment - Experiential Learning Activity 5 – Disease Diagnosis (see instructions in Announcements)
- Quiz 5

Week 8 - Pesticides
- Readings – Text Chapter 9
- Assignment – Reflection 3
Visit the pest control section of your local hardware store. Identify two products that would be recommended for use in the home landscape to control pests or disease. Read the labels carefully. What did you learn about each of these two chemicals. Are they safe for food products? Can children and pets be exposed to them? What are your thoughts on the research regarding the effectiveness and impacts of these sorts of chemicals? Think back over the past several weeks. What are your thoughts about weed, pest, and disease management in landscapes and gardens and how do these labels change or reaffirm your ideas and attitudes? How do IPM and the use of chemical controls interact? What is the role of Extension in providing recommendations regarding pest, weed and disease management?
- Quiz 6

Week 9 – SPRING BREAK
NO Assignments

Week 10 – Turf, Plant Propagation
- Reading – Text Chapter 10
- Assignment - Experiential Learning Activity 6 – Seeds and Cuttings (see instructions in Announcements)
- Quiz 7

Week 11 – Weeds, Invasive Plants
- Readings – Text Chapter 11
- Assignment – Reflection 4
Discuss your understanding of invasive species, and what you learned from the article. What surprised you? How do you think other ecological impacts relate to their dominance? Have you had any experiences with invasive species? What did you observe? How did it impact you or those who were dealing with it? How can extension help reduce the spread of invasive species?
- Quiz 8

Week 12 – Vegetables, Fruits, and Agroecology Part 2
- Readings – Text Chapter 12&15
- Assignment - Experiential Learning Activity 7 – Seasonality (see instructions in Announcements)
- Quiz 9

Week 13 – Planting and Maintenance
- Reading – Text Chapter 13
- Assignment - Experiential Learning Activity 8 – Garden Plan (see instructions in Announcements)
- Quiz 10

Week 14 – Wildlife
- Reading – Text Chapter 14
- Assignment - Final Reflection (2 parts) For full credit, be sure to respond to all of the questions.
PART 1: Think back to what you wrote in your first reflection. How has your individual understanding of gardening and your relationship to plants changed over the course of the class? Did you have any key realizations? Has your relationship to food and agriculture changed? What are your feelings about Extension, the Master Gardener Program, and the role of education in community development and civic life?

PART 2: Please reflect on your learning process. What activities did you find most educational? Which readings or concepts were the most thought-provoking or transformative personally? What other feedback do you have about the class or your personal experience?

- Quiz 11

Week 15 – Review; Reading Days

Week 16 – Final Exam

Links and Policies Class Evaluation
Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Special Accommodations
Students requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Honor Code
UF students are bound by The Honor Pledge which states:
"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

The Honor Code can be found here: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/
Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class.

Class Demeanor, Attendance and Make-up Policy
Students are expected to review each module and all materials and readings associated with each module. All assignments are due by 10pm on the date posted on Canvas. Late assignments will not be accepted unless there are extenuated circumstances or other reasons outlined in University policies. Excused absences that result in the inability to complete an assignment are consistent with university policies: (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx) and require appropriate documentation.

Students are expected to behave in a manner that is respectful to the instructor and to fellow students. Our goal in this class is to create a culture of acceptance, engagement and respectful discourse. We encourage differences of opinion and sharing ideas constructively. Opinions held by other students should be respected in discussion posts, and any rude or intolerant behavior will not be tolerated. Conversations that do not contribute to the discussion of course material should be held to a minimum. Cell phone use is not permitted in class, unless otherwise specified.

Software Use:
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Student Assistance
At UF, we care for every single student. You are important to us, and if you are in need of assistance, we are here to help. UF has a number of resources, facilities, and success plans to allow every person to feel a part of this University of Florida community and to succeed in their academic career. One example is the Dean of Students CARE Team which provide ongoing support for students in distress dealing with a variety of issues. They also students complete the necessary medical petition paperwork for all courses or medical drops before or after the drop deadline for a medical withdrawal. Another important resource is the Alan and Cathy Hitchcock Field and Fork Pantry. It offers food assistance to anyone with a valid UF ID. If you would like to discuss your needs or need find another type of assistance, please see me, reach out to the CARE team member, or ask your academic advisor.

Campus Helping Resources
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the University’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu
- Counseling Services
- Groups and Workshops
- Outreach and Consultation
- Self-Help Library
- Wellness Coaching

- U Matter We Care, www.umatter.ufl.edu/

- Career Connections Center, First Floor JWRU, 392-1601, https://career.ufl.edu/

Student Complaints

Online Course: http://www.distance.ufl.edu/student-complaint-process

Materials and Supplies Fees
There are no additional fees for this course.

Grading Scheme Grading and Assignments:
Quizzes: 100 points (10 x 10 points each); 27% of total
Students should review the lectures and any assigned readings, complete the assigned Quiz sheets, and post your work on Canvas by 10pm on the due date posted each week. Late assignments will not be accepted unless there are extenuating circumstances or other reasons outlined in University policies.

Reflection and Participation: 75 points (10 points for each reflection and 5 points for each response); 20% of total
Five reflection topics will be posted in the discussion section of Canvas on the dates noted on the schedule. Students must post an initial reflection to the questions by 10pm on the due date posted. Students must then read classmates reflections and offer a thoughtful response to at least one of the reflections by 10pm Friday. Reflections are not a book report and should not simply reiterate what you have learned. You are expected to discuss your thoughts on the topic: Do you agree with the central idea, and why or why not? Is there research or information supporting the main points you are making? Did you learn something new or reinforce what you already knew? What did you take-away from the lectures and/or readings related to the topic, and what questions do you have after reviewing them? All reflections should be at least 300 words. Please check your writing before posting it — spelling, punctuation, and grammar count! All assignments should be posted on Canvas by 10pm on the due date. Late assignments will not be accepted unless there are extenuating circumstances or other reasons outlined in University policies.

Experiential Learning Activities: 100 points (20pts/activity); 27% of total
Students must complete five experiential learning activities throughout the term, chosen from the eight options listed in the schedule. If students cannot accomplish the activities due to location or medical accommodation constraints, a substitute project that covers the relevant material for that module may
be chosen with prior approval by the instructor, and it is due the same time as the regular activity. Assignment deliverables must be submitted on Canvas by 10pm on the due dates posted. Extra Credit may be given for completing all experiential learning activities and for attendance at specified events throughout the term. All students will have equal opportunity for extra credit. Final Exam: 100 points; 26% of total Final exam will cover all modules and readings.

Assigned Readings
Additional readings are listed below in the schedule and will be posted on Canvas for the relevant modules.

UF Grading Policies and Student Accommodations
This course will use the following grading for the course:
• A  94 – 100%
• A-  90 – 93.9%
• B+  87 – 89.9%
• B   83 – 86.9%
• B-  80 – 8.92%
• C+  77 – 79.9%
• C   73 – 76.9%
• C-  70 – 72.9%
• D+  67 – 69.9%
• D   63 – 66.9%
• D-  60 – 62.9%
• E   < 60%
More info on grades and policies can be found here: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Instructor(s) Anna Prizzia
Wendy Wilber
Course Description:

The Florida Master Gardener Program trains UF/IFAS Extension volunteers to provide horticultural education to residents and communities. Students will receive training to become a Master Gardener, and learn, horticulture, Integrated Pest Management, plant pathology, and garden planning. This online class is composed of digital lectures, discussion, and hands-on activities.

Course Overview:

This course is ideal for students interested in home gardening, community gardening, community development, public health, public education, Extension, urban sociology, urban landscape design, and sustainability. After completing this course, students will be qualified to become a Florida Master Gardener. If they wish to pursue this, they must work through the State Master Gardener Office and their County Extension Office within two years, identifying any formal steps to take for certification and contributing 75 volunteer hours and 10 learning hours within the first year of training. Certified Master Gardeners serve their communities by answering gardening questions from local residents, participating in community and school garden projects, supporting youth activities, and more.

Student Learning Outcomes:
By the end of this course, you will be able to:

- Explain the basic principles of horticulture in Florida, including native species and ecosystem considerations, soil health and management, plant biology and selection, and garden and landscape planning and maintenance.
- Apply practical solutions and troubleshoot landscape and garden issues.
- Apply the principles of integrated pest management and plant pathology in order to make recommendations for pests and disease management in home and community gardens.
- Critique the possibilities and limitations of Extension and its role in communicating science to the community.

Grading and Assignments:
Quizzes: 100 points (10 x 10 points each); 27% of total

Students should review the lectures and any assigned readings, complete the assigned Quiz sheets, and post your work on Canvas by 10pm on the due date posted each week. Late assignments will not be accepted unless there are extenuating circumstances or other reasons outlined in University policies.

Reflection and Participation: 75 points (10 points for each reflection and 5 points for each response); 20% of total

Five reflection topics will be posted in the discussion section of Canvas on the dates noted on the schedule. Students must post an initial reflection to the questions by 10pm on the due date posted.
Students must then read classmates reflections and offer a thoughtful response to at least one of the reflections by 10pm Friday. Reflections are not a book report and should not simply reiterate what you have learned. You are expected to discuss your thoughts on the topic: Do you agree with the central idea, and why or why not? Is there research or information supporting the main points you are making? Did you learn something new or reinforce what you already knew? What did you take-away from the lectures and/or readings related to the topic, and what questions do you have after reviewing them? All reflections should be at least 300 words. Please check your writing before posting it – spelling, punctuation, and grammar count! All assignments should be posted on Canvas by 10pm on the due date. Late assignments will not be accepted unless there are extenuating circumstances or other reasons outlined in University policies.

**Experiential Learning Activities: 100 points (20pts/activity); 27% of total**

Students must complete five experiential learning activities throughout the term, chosen from the eight options listed in the schedule. If students cannot accomplish the activities due to location or medical accommodation constraints, a substitute project that covers the relevant material for that module may be chosen with prior approval by the instructor, and it is due the same time as the regular activity. Assignment deliverables must be submitted on Canvas by 10pm on the due dates posted.

Extra Credit may be given for completing all experiential learning activities and for attendance at specified events throughout the term. All students will have equal opportunity for extra credit.

**Final Exam: 100 points; 26% of total**

Final exam will cover all modules and readings.

**Assigned Readings**

Additional readings are listed below in the schedule and will be posted on Canvas for the relevant modules.

**Pre-requisites/Co-requisites:**
HOS1014 - 1 CREDIT OR Permission of Instructor

**UF Grading Policies and Student Accommodations**
This course will use the following grading for the course:

- **A** 94 – 100%
- **A-** 90 – 93.9%
- **B+** 87 – 89.9%
- **B** 83 – 86.9%
- **B-** 80 – 8.92%
- **C+** 77 – 79.9%
- **C** 73 – 76.9%
- **C-** 70 – 72.9%
- **D+** 67 – 69.9%
- **D** 63 – 66.9%
- **D-** 60 – 62.9%
- **E** < 60%
More info on grades and policies can be found here: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Class Evaluation
Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Special Accommodations
Students requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Honor Code
UF students are bound by The Honor Pledge which states: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code can be found here: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class.

Class Demeanor, Attendance and Make-up Policy
Students are expected to review each module and all materials and readings associated with each module. All assignments are due by 10pm on the date posted on Canvas. Late assignments will not be accepted unless there are extenuated circumstances or other reasons outlined in University policies. Excused absences that result in the inability to complete an assignment are consistent with university policies: (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx) and require appropriate documentation.

Students are expected to behave in a manner that is respectful to the instructor and to fellow students. Our goal in this class is to create a culture of acceptance, engagement and respectful discourse. We encourage differences of opinion and sharing ideas constructively. Opinions held by other students should be respected in discussion posts, and any rude or intolerant behavior will not be tolerated. Conversations that do not contribute to the discussion of course material should be held to a minimum. Cell phone use is not permitted in class, unless otherwise specified.

Software Use:
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.
Student Assistance
At UF, we care for every single student. You are important to us, and if you are in need of assistance, we are here to help. UF has a number of resources, facilities, and success plans to allow every person to feel a part of this University of Florida community and to succeed in their academic career. One example is the Dean of Students CARE Team which provide ongoing support for students in distress dealing with a variety of issues. They also students complete the necessary medical petition paperwork for all courses or medical drops before or after the drop deadline for a medical withdrawal. Another important resource is the Alan and Cathy Hitchcock Field and Fork Pantry. It offers food assistance to anyone with a valid UF ID. If you would like to discuss your needs or need find another type of assistance, please see me, reach out to the CARE team member, or ask your academic advisor.

Campus Helping Resources
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu
  Counseling Services
  Groups and Workshops
  Outreach and Consultation
  Self-Help Library
  Wellness Coaching

- U Matter We Care, www.umatter.ufl.edu/

- Career Connections Center, First Floor JWRU, 392-1601, https://career.ufl.edu/.

Student Complaints
Online Course: http://www.distance.ufl.edu/student-complaint-process

Materials and Supplies Fees
There are no additional fees for this course.
Schedule of Topics and Readings

Week 1: Welcome and Orientation
Master Gardener Overview
- Readings - Text Chapter 1
- Assignment - Reflection 1 (2 parts) For full credit, be sure to respond to all the questions.
  Part 1: Discuss your relationship with gardening and plants, and share why you took this class. Some questions to get you started: What interests you about plants and gardening? What are your core/central values and ideas around food production, landscaping, and gardening? What is your experience and history with plants, agriculture, gardening, food preparation, landscaping? What interested you about this class and what do you hope to get out of it?
  Part 2: Based on the module, readings in the text, and the article Extension Community Development: Building Strong, Vibrant Communities, do things like community and school gardens play a role in Community Development? As one of the most well-known programs and “faces” of Extension, what role do you feel Master Gardeners play in supporting Extension and Community Development?

Week 2: Florida Friendly Landscaping and Agroecology Part 1
Teaching Adult Learners
- Reading - Text Chapter 2
- Assignment - Experiential Learning Activity 1 – Right Plant, Right Place (see instructions in Announcements)
- Quiz 1

Week 3: Botany
Volunteerism
- Reading – Text Chapter 3
- Assignment - Experiential Learning Activity 2 – Plant Parts, Life Cycle, and Processes (see instructions in Announcements)
- Quiz 2

Week 4 – Soils and Nutrients
Extension Resources
- Readings – Text Chapter 4
- Assignment – Reflection 2
  Think about the publication you just read, and reflect on what you learned. What was new information for you? Do you think protecting water quality is important? Why or why not? Share relevant examples from your experience. How would you apply the ideas in this reading in your current living situation if you had control – eg. apartment complex landscape, home landscape, campus landscape? What advice might you give friends or family about adjustments they could make to help protect water quality?
Week 5 – Entomology

**Damage ID and Recommending Control Measures**
- **Reading** – Text Chapter 5
- **Assignment** – Experiential Learning Activity 3 – Bug ID (see instructions in Announcements)
- **Quiz 3**

Week 6 – Nematology and Integrated Pest Management

**Record-Keeping**
- **Readings** – Text Chapter 6 and 7
- **Assignment** – Experiential Learning Activity 4 – IPM Remedy (see instructions in Announcements)
- **Quiz 4**

Week 7 – Plant Pathology

**Alternative/Experiential Teaching Techniques**
- **Reading** – Text Chapter 8
- **Assignment** – Experiential Learning Activity 5 – Disease Diagnosis (see instructions in Announcements)
- **Quiz 5**

Week 8 – Pesticides

**Public Perception and Thresholds**
- **Readings** – Text Chapter 9
- **Assignment** – Reflection 3
  - Visit the pest control section of your local hardware store. Identify two products that would be recommended for use in the home landscape to control pests or disease. Read the labels carefully. What did you learn about each of these two chemicals. Are they safe for food products? Can children and pets be exposed to them? What are your thoughts on the research regarding the effectiveness and impacts of these sorts of chemicals? Think back over the past several weeks. What are your thoughts about weed, pest, and disease management in landscapes and gardens and how do these labels change or reaffirm your ideas and attitudes? How do IPM and the use of chemical controls interact? What is the role of Extension in providing recommendations regarding pest, weed and disease management?
- **Quiz 6**

Week 9 – SPRING BREAK

**NO Assignments**

Week 10 – Turf

**Plant Propagation**
- **Reading** – Text Chapter 10
- **Assignment** – Experiential Learning Activity 6 – Seeds and Cuttings (see instructions in Announcements)
- **Quiz 7**
Week 11 – Weeds – ID, Prevention, and Control
Invasive Plants
- Readings – Text Chapter 11
- Assignment – Reflection 4
  Discuss your understanding of invasive species, and what you learned from the article.
  What surprised you? How do you think other ecological impacts relate to their dominance?
  Have you had any experiences with invasive species? What did you observe? How did it impact you or those who were dealing with it? How can extension help reduce the spread of invasive species?
  - Quiz 8

Week 12 – Vegetables, Fruits, and Agroecology Part 2
Expectations, Seasonality, and Scale
- Readings – Text Chapter 12&15
- Assignment - Experiential Learning Activity 7 – Seasonality (see instructions in Announcements)
  - Quiz 9

Week 13 – Landscape Planting
Landscape Maintenance
- Reading – Text Chapter 13
- Assignment - Experiential Learning Activity 8 – Garden Plan (see instructions in Announcements)
  - Quiz 10

Week 14 – Wildlife Attraction and Prevention
- Reading – Text Chapter 14
- Assignment - Final Reflection (2 parts) For full credit, be sure to respond to all of the questions.
  PART 1: Think back to what you wrote in your first reflection. How has your individual understanding of gardening and your relationship to plants changed over the course of the class? Did you have any key realizations? Has your relationship to food and agriculture changed? What are your feelings about Extension, the Master Gardener Program, and the role of education in community development and civic life?
  PART 2: Please reflect on your learning process. What activities did you find most educational? Which readings or concepts, were the most thought-provoking or transformative personally? What other feedback do you have about the class or your personal experience?
  - Quiz 11

Week 15 – Review; Reading Days

Week 16 – Final Exam
Course Description:

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Course Overview:

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Student Learning Outcomes:

By the end of this course, you will be able to:

- Explain the basic principles of horticulture in Florida, including native species and ecosystem considerations, soil health and management, plant biology and selection, and garden planning and maintenance.
- Critique the possibilities and limitations of Extension and its role in communicating science to the community.
- Discuss agro-ecological principles related to food production, and their role in home and community gardens.
- Apply the principles of integrated pest management and plant pathology in order to make recommendations for pests and disease management in home and community gardens.
- Identify the elements necessary to develop successful home landscapes and community gardens.

Grading and Assignments:
Quizzes: 100 points (10 x 10 points each); 27% of total

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The Honor Code can be found here: http://www.dso.ufl.edu/scrr/process/student-conduct-honor-code/. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class.

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Student Complaints

Online Course: http://www.distance.ufl.edu/student-complaint-process

Materials and Supplies Fees
There are no additional fees for this course.

Schedule of Topics and Readings

Week 1: Welcome, Master Gardener Overview and Orientation
- **Readings** - Text Chapter 1
- Assignment - Reflection 1 (2 parts) For full credit, be sure to respond to all the questions.
Part 1: Discuss your relationship with gardening and plants, and share why you took this class. Some questions to get you started: What interests you about plants and gardening? What are your core/central values and ideas around food production, landscaping, and gardening? What is your experience and history with plants, agriculture, gardening, food preparation, landscaping? What interested you about this class and what do you hope to get out of it?

Part 2: Based on the module, readings in the text, and the article *Extension Community Development: Building Strong, Vibrant Communities*, do things like community and school gardens play a role in Community Development? As one of the most well-known programs and "faces" of Extension, what role do you feel Master Gardeners play in supporting Extension and Community Development?

**Week 2: Florida Friendly Landscaping and Agroecology**
- **Reading** - Text Chapter 2
- **Assignment** - Experiential Learning Activity 1 – Right Plant, Right Place (see instructions in Announcements)
- **Quiz 1**

**Week 3: Botany**
- **Reading** – Text Chapter 3
- **Assignment** - Experiential Learning Activity 2 – Plant Parts, Life Cycle, and Processes (see instructions in Announcements)
- **Quiz 2**

**Week 4 – Soils and Nutrients**
- **Readings** – Text Chapter 4
- **Assignment** – Reflection 2

Think about the publication you just read, and reflect on what you learned. What was new information for you? Do you think protecting water quality is important? Why or why not? Share relevant examples from your experience. How would you apply the ideas in this reading in your current living situation if you had control – eg. apartment complex landscape, home landscape, campus landscape? What advice might you give friends or family about adjustments they could make to help protect water quality?

**Week 5 – Entomology**
- **Reading** – Text Chapter 5
- **Assignment** - Experiential Learning Activity 3 – Bug ID (see instructions in Announcements)
- **Quiz 3**

**Week 6 – Nematology and Integrated Pest Management**
- **Readings** – Text Chapter 6 and 7
- **Assignment** - Experiential Learning Activity 4 – IPM Remedy (see instructions in Announcements)
- **Quiz 4**

**Week 7 Plant Pathology**
- **Reading** – Text Chapter 8
- **Assignment** - Experiential Learning Activity 5 – Disease Diagnosis (see instructions in Announcements)
- **Quiz 5**

**Week 8 - Pesticides**
- **Readings** – Text Chapter 9
- **Assignment** – Reflection 3
  
  Visit the pest control section of your local hardware store. Identify two products that would be recommended for use in the home landscape to control pests or disease. Read the labels carefully. What did you learn about each of these two chemicals. Are they safe for food products? Can children and pets be exposed to them? What are your thoughts on the research regarding the effectiveness and impacts of these sorts of chemicals? Think back over the past several weeks. What are your thoughts about weed, pest, and disease management in landscapes and gardens and how do these labels change or reaffirm your ideas and attitudes? How do IPM and the use of chemical controls interact? What is the role of Extension in providing recommendations regarding pest, weed and disease management?
- **Quiz 6**

**Week 9 – SPRING BREAK**

**NO Assignments**

**Week 10 – Turf, Plant Propagation**
- **Reading** – Text Chapter 10
- **Assignment** - Experiential Learning Activity 6 – Seeds and Cuttings (see instructions in Announcements)
- **Quiz 7**

**Week 11 – Weeds, Invasive Plants**
- **Readings** – Text Chapter 11
- **Assignment** – Reflection 4
  
  Discuss your understanding of invasive species, and what you learned from the article.
  What surprised you? How do you think other ecological impacts relate to their dominance?
  Have you had any experiences with invasive species? What did you observe? How did it impact you or those who were dealing with it? How can extension help reduce the spread of invasive species?
- **Quiz 8**

**Week 12 – Vegetables, Fruits, and Agroecology Part 2**
- **Readings** – Text Chapter 12&15
- **Assignment** - Experiential Learning Activity 7 – Seasonality (see instructions in Announcements)
- **Quiz 9**
Week 13 – Planting and Maintenance
  - Reading – Text Chapter 13
  - Assignment - Experiential Learning Activity 8 – Garden Plan (see instructions in Announcements)
  - Quiz 10

Week 14 – Wildlife
  - Reading – Text Chapter 14
  - Assignment - Final Reflection (2 parts) For full credit, be sure to respond to all of the questions.
    PART 1: Think back to what you wrote in your first reflection. How has your individual understanding of gardening and your relationship to plants changed over the course of the class? Did you have any key realizations? Has your relationship to food and agriculture changed? What are your feelings about Extension, the Master Gardener Program, and the role of education in community development and civic life?
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  - Quiz 11

Week 15 – Review; Reading Days

Week 16 – Final Exam