

# **CALS Curriculum Committee Meeting**

**September 14, 2018**

**2:00 p.m.**

**1044 McCarty Hall D**

**Members:** R. Baldwin, J. Brendemuhl, J.C. Bunch, D. Coenen, D. Farnsworth, D. Gabriel, P. Inglett, S. Johnson, B. Kolaczowski, A. Mathews, G. Nunez, B. Pearson, W. Porter, C. Prince, K. Rose, D. Rowland, S. Sager (Chair), C. Stefanou, L. Warren, A. Wysocki

## **Agenda and Index for Materials**

**Approve Minutes from August 17, 2018 meeting**

**Dr. Brendemuhl: Update from UCC**

### **Graduate New Course Proposals**

1. HOS 6XXX – Weed Management for Organic and Sustainable Cropping Systems (req. #12982)
2. MCB 6XXX – Probiotics (req. #12935)
3. SWS 6XXX – Landscape Hydrology (req. #12960)

### **Graduate Course Change Proposal**

4. HUN 6321 – Proteins and Amino acids in Nutrition (req. #12955)

### **Undergraduate New Course Proposals**

5. HOS 3XXX – Genetics and Breeding of Fruit Crops (req. #12998)
6. HOS 3XXX – Innovations in Organic Agriculture (req. #12997)
7. HOS 4XXXXC – Principles of Postharvest Horticulture (req. #13001)
8. HOS 4XXX – Horticultural Sciences Capstone (req. #13002)
9. HOS 4XXX – Supervised Teaching Experience in Horticultural Sciences (req. #13000)
10. HOS 4XXX – Capstone Planning in Horticultural Sciences (req. #12999)
11. HOS 4XXX – Organic Weed Management (req. #12981)

12. MCB 4XXX – Probiotics (req. #12932)  
(Supporting materials with Graduate submission)

13. PLS 3XXXC – Hydroponic Systems (req. #12996)

### **Undergraduate Course Change Proposal**

14. HOS 3020C – Principles of Horticultural Crop Production (req. #12995)

### **Certificates**

15. Proposed change to the Wildlife Forensic Sciences and Conservation Graduate Certificate (req. #12959)

16. Proposed termination of the Personal and Financial Planning Undergraduate Certificate (req. #12972)

**ALS Curriculum Committee Meeting**  
**August 17, 2018**  
**Submitted by James Fant**

**Members Present:** J. Brendemuhl, J.C. Bunch, D. Coenen, P. Inglett, A. Mathews, G. Nunez, B. Pearson, C. Prince, K. Rose, S. Sager, L. Warren

**Substitutes:** Misti Sharp for D. Farnsworth  
Adam Watson for W. Porter

**Visitors:** Rebecca Darnell and Martha Monroe

**Call to Order:** The College of Agricultural and Life Sciences Curriculum Committee met on August 17, 2018 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 Curriculum Committee homepage under archived information:**  
[http://www.cals.ufl.edu/faculty\\_staff/curriculum\\_committee.shtml](http://www.cals.ufl.edu/faculty_staff/curriculum_committee.shtml)

**Approval of Minutes:** A motion was made by Dr. Warren to approve the minutes from the April 13, 2018 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.**

**Websites:** Grades – <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>  
Syllabus Statements – <http://www.cals.ufl.edu/faculty-staff/docs/policies/CALS%20Syllabus%20Policy%20Final.pdf>  
Absences & Make-Ups – <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

**Update from UCC:** Dr. Brendemuhl noted the following items were addressed at the April 17<sup>th</sup>, 2018 UCC: 1) Proposed changes Microbiology and Cell Science (request #'s 12335&12400) were both conditionally-approved, 2) Proposed change to the Undergraduate Certificate – Family Life Educator (approved). There were no CALS items on the May UCC agenda. Dr. Brendemuhl noted that there were several new Compass releases that were affecting academic advisors and that much work is currently being done to correct degree audits in the new system and prepare for fall graduation. He also indicated that a new release would occur that would affect admissions. All semester plans for critical-tracking during semesters 6-8 were submitted on time and he is awaiting their review. He once again reminded members concerning trainings associated with various rollouts of UF COMPASS and to stay abreast and take the trainings. Lastly he mentioned that there is a new component on degree audits concerning the Common Prerequisite Manual (CPM) that will need to be addressed for degree programs moving forward.

## **Graduate New Course Proposal**

### **1. ENY 6XXX – Ecology and Conservation of Pollinators (req. #12773)**

This item was reviewed with item #9. Any comments are directed at both submissions unless otherwise noted. A motion was made by Dr. Bunch to approve these items with changes required. The motion was approved. The description of request section on the UCC form and cover sheet should not be the course description. This space is used to explain what you are requesting. For example: Requesting a new course to fill a void regarding pollinator populations worldwide. In the course textbook section of the UCC form replace “purchased” with “required.” The learning objectives section in the graduate syllabus should contain a couple of expectations that are above and beyond those of the undergraduates. The graph in the grades and assignment sections of both syllabuses includes a possible 50 point for participation. Please outline in each syllabus the expectations for participation. The grade distribution section in each syllabus shows a letter grade associated with a percentage range. This should also include point ranges in relation to percentage ranges (Graduate 0-550 and Undergraduate 0-500).

### **2. FAS 5XXX – Invasion Ecology of Aquatic Animals (req. #12896)**

A motion was made by Dr. Nunez to recycle this item back to the department for required changes and resubmission. The motion was approved. Please provide external consults from other departments which may offer courses involving invasion ecology to ensure there is no excessive overlap with any existing courses. There is concern that the proposed title is too broad. The learning outcome section on the UCC form and in the syllabus have no mention of aquatic animals. In topic review and data paper section of the syllabus explain what is included in a data set. The grading scale on the UCC form and in the syllabus should contain decimal points (A 94-100%, A- 90-93.99, B+ 86-89.99, etc.). This will help avoid any confusion or discussion regarding the rounding up of final grades. Lastly, the committee suggests considering this course as a possible co-taught Graduate (6000 level) and Undergraduate (4000 level) option.

### **3. FAS 6XXX – Environmental Physiology of Fishes (req. #12895)**

A motion was made by C. Prince to recycle this item back to the department for required changes and resubmission. The motion was approved. Provide an external consult from Biology (Marta Wayne – mlwayne@ufl.edu) to ensure there is no excessive overlap with any existing courses.

### **4. FAS 6XXX – Spatial Sciences for Marine Environmental Characterization (req. #12897)**

A motion was made by C. Prince to recycle this item back to the department for required changes and resubmission. The motion was approved. Provide an outside consultation from Soil and Water Science to ensure there is no excessive overlap with any existing courses. The citations for the required readings on the UCC form need to be listed the like they are in the syllabus (all information included).

### **5. FAS 6XXX – Fisheries Enhancement (req. #12900)**

A motion was made by Dr. Nunez to approve this item with changes required. The motion was approved. Decimal points need to be added to the grading scale (A 93-100, A- 90-

92.99, B+ 86-89.99, etc.). This will help avoid any confusion or discussion regarding the rounding up of final grades.

6. SWS 5XXX – Aquatic Toxicology: Science and Applications (req. #12689)

This item was reviewed with item #11. Comments will apply to both submissions unless otherwise noted. A motion was made by Dr. Sharp to approve these items with changes required. The motion was approved. An external consult is requested from Ruth Francis-Floyd (rffloyd@ufl.edu) at the College of Veterinary Medicine to ensure there is no excessive overlap with any existing course. The Graduate submission needs to be changed from a 5000 to a 6000-level course. This will need to be changed everywhere it appears in the submission. The course objectives for the graduate students need to differ enough from the undergraduate objectives to show the rigor expected for a graduate level course. The grading scales in both submissions need to include decimal points (A 93% and above, A- 90-92.99%, B+ 87-89.99%, etc.). This will help avoid any confusion or discussion regarding the rounding up of final grades.

### **Graduate Course Change Proposals**

7. AEC 6933 – Seminar in Agricultural Education and Communication (req. #12781)

A motion was made by Dr. Inglett to recycle this item back to the department for required changes and resubmission. A syllabus must be provided for any UCC2 submission. An explanation of what is expected of each student who takes this course for 0, 1, 2 or 3 credits is required.

8. WIS 6934 – Topics in Wildlife and Range Sciences (req. #12511)

A motion was made by Dr. Inglett to approve this item with an update required. The motion was approved. The description of the request must be fixed on the UCC form. This statement needs to explain what you are requesting. It is not a space for the course description. Dr. Brendemuhl has made this correction and will forward the item to the next level of the approval process. Therefore, there is no action required on your part.

### **Undergraduate New Course Proposals**

9. ENY 4XXX – Ecology and Conservation of Pollinators (req. #12772)

Please see item #1 for comments.

10. FYC 4XXX – Family and Cultural Diversity (req. #12849)

A motion was made by Dr. Bunch to recycle this item back to the department for required changes and resubmission. The motion was approved. There needs to be a syllabus submitted with this item. There was a question that the proposed title should contain something about studying abroad.

11. SWS 4XXX – Aquatic Toxicology: Science and Applications (req. #12688)

Please see item #6 for comments.

### **Certificates**

12. Graduate Certificate in Environmental Microbiology

A motion was made by Dr. Bunch to recycle this item back to the department for required updates and resubmission. An external consult is required from the Soil and Water Science department.

13. Graduate Certificate in Environmental Education and Communication (req. #12164)

A motion was made by Dr. Inglett to recycle this item back to the department for required updates and resubmission. The motion was approved. There is too much flexibility in the course options for this certificate. There needs to be some commonality. At least six credit hours should be common to all students who pursue the certificate. The committee also suggests the possibility of developing several certificates based on the proposed course options.

**Recycled items**

14. Proposed name change to Interdisciplinary Studies Concentration in Environmental Management in Agriculture and Natural Resources (req. #11996)

A motion was made by Dr. Inglett to recycle this item back to the department for required changes and resubmission. The motion was approved. It is the CALS CC's understanding that there will be a committee formed by the School of Natural Resources and Conservation and the department of Soil and Water Sciences to discuss this proposal. The CALS CC would like to review the outcome once that committee has met. Please include a letter from UF Online explaining the need for a shorter title.

15. MCB 4XXX – Microbial Applications of Synthetic Biology (req. #11708)

A motion was made by Dr. Bunch to recycle this item back to the department for required changes and resubmission. The motion was approved. There is still not enough of a difference in rigor between Graduate and Undergraduate students. The course objectives must be measurable (Understand and Consider cannot be measured). The Graduate version of this course has to be included with the resubmission of the Undergraduate version and all previous committee concerns must be addressed.

16. HOS 3XXX – Medicinal Plant and Herb Production (req. #12481)

Title changed to: Breeding and Production of Medicinal Plants and Herbs

A motion was made by Dr. Inglett to approve this item as submitted. The motion was approved.

\*\*\*\*Dr. Inglett has volunteered to chair the remaining (4) CALS CC meetings in 2018 due to a schedule conflict for Scott Sager.

The meeting was adjourned at 3:41 p.m.

## Cover Sheet: Request 12982

### HOS6XXX Weed Management for Organic and Sustainable Cropping Systems

#### Info

Process	Course New Grad
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Carlene Chase cachase@ufl.edu
Created	8/30/2018 5:27:49 PM
Updated	9/5/2018 11:14:51 AM
Description of request	This graduate level course has been taught for many years in alternate years in spring as HOS6932. A permanent course number is required by the Horticultural Sciences Department and to make the course available to the graduate Interdisciplinary Ecology program.

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Horticultural Sciences 514923000	Christine Chase		8/31/2018
No document changes					
College	Pending	CALS - College of Agricultural and Life Sciences			8/31/2018
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 12982

### Info

**Request:** HOS6XXX Weed Management for Organic and Sustainable Cropping Systems

**Description of request:** This graduate level course has been taught for many years in alternate years in spring as HOS6932. A permanent course number is required by the Horticultural Sciences Department and to make the course available to the graduate Interdisciplinary Ecology program.

**Submitter:** Carlene Chase cachase@ufl.edu

**Created:** 8/30/2018 4:40:57 PM

**Form version:** 1

### Responses

**Recommended Prefix** HOS

**Course Level** 6

**Number** XXX

**Category of Instruction** Joint (Ugrad/Grad)

**Lab Code** None

**Course Title** Weed Management for Organic and Sustainable Cropping Systems

**Transcript Title** Sustainable Weed Mgt

**Degree Type** Graduate

**Delivery Method(s)** On-Campus

**Co-Listing** Yes

**Co-Listing Explanation** The weighting of quizzes for undergraduate students is double that for graduate students.

Undergraduate students prepare a written laboratory report based on an experiment conducted over an 8-week period. Graduate students are required to serve as discussion moderators. Graduate students develop a grant proposal on a sustainable and/or organic weed management problem formatted for submission to the Southern Sustainable Agriculture Research and Education graduate student grant program. A ten-minute PowerPoint presentation is also required.

**Effective Term** Spring

**Effective Year** 2020

**Rotating Topic?** No

**Repeatable Credit?** No

**Amount of Credit** 3

**S/U Only?** No

**Contact Type** Regularly Scheduled

**Weekly Contact Hours** 3

**Course Description** Ecological principles can be applied in agroecosystems to manage weeds sustainably. Alternative weed management approaches that are less dependent on herbicides and utilize ecological processes detrimental to weeds and their propagules will be emphasized. Students will learn actively by critically analyzing pertinent literature and participating in discussions of supplemental reading.

**Prerequisites** HOS 3020C - Principles of Horticultural Crop Production or ALS 3153 Agricultural Ecology or equivalent.

**Co-requisites** None.

**Rationale and Placement in Curriculum** At graduate level this course is intended for students undertaking graduate research with a focus on organic and sustainable cropping systems. It will also be a useful offering for students in the graduate Interdisciplinary Ecology program.

**Course Objectives** Students will learn how ecological approaches can be utilized to manage weeds in a sustainable manner. In addition, students will develop or improve skills for critically analyzing scientific literature and hone their oral presentation skills by serving as a moderator and by participating in discussions of weed science with peers. Students will polish their research and writing skills by preparing a grant proposal.

### **Course Textbook(s) and/or Other Assigned Reading Recommended Texts**

Chauhan, B.S. and G. Mahajan. 2014. Recent Advances in Weed Management. Springer, New York Heidelberg Dordrecht London.

Hatcher, P.E. and R.J. Froud-Williams. 2017. Weed Research: Expanding Horizons. John Wiley & Sons, Hoboken, NJ.

Liebman, M., C.L. Mohler, and C.P. Staver. 2001. Ecological Management of Agricultural Weeds. Cambridge University Press, Cambridge.

Upadhyaya, M.K. and R.E. Blackshaw. 2007. Non-chemical Weed Management: Principles, Concepts and Technology. CABI, Wallingford.

### **Supplemental Materials**

Booth, B.D., S.D. Murphy, and C.J. Swanton. 2010. Invasive plant ecology in natural and agricultural systems. Second edition. CABI Publishing.

Bowman, G. 2001. Steel in the field: a farmer's guide to weed management tools. Sustainable Agriculture Network, Beltsville.

Häkansson, S. 2003. Weeds and weed management on arable land: an ecological approach. CABI Publishing.

Radosevich, S.R., J.S. Holt, and C.M. Ghersa. 2007. Ecology of Weeds and Invasive Plants: Relationship to Agriculture and Natural Resource Management, 3rd Edition. John Wiley & Sons, New York.

Ross, M.A. and C.A. Lembi. 2008. Applied Weed Science: Including the Ecology and Management of Invasive Plants. Prentice Hall, Upper Saddle River.

### **Weekly Schedule of Topics Week 1**

1. Introduction and Orientation
2. Weeds – Ecological Definition, Adverse Effects and Utility
3. Ecological Weed Management

### **Week 2**

1. Weed Life History
2. Preventive Measures

### **Week 3**

1. The National Organic Rule - Permitted Practices
2. Herbicides permitted in organic cropping systems
3. Weed-Crop Interactions, Competition

### **Week 4**

1. Weed-Crop Competition Greenhouse Experiment Initiated
2. Students assigned to independently view for in-class discussion: What Plants Talk About – <https://www.youtube.com/watch?v=CrrSAC-vjG4>
3. Allelopathy

### **Week 5**

1. Biofumigation
2. Cultural Weed Management
3. Examination 1

### **Week 6**

1. Cultural Weed Management
2. Quiz. Cultural Weed Management (Student-Moderated Discussion)
3. Cultural Weed Management

Week 7

1. Physical Weed Control – Mulches
2. Quiz. Physical Weed Control – Soil Solarization (Student-Moderated Discussion)
3. Physical Weed Control – Thermal methods

Week 8

1. Physical Weed Control – Grits (Titles for Grant Proposals Due)
2. Anaerobic Soil Disinfestation
3. Mechanical Weed Control – Tillage

Week 9 NO CLASS – Spring Break

Week 10

1. Mechanical Weed Control – Cultivation
2. Quiz. Automated Weed Control (Student-Moderated Discussion)
3. Examination 2

Week 11

1. Introduction to Biological Control of Weeds
2. Quiz. Weed Seed Predation (Student-Moderated Discussion)
3. Biological Control Using Microorganisms/Bioherbicides

Week 12

1. Final data collection from Weed-Crop Competition experiment
2. Livestock for Weed Management
3. Quiz. Livestock for Weed Management (Student-Moderated Discussion)

Week 13

1. Chemical Weed Control – Soil fumigants (Proposal Drafts and Lab Introduction are due)
2. Chemical Weed Control – Synthetic Herbicides

Week 14

1. Herbicide resistance
2. Quiz. Sustainability of Herbicide-Resistant Crops (Student-Moderated Discussion)
3. Unmanned aerial vehicle use for weed management

Week 15

1. Integrated Weed Management vs Ecological Weed Management
2. Assess Graduate Student Grant Proposal Presentations
3. Submit laboratory report

Week 16

1. Review for Exam
2. Examination 3

**Links and Policies** Policies: Attendance and participation in moderating and discussions are required. Students are urged to arrive on time to avoid disrupting class. Late assignments and make-up exams are permitted only for excused absences. Acceptable documents for an excused absence include a doctor's note or a funeral program. Mobile phones must be turned off during class. Discourse during discussions must be polite and respectful.

**Academic Honesty:** Students are expected to adhere to the University of Florida Honor Code: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. Please refer to conduct regulations at <http://www.dso.ufl.edu/STG>. Violations of Academic Honesty Guidelines and the Honor code, which include cheating, plagiarism, bribery, misrepresentation, conspiracy, and fabrication, will not be tolerated.

**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.

**Counseling and Wellness Center:** Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling and Wellness Center provides confidential counseling services at no cost for currently enrolled students. 3190 Radio Road, 392-1575, [www.counseling.ufl.edu/cwc](http://www.counseling.ufl.edu/cwc).

**Students Requiring Accommodations:** 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. 001 Reid Hall, 392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/).

**Course Evaluation:** Constructive feedback from students via course evaluation is requested to contribute to enhancing course quality. Students are requested to complete online evaluations at <https://evaluations.ufl.edu> when advised that the evaluation system is open.

**Grading Scheme Examinations (60%):**

Three examinations, essay type and short answer responses.

**Discussion Moderator (10%)**

Select a current journal article (published within the past 5 years) on the assigned topic and share the selected article with the class at least 1 week in advance of the scheduled discussion. Prepare a 15-minute presentation to provide background information on the topic using the article, other related journal articles, text books etc. Prepare 4 to 6 questions to stimulate the discussion.

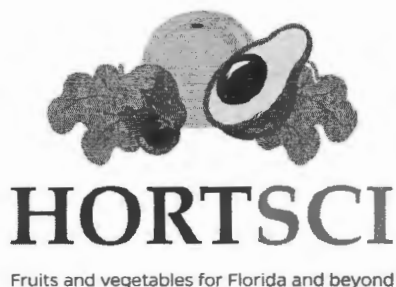
**Quizzes (10%)**

Students will complete quizzes based on journal articles assigned for discussion.

**Grant Proposal (20%)**

Students will develop a grant proposal on a sustainable and/or organic weed management problem formatted for submission to the Southern Sustainable Agriculture Research and Education graduate student grant program. A 10-minute PowerPoint presentation is also required.

**Instructor(s)** Carlene A. Chase



**HOS6XXX –Weed Management for Organic  
and Sustainable Cropping Systems**

**3 CREDITS**

**Spring Semester 20XX**

**MWF Period 2, 8:30 to 9:20 AM**

**2316 Fifield Hall**

**INSTRUCTOR**

Dr. Carlene A. Chase  
1245 Fifield Hall  
(352) 273-4770  
Email: cachase@ufl.edu

**OFFICE HOURS**

Thursdays 10 am -12 pm  
Fridays 1 pm - 3 pm or by appointment.

**COURSE DESCRIPTION**

Ecological principles can be applied in agroecosystems to manage weeds sustainably. Alternative weed management approaches that are less dependent on herbicides and utilize ecological processes detrimental to weeds and their propagules will be emphasized. Students will learn actively by critically analyzing pertinent literature and participating in discussions of supplemental reading.

**LEARNING OBJECTIVES**

Upon successful completion of this course, students will be able to:

- Describe how ecological approaches can be utilized to manage weeds in a sustainable manner
- Select and recommend ecological weed management practices that are approved for use in organic cropping systems.
- Critically analyze and discuss weed science journal articles.
- Lead the discussion of refereed journal articles.
- Develop and write a grant proposal for the Southern Sustainable Research and Education (Southern SARE) graduate student grant program.

**TEXTBOOKS:** There is no required textbook.

**Recommended Texts**

Chauhan, B.S. and G. Mahajan. 2014. Recent Advances in Weed Management. Springer, New York Heidelberg Dordrecht London.

Hatcher, P.E. and R.J. Froud-Williams. 2017. Weed Research: Expanding Horizons. John Wiley & Sons, Hoboken, NJ.

Liebman, M., C.L. Mohler, and C.P. Staver. 2001. Ecological Management of Agricultural Weeds. Cambridge University Press, Cambridge.

Upadhyaya, M.K. and R.E. Blackshaw. 2007. Non-chemical Weed Management: Principles, Concepts and Technology. CABI, Wallingford.

### Supplemental Materials

Booth, B.D., S.D. Murphy, and C.J. Swanton. 2010. Invasive plant ecology in natural and agricultural systems. Second edition. CABI Publishing.

Bowman, G. 2001. Steel in the field: a farmer's guide to weed management tools. Sustainable Agriculture Network, Beltsville.

Håkansson, S. 2003. Weeds and weed management on arable land: an ecological approach. CABI Publishing.

Radosevich, S.R., J.S. Holt, and C.M. Ghera. 2007. Ecology of Weeds and Invasive Plants: Relationship to Agriculture and Natural Resource Management, 3rd Edition. John Wiley & Sons, New York.

Ross, M.A. and C.A. Lembi. 2008. Applied Weed Science: Including the Ecology and Management of Invasive Plants. Prentice Hall, Upper Saddle River.

### COURSE GRADE

Assignment	Points
<u>Examinations</u> : Three examinations, essay type and short answer responses.	600
<u>Discussion moderator</u> : Select a current journal article (published within the past 5 years) on the assigned topic and share the selected article with the class at least 1 week in advance of the scheduled discussion. Prepare a 15-minute presentation to provide background information on the topic using the article, other related journal articles, text books etc. Prepare 4 to 6 questions to stimulate the discussion.	100
<u>Quizzes</u> : Students will complete quizzes based on journal articles assigned for discussion.	100
<u>Grant proposal and presentation</u> : Students will develop a grant proposal on a sustainable and/or organic weed management problem formatted for submission to the Southern SARE Graduate Student grant program.	200
TOTAL	1000

### GRADING SCALE

Score	Percent	Grade
900 to 1000	90 to 100	A
850 to 899	85 to 89.9	B+
800 to 849	80 to 84.9	B
750 to 799	75 to 79.9	C+
700 to 749	70 to 74.9	C

650 to 699	65 to 69.9	D+
600 to 649	60 to 64.9	D
0 to 599	0 to 59.9	E

Additional information on current UF grading policies for assigning grade points can be found here:

- *Grading policy*, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

## **COURSE POLICIES**

### Attendance and Make-up Policy

You are encouraged to attend every lecture and complete quizzes and assignments by the posted deadlines. Absences will be excused and late assignments will be graded only for documented emergencies as per UF's attendance policy.

Additional information on class attendance and make-up exams, assignments and other work can be found here:

- *UF Attendance policy*, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx)

### Technical Difficulties

If you are experiencing technical difficulties with Canvas, you should immediately contact the UF Help Desk. This will generate a ticket number, which documents the date and time of your technical difficulty. Any requests to make-up late work due to technical difficulties must be accompanied by this ticket number.

- *UF Help Desk*, HUB 132, (352) - 392 - 4357, [www.lss.at.ufl.edu/help.shtml](http://www.lss.at.ufl.edu/help.shtml)

### 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 when appropriate.

### 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.

- *Disability Resource Center*, 0001 Reid Hall, (352) 392-8565, [www.dso.ufl.edu/drc/](http://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](http://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](http://www.umatter.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 Resource Center*, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

### 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](http://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](http://www.evaluations.ufl.edu/results)

### Student Complaints

You can file and resolve any complaints about your experience in this course at the following site:

- *Student complaints in residential courses*, [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

### **COURSE SCHEDULE**

<b>Date</b>	<b>Topics/Learning Experiences</b>
Week 1	1. Introduction and Orientation 2. Weeds – Ecological Definition, Adverse Effects and Utility 3. Ecological Weed Management
Week 2	1. Weed Life History 2. Preventive Measures
Week 3	1. The National Organic Rule - Permitted Practices 2. Herbicides permitted in organic cropping systems 3. Weed-Crop Interactions, Competition
Week 4	1. Weed-Crop Competition Greenhouse Experiment Initiated 2. Students assigned to independently view for in-class discussion: What Plants Talk About – <a href="https://www.youtube.com/watch?v=CrrSAc-vjG4">https://www.youtube.com/watch?v=CrrSAc-vjG4</a> 3. Allelopathy
Week 5	1. Biofumigation 2. Cultural Weed Management 3. <b>Examination 1</b>
Week 6	1. Cultural Weed Management 2. <b>Quiz.</b> Cultural Weed Management ( <i>Graduate Student-Moderated Discussion</i> ) 3. Cultural Weed Management
Week 7	1. Physical Weed Control – Mulches 2. <b>Quiz.</b> Physical Weed Control – Soil Solarization ( <i>Graduate Student-Moderated Discussion</i> ) 3. Physical Weed Control – Thermal methods
Week 8	1. Physical Weed Control – Grits ( <i>Titles for Grant Proposals are Due</i> ) 2. Anaerobic Soil Disinfestation 3. Mechanical Weed Control – Tillage
	<b>NO CLASS – Spring Break</b>

Week 9	<ol style="list-style-type: none"> <li>1. Mechanical Weed Control – Cultivation</li> <li>2. <b>Quiz.</b> Automated Weed Control (<i>Graduate Student-Moderated Discussion</i>)</li> <li>3. <b>Examination 2</b></li> </ol>
Week 10	<ol style="list-style-type: none"> <li>1. Introduction to Biological Control of Weeds</li> <li>2. <b>Quiz.</b> Weed Seed Predation (<i>Student-Moderated Discussion</i>)</li> <li>3. Biological Control Using Microorganisms/Bioherbicides</li> </ol>
Week 11	<ol style="list-style-type: none"> <li>1. Final data collection from Weed-Crop Competition experiment</li> <li>2. Livestock for Weed Management</li> <li>3. <b>Quiz.</b> Livestock for Weed Management (<i>Graduate Student-Moderated Discussion</i>)</li> </ol>
Week 12	<ol style="list-style-type: none"> <li>1. Chemical Weed Control – Soil fumigants (<i>Grant Proposal Drafts are due</i>)</li> <li>2. Chemical Weed Control – Synthetic Herbicides</li> </ol>
Week 13	<ol style="list-style-type: none"> <li>1. Herbicide resistance</li> <li>2. <b>Quiz.</b> Sustainability of Herbicide-Resistant Crops (<i>Graduate Student-Moderated Discussion</i>)</li> <li>3. Unmanned aerial vehicle use for weed management</li> </ol>
Week 14	<ol style="list-style-type: none"> <li>1. Integrated Weed Management vs Ecological Weed Management</li> <li>2. Graduate Student Grant Proposal Presentations</li> <li>3. Submit grant proposal</li> </ol>
Week 15	<ol style="list-style-type: none"> <li>1. Review for Exam</li> <li>2. <b>Examination 3</b></li> </ol>

## Grant Proposal Format

**Project Abstract:** Limited to no more than 250 words.

**Statement of Problem, Rational and Justification:** Statement of the problem being addressed, rationale and justification for objectives and the impact of the anticipated project. Begin the statement of the problem as: *“The purpose of this project is to”*... Limited to 500 words.

**Project Relevance to Sustainable Agriculture:** State how the project and the expected results contribute to agricultural sustainability. Don't simply tell us that your project addresses an element of sustainable agriculture, tell us HOW your project will address it and make it more sustainable. Make sure that your work -- even though it is making a part of a system more sustainable -- does not make the whole system or another part of it, less sustainable. Does your project use genetically engineered varieties or organisms? If so, state how their use will contribute to your project and make agriculture more sustainable. No more than 500 words.

**Objectives:** A numbered list of concise project objectives limited to no more than 500 words.

**Approach and Methods:** A brief description of the methods to be used for each objective, numbered according to their corresponding objective. **There must be a direct relationship between the approach**

**and methods and the project relevance to sustainable agriculture.** Approach and Methods is limited to no more than 1000 words.

**Timetable:** Limited to no more than 500 words.

**Literature Cited:** A minimum of 8 refereed journal articles is required.

### **Grant Proposal Presentation**

Students will make a 10 minute PowerPoint presentation of their grant proposals.

## Cover Sheet: Request 12935

### MCB6xxx Probiotics

#### Info

Process	Course New Grad
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Graciela Lorca glorca@ufl.edu
Created	8/14/2018 12:36:24 PM
Updated	8/27/2018 12:50:38 PM
Description of request	New course

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Microbiology and Cell Science 514910000	Eric Triplett	We have discussed this course with Food Science and Human Nutrition. They do not offer a course on this topic now. We propose that FSHN offer a complimentary course in prebiotics. The combination of courses in prebiotics and probiotics would be very attractive additions to the CALS curriculum.	8/21/2018
Probiotics_syllabus_6937_final.pdf					8/14/2018
uccconsult.pdf					8/14/2018
College	Pending	CALS - College of Agricultural and Life Sciences			8/21/2018
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					



College of Agricultural and Life Sciences  
Food Science & Human Nutrition

572 Newell Drive  
PO Box 110370  
Gainesville, FL 32611  
352-392-2022  
352-392-9467 Fax

Undergraduate Curriculum Committee

This letter is to express my enthusiastic support for the new courses MCB4xxx and MCB6xxx called Probiotics developed by Dr. Lorca in the Department of Microbiology and Cell Sciences.

We currently do not offer a course in this specialized area in the Food Science and Human Nutrition Department. Dr. Langkamp-Henken, Dr. Archer and myself have evaluated the syllabus and we believe it will be of interest to many of our undergraduate and graduate students.

Sincerely,

A handwritten signature in cursive script, reading 'Susan S. Percival'.

**Susan S. Percival, PhD**  
Professor & Chair  
Food Science & Human Nutrition  
University of Florida  
percival@ufl.edu

*The Foundation for The Gator Nation*  
*An Equal Opportunity Institution*

External Consultation Results (departments with potential overlap or interest in proposed course, if any)

Department Food Science and Human Nutrition	Name and Title Dr. Susan Percival, Chair & Professor
Phone Number 352.392.2022	E-mail percival@ufl.edu
Comments Students in the Food Science and Human Nutrition Department may be interested in taking this new course. No overlaps were identified with the courses being offered by the department.	

Department <hr/>	Name and Title <hr/>
Phone Number <hr/>	E-mail <hr/>
Comments      	

Department <hr/>	Name and Title <hr/>
Phone Number <hr/>	E-mail <hr/>
Comments      	

## **MCB4xxx/MCB6xxx Probiotics**

### **Similarities between MCB4xxx and MCB6xxx**

These courses are taught simultaneously.

The undergraduate and graduate level share the same lectures, tests and assignments.

### **Differences between MCB4xxx and MCB6xxx**

For the undergraduate level course (MCB4xxx) the final grade is the result of:

Total: 1000 points

Assignments: 25% (250 points)

Tests: 75% (3 exams x 250= 750 points)

For the graduate level course (MCB6xxx), the students are required to complete all the activities and tests required in the undergraduate course (70% of the grade).

In addition, the students in the graduate level course have to write a Topics review paper based on at least five peer reviewed research articles (30% of the grade).

Total: 1000 points

Assignments: 25% (250 points)

Tests: 45% (3 exams x 150= 450 points)

Topic review: 30% (300 points)

## Course|New for request 12935

### Info

**Request:** MCB6xxx Probiotics  
**Description of request:** New course  
**Submitter:** Graciela Lorca glorca@ufl.edu  
**Created:** 8/14/2018 12:25:09 PM  
**Form version:** 1

### Responses

**Recommended Prefix** MCB  
**Course Level** 6  
**Number** xxx  
**Category of Instruction** Joint (Ugrad/Grad)  
**Lab Code** None  
**Course Title** Probiotics  
**Transcript Title** Probiotics  
**Degree Type** Graduate

**Delivery Method(s)** Online

**Co-Listing** Yes

**Co-Listing Explanation** For the graduate level course, the students are required to complete all the activities and tests required in the undergraduate course (70% of the grade). In addition, the students in the graduate level course have to write a Topics review paper based on at least five peer reviewed research articles (30% of the grade).

**Effective Term** Spring

**Effective Year** 2018

**Rotating Topic?** No

**Repeatable Credit?** No

**Amount of Credit** 3

**S/U Only?** No

**Contact Type** Regularly Scheduled

**Weekly Contact Hours** 3

**Course Description** MCB6xxx is an upper division course on probiotics. This course will cover the use of microorganisms to promote a health status in the host. This course will provide a conceptual background in microbiology and immunology for the use of microorganisms for the prevention or treatment of animal and human diseases.

**Prerequisites** MCB3020 or MCB3023

**Co-requisites** None

**Rationale and Placement in Curriculum** These new courses (first sections taught Spring 2018) were created in response to the growing interest (among students and the public) on the use of microorganisms in the prevention and/or treatment of some human and animal diseases, as well as their use to promote a healthy status. To my knowledge, these are the first comprehensive courses available on the topic of probiotics. These courses provide a conceptual background in microbiology and immunology for the use of microorganisms in the prevention or treatment of animal and human diseases. These courses are based on peer reviewed scientific literature.

This course is proposed as an elective

**Course Objectives** After successful completion of this course, students will be able to:

- Understand the history of probiotics
- Compare and contrast the use of lactic acid bacteria, Bifidobacterium and Propionibacterium as probiotics
- Understand the range of proposed probiotics and the challenges in ensuring their safety and efficacy
- Compare and contrast the mechanisms used by probiotic microorganisms to modulate the host immune responses in the animal and in the human host
- List the proposed uses of probiotic microorganisms for the prevention or treatment of animal

and human diseases

- Compare and contrast the applications of prebiotics, probiotics and symbiotics
- Discuss current research efforts and proposed applications of probiotics for animal and human health

**Course Textbook(s) and/or Other Assigned Reading** - Textbook: no textbook is required, this course is based on peer reviewed papers either available for free through the links provided or through the UF library (ojournals).

- Suggested readings: For each module, suggested readings will be posted as pdf documents on Canvas or as links to download them from PUBMED (see working list at the end of the document). Students are instructed to connect to UF through VPN (if outside campus) before accessing the journals (<https://connect.ufl.edu/it/wiki/pages/glvpn.aspx>).

### Weekly Schedule of Topics Schedule of Classes

Date	Unit	Module. Topic
	Unit 1	Probiotics: definitions, history and classification
8-Jan*		1. Definitions and History
		2. Classification and physiology: Lactic acid bacteria (LAB)
		3. Classification and physiology: Bifidobacterium and Propionibacterium
		4. Impact of genomics on the characterization of probiotics_Intro to genomics
		4. Impact of genomics on the characterization of probiotics_LAB part 1
		4. Impact of genomics on the characterization of probiotics_LAB part 2
29-Jan		Assignment 1 due
	Unit 2	
		Biotechnological applications of Lactic acid bacteria
31-Jan*		5. The uses of LAB in food fermentation -part 1
		5. The uses of LAB in food fermentation -part 2
		6. Antimicrobials components of LAB
		7. Bacteriophages from LAB
		8. Nutraceuticals and high value metabolites produced by LABs
12-Feb		Assignment 2 due
14-Feb		Test 1
	Unit 3	
		Interactions of probiotics with the host immune system
16-Feb*		9. Overview on the adaptive and innate immune response - Part 1
		9. Overview on the adaptive and innate immune response - Part 2
		10. Immunomodulatory properties of probiotics: bacterial surface proteins
		11. Immunomodulatory properties of probiotics: interactions with the immune system
		12. Engineering LAB and Bifidobacterium for mucosal delivery of health-associated molecules: Genetic tools
		12. Engineering LAB and Bifidobacterium for mucosal delivery of health-associated molecules
2-Mar		Assignment 3 due
	Unit 4	Probiotics safety and efficacy
12-Mar*		13. FAO/WHO Guidelines on Probiotics
		14. Safety considerations on probiotics
		15. Environmental factors influencing the efficacy of probiotics
		16. Efficacy of probiotics in Human Subjects: Part 1
		16. Efficacy of probiotics in Human Subjects: Part 2
		16. Efficacy of probiotics in Human Subjects: Part 3
		16. Efficacy of probiotics in Human Subjects: Probiotics by design
		17. Probiotics in Animal Production and Health
30-Mar		Assignment 4 due
2-Apr		Test 2
	Unit 5	New frontiers in the probiotic's field
4-Apr*		18. Overview on the microbiome – Part 1
		18. Overview on the microbiome – Part 2
8-Apr		Topic review due
		19. Manipulation of the microbiome with probiotics

	20. Microbiome based new probiotic microorganisms
	21. Fecal transplants as probiotics
	22. Probiotics, prebiotics and symbiotic
	23. Psychobiotics and the Manipulation of Bacteria–Gut–Brain Signals
20-Apr	Assignment 5 due – EXTRA CREDIT
23-Apr	Test 3
2-May	Optional Final
*Release date for the Unit on Canvas	

## **Links and Policies** University of Florida Policies

### **Students Requiring Accommodations**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://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 Resources**

Resources are available on campus for students having personal problems or lacking clear career and academic goals, which interfere with their academic performance. These resources include:

### **Health and Wellness**

- U Matter, We Care: If you or a friend is in distress, please contact [umatter@ufl.edu](mailto: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;
- Sexual Assault Recovery Services (SARS) at the Student Health Care Center, 392-1161.
- For emergencies call: 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 [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu). <https://lss.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 with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>

### **Course 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/>.

### **Class demeanor**

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

### **Netiquette guide for online courses**

It is important to recognize that the online classroom is in fact a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for online behavior and interaction are known as netiquette.

<http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

### **University Honesty Policy**

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 (<https://sccr.dso.ufl.edu/process/honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. 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 or TAs in this class.

Additional comments regarding academic integrity:

Students are encouraged to discuss material with each other from the course, help each other understand concepts, study together, and even discuss assessment questions with each other once the quiz window is closed. However, the following is considered academic dishonesty, and I expect that no student will ever do any of the following:

- Have another person complete a quiz in this course
- Copy another student's quiz in this course
- Collaborate with anyone during a quiz in this course
- Discuss the questions and answers of a quiz with other students while the quiz window is still open
- Manipulate and/or distribute any materials provided in this course for any purpose (including course lecture slides).
- Use any materials provided by a previous student in the 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.

Microsoft Office 365 Software is free for UF students

<http://www.it.ufl.edu/gatorcloud/free-office-365-downloads/>

Other free software is available at:

<http://www.software.ufl.edu/>

To check for availability of the media and technical requirements, contact the UF Computing Help Desk at (352)392-HELP(4357).

#### University of Florida Complaints Policy and Student Complaint Process

Most problems, questions and concerns about the course will be resolved by professionally communicating with the instructor or the TAs.

The University of Florida believes strongly in the ability of students to express concerns regarding their experiences at the University. The University encourages its students who wish to file a written complaint to submit that complaint directly to the department that manages that policy.

If a problem really cannot be resolved by communicating with the instructor or the TAs you can contact

- Residential Course:

[https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

- Online Course: <http://www.distance.ufl.edu/student-complaint-process>.

#### University of Florida Complaints Policy and Student Complaint Process

The University of Florida and most instructors believe strongly in the ability of students to express concerns regarding their experiences at the University. Most problems, questions and concerns about courses can be resolved by professionally communicating with the instructor. Please try to meet your instructor in person, make an appointment to call, or try to set up a remote meeting through Skype or other media.

If this does not help the University encourages the students who wish to file a written complaint to submit that complaint directly to the department that manages that course. If a problem really persists and cannot be resolved by communicating with the instructor and the department, contact... for Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

Online Course: <http://www.distance.ufl.edu/student-complaint-process>

This said, professionalism is a two-way-street. Unprofessional behavior of students includes, among other things: lack of communication, blaming other people or external factors, lying, affecting others negatively in a group or in the class, not accepting criticism and not being proactive in solving

problems or seeking help. Furthermore, faculty often have family and other obligations to tend to. Over the weekend, replies to your inquiries or questions maybe delayed.  
If a student is lacking professionalism repeatedly, the instructor has the rights to file formal complaint against the student through the Dean of Student office.

**Grading Scheme** Assessment of learning

- **Assignments (250 points):** Activities will be assigned by Unit. The activities include online research on diverse topics such as “co-evolution of beneficial bacteria and its hosts”, “GMO's and probiotics”, “Market claims: is there scientific evidence?”. The activities are mandatory and count towards the final grade. They should be completed by the deadline indicated on Canvas.
- **Topic review (300 points):** The research topics will involve the search and writing of a critical review of at least 5 scientific articles (original research, no reviews will be allowed). The student will have to complete the review on one of the five topics that will be listed on Canvas. Examples are listed below:
  - Conflicts between study of probiotics as foods, dietary supplements and drugs in the US
  - Use of Omics technologies to help understand the microbiome and probiotic functionality
  - Psychobiotics: the microbiome as a key regulator of Brain and behavior
  - Improving probiotic specificity – ‘designer probiotics’
- **Exams (450 points):** Exams will assess your knowledge of the concepts covered during the lectures. Students must sign up on ProctorU at least 72h in advance.  
The assessment will be performed in Three Mandatory Mid-term exams. The student will be given the option to take a final cumulative exam to improve the grade obtained through the mid-term exams.
- **Mid-terms (450 points):** There will be three 50 minutes proctored mid-term exams (150 points each) with multiple choice questions, true/false, fill in the blanks questions and short answers questions. All exams are mandatory and will count towards the final grade. Exams will test learning and understanding of material presented in lectures, assigned readings and in assignments.
- **Optional Final to replace ONE test (with the lowest grade)** will be available during Finals Week. The students MUST have taken all three tests to qualify for the Optional Final. This cumulative test will include all the content included in Units 1 to 5 and will be worth 150 points.

**Grading Scale (points)**

A	900 or above
A-	860-899
B+	830-859
B	790-829
B-	750-789
C+	720-749
C	690-719
C-	660-689
D+	630-659
D	600-629
D-	570-599
E	560 or below

**Instructor(s)** Instructor:Dr. Graciela L Lorca

Office: Genetics Institute, Room 307

**MCB6937: Probiotics (3 credits)**  
**Spring 2018**

MCB6937 is an upper division course on probiotics. This course will cover the use of microorganisms to promote a health status in the animal and human host. This course will provide a conceptual background in microbiology and immunology for the use of microorganisms for the prevention or treatment of animal and human diseases.

**Student Learning Outcomes** – After successful completion of this course, students will be able to:

- Understand the history of probiotics
- Compare and contrast the use of lactic acid bacteria, *Bifidobacterium* and *Propionibacterium* as probiotics
- Understand the range of proposed probiotics and the challenges in ensuring their safety and efficacy
- Compare and contrast the mechanisms used by probiotic microorganisms to modulate the host immune responses in the animal and in the human host
- List the proposed uses of probiotic microorganisms for the prevention or treatment of animal and human diseases
- Compare and contrast the applications of prebiotics, probiotics and symbiotics
- Discuss current research efforts and proposed applications of probiotics for animal and human health

**Lectures:** Online through Canvas

**Instructor:** Dr. Graciela L Lorca

**Office:** Genetics Institute, Room 307

**WebPage:** Canvas (<https://ufl.instructure.com/>). Please select MCB6937.

**On line help with classroom technology:** <http://helpdesk.ufl.edu/>

**Pre-requisite:** MCB3020 or MCB3023

**Communication:** for questions regarding class and textbook content use the Discussion Board, for issues on Home Work Assignments, class organization check first the syllabus, the announcements and calendar on Canvas, then post your questions on the discussion board. For all other issues contact Dr. Graciela Lorca.

**VIRTUAL OFFICE HOURS:** will be available every week through the **BLUE BUTTON** tool in Canvas. To participate go to Conferences in the left of your screen and join! You will receive a weekly reminder by email.

**Students in Gainesville can also come for in person office hours:**  
Fridays 2-3 PM at Genetics Institute, Room 307.

**All students:** If you cannot make it to office hours you can request an appointment. Send an e-mail with three suggested times and I will choose one for us to meet.

**Contact Information: Use TEACHER in your emails through Canvas ONLY (personal emails should only be used in a case of emergency)**

Dr. Graciela L Lorca:

**Email (the most efficient):** ONLY use Canvas e-mail (If you do not have access to the e-learning platform and need to contact me for an **emergency**, use [glorca@ufl.edu](mailto:glorca@ufl.edu))

**Phone:** 273 8090 (please leave a message).

**Office hours:** Fridays 2-3 PM at Genetics Institute, Room 307. By appointment: (only if you cannot make it to office hours) send an e-mail with three suggested times and I will choose one for us to meet.

- **Discussion Board:** A discussion board is available in Canvas. It is very useful, please post and answer your questions on class content and organization there. Postings and answers are monitored by the instructor to make sure no mistakes get propagated. There are several discussion themes. Please post your questions in the adequate section.

## **Material**

- **Textbook:** textbook is not required; this course is based on peer reviewed papers either available for free through the links provided or through the UF library (ejournals).

- **Suggested readings:** For each module, suggested readings will be posted as pdf documents on Canvas or as links to download them from PUBMED (see working list at the end of the document). Remember to connect to UF through VPN (if outside campus) before accessing the journals (<https://connect.ufl.edu/it/wiki/pages/glvpn.aspx>).

## **Assessment of learning**

- **Assignments (250 points):** Activities will be assigned by Unit. The activities include online research on diverse topics such as “co-evolution of beneficial bacteria and its hosts”, “GMO’s and probiotics”, “Market claims: is there scientific evidence?”. The

activities are mandatory and count towards the final grade. They should be completed by the deadline indicated on Canvas.

- **Topic review (300 points):** The research topics will involve the search and writing of a critical review of at least 5 scientific articles (original research, no reviews will be allowed). The student will have to complete the review on one of the five topics that will be listed on Canvas. Examples are listed below:
  - Conflicts between study of probiotics as foods, dietary supplements and drugs in the US
  - Use of Omics technologies to help understand the microbiome and probiotic functionality
  - Psychobiotics: the microbiome as a key regulator of Brain and behavior
  - Improving probiotic specificity – ‘designer probiotics’
- **Exams (450 points):** Exams will assess your knowledge of the concepts covered during the lectures. Students must sign up on ProctorU at least 72h in advance. The assessment will be performed in **Three Mandatory Mid-term exams**. The student will be given the option to take a final cumulative exam to improve the grade obtained through the mid-term exams.
  - *Mid-terms (450 points):* There will be three 50 minutes proctored mid-term exams (150 points each) with multiple choice questions, true/false, fill in the blanks questions and short answers questions. **All exams are mandatory and will count towards the final grade.** Exams will test learning and understanding of material presented in lectures, assigned readings and in assignments.
  - *Optional Final to replace ONE test (with the lowest grade) will be available during Finals Week.* The students **MUST** have taken all three tests to qualify for the Optional Final. This cumulative test will include all the content included in Units 1 to 5 and will be worth 150 points.

*Make-Up policy:* Make-up exams will **ONLY** be allowed with a **VALID** justification. If one exam is missed, it will result in a score of 0 for the test (see below for “Excused absences”).

*Excused absences:*

Documentation **MUST** be provided for absences caused by serious illness, accident, jury duty, or death in the immediate family. You must contact the instructor **IN ADVANCE (as soon as possible)** of the missed exam and I will arrange an alternative time for the exam.

*After the exam:* The grades will be available on Canvas three days after the exam, unless notified by an announcement. Test questions will be made available through Canvas. After we release the questions, the student will have **5** days to submit questions about the test or claim mistakes in grading. No claims will be considered after that time.

**Grading: Straight scale**

**Grading Scale**

<b>A</b>	900 or above
<b>A-</b>	860-899
<b>B+</b>	830-859
<b>B</b>	790-829
<b>B-</b>	750-789
<b>C+</b>	720-749
<b>C</b>	690-719
<b>C-</b>	660-689
<b>D+</b>	630-659
<b>D</b>	600-629
<b>D-</b>	570-599
<b>E</b>	560 or below

## Schedule of Classes

<b>Date</b>	<b>Unit</b>	<b>Module. Topic</b>
8-Jan*	Unit 1	<b>Probiotics: definitions, history and classification</b> 1. Definitions and History 2. Classification and physiology: Lactic acid bacteria (LAB) 3. Classification and physiology: <i>Bifidobacterium</i> and <i>Propionibacterium</i> 4. Impact of genomics on the characterization of probiotics_Intro to genomics 4. Impact of genomics on the characterization of probiotics_LAB part 1 4. Impact of genomics on the characterization of probiotics_LAB part 2
29-Jan		Assignment 1 due
31-Jan*	Unit 2	<b>Biotechnological applications of Lactic acid bacteria</b> 5. The uses of LAB in food fermentation -part 1 5. The uses of LAB in food fermentation -part 2 6. Antimicrobials components of LAB 7. Bacteriophages from LAB 8. Nutraceuticals and high value metabolites produced by LABs
12-Feb		Assignment 2 due
14-Feb		Test 1
16-Feb*	Unit 3	<b>Interactions of probiotics with the host immune system</b> 9. Overview on the adaptive and innate immune response - Part 1 9. Overview on the adaptive and innate immune response - Part 2 10. Immunomodulatory properties of probiotics: bacterial surface proteins 11. Immunomodulatory properties of probiotics: interactions with the immune system

		12. Engineering LAB and <i>Bifidobacterium</i> for mucosal delivery of health-associated molecules: Genetic tools
		12. Engineering LAB and <i>Bifidobacterium</i> for mucosal delivery of health-associated molecules
2-Mar		Assignment 3 due
	Unit 4	<b>Probiotics safety and efficacy</b>
12-Mar*		13. FAO/WHO Guidelines on Probiotics
		14. Safety considerations on probiotics
		15. Environmental factors influencing the efficacy of probiotics
		16. Efficacy of probiotics in Human Subjects: Part 1
		16. Efficacy of probiotics in Human Subjects: Part 2
		16. Efficacy of probiotics in Human Subjects: Part 3
		16. Efficacy of probiotics in Human Subjects: Probiotics by design
		17. Probiotics in Animal Production and Health
30-Mar		Assignment 4 due
2-Apr		Test 2
	Unit 5	<b>New frontiers in the probiotic's field</b>
4-Apr*		18. Overview on the microbiome – Part 1
		18. Overview on the microbiome – Part 2
8-Apr		Topic review due
		19. Manipulation of the microbiome with probiotics
		20. Microbiome based new probiotic microorganisms
		21. Fecal transplants as probiotics
		22. Probiotics, prebiotics and symbiotic
		23. Psychobiotics and the Manipulation of Bacteria–Gut–Brain Signals
20-Apr		Assignment 5 due – EXTRA CREDIT
23-Apr		Test 3
2-May		Optional Final

\*Release date for the Unit on Canvas

## **University of Florida Policies**

### **Students Requiring Accommodations**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://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 Resources**

Resources are available on campus for students having personal problems or lacking clear career and academic goals, which interfere with their academic performance. These resources include:

### **Health and Wellness**

- U Matter, We Care: If you or a friend is in distress, please contact [umatter@ufl.edu](mailto: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;
- Sexual Assault Recovery Services (SARS) at the Student Health Care Center, 392-1161.
- For emergencies call: 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 [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu). <https://lss.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 with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>

## **Course 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/>.

## **Class demeanor**

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

### **Netiquette guide for online courses**

It is important to recognize that the online classroom is in fact a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for online behavior and interaction are known as netiquette.

<http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

### **University Honesty Policy**

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 (<https://sccr.dso.ufl.edu/process/honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. 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 or TAs in this class.

### **Additional comments regarding academic integrity:**

Students are encouraged to discuss material with each other from the course, help each other understand concepts, study together, and even discuss assessment questions with each other once the quiz window is closed. However, the following is considered academic dishonesty, and I expect that no student will ever do any of the following:

- Have another person complete a quiz in this course
- Copy another student's quiz in this course
- Collaborate with anyone during a quiz in this course
- Discuss the questions and answers of a quiz with other students while the quiz window is still open
- Manipulate and/or distribute any materials provided in this course for any purpose (including course lecture slides).
- Use any materials provided by a previous student in the 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.

### **Microsoft Office 365 Software is free for UF students**

<http://www.it.ufl.edu/gatorcloud/free-office-365-downloads/>

**Other free software is available at:**

<http://www.software.ufl.edu/>

To check for availability of the media and technical requirements, contact the UF Computing Help Desk at (352)392-HELP(4357).

### **University of Florida Complaints Policy and Student Complaint Process**

Most problems, questions and concerns about the course will be resolved by professionally communicating with the instructor or the TAs.

The University of Florida believes strongly in the ability of students to express concerns regarding their experiences at the University. The University encourages its students who wish to file a written complaint to submit that complaint directly to the department that manages that policy.

If a problem really cannot be resolved by communicating with the instructor or the TAs you can contact

- Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>.

### **University of Florida Complaints Policy and Student Complaint Process**

The University of Florida and most instructors believe strongly in the ability of students to express concerns regarding their experiences at the University. Most problems, questions and concerns about courses can be resolved by professionally communicating with the instructor. Please try to meet your instructor in person, make an appointment to call, or try to set up a remote meeting through Skype or other media.

If this does not help the University encourages the students who wish to file a written complaint to submit that complaint directly to the department that manages that course. If a problem really persists and cannot be resolved by communicating with the instructor and the department, contact... for

Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

Online Course: <http://www.distance.ufl.edu/student-complaint-process>

This said, professionalism is a two-way-street. Unprofessional behavior of students includes, among other things: lack of communication, blaming other people or external factors, lying, affecting others negatively in a group or in the class, not accepting criticism and not being proactive in solving problems or seeking help. Furthermore, faculty often have family and other obligations to tend to. Over the weekend, replies to your inquiries or questions maybe delayed.

If a student is lacking professionalism repeatedly, the instructor has the rights to file formal complaint against the student through the Dean of Student office.

## Suggested Readings and Sources

### Unit 1. Probiotics: definitions, history and classification

#### Module 1. Definitions and History

- Gogineni VK, Morrow LE, Gregory PJ, Malesker MA. 2013. Probiotics: History and Evolution. *J Anc Dis Prev Rem* 1:107.
- Lauzon HLL, Dimitroglou A, Merrifield DL, Ringo E, Davies SJ. 2014. Probiotics and Prebiotics: Concepts, Definitions and History. In *Aquaculture Nutrition: Gut Health, Probiotics and Prebiotics*, First Edition. Edited by Daniel Merrifield and Einar Ringø. © 2014 John Wiley & Sons, Ltd. Published 2014 by John Wiley & Sons, Ltd.
- Soccol CR, de Souza Vandenberghe, Spier MR, et al. 2010. The Potential of Probiotics, Food Technol. *Biotechnol.* 48:413-434.

#### Module 2. Classification and physiology: Lactic acid bacteria (LAB)

- Axelsson L. 1998. Lactic acid bacteria: Classification and Physiology. Ch. 1. In *Lactic acid bacteria, Microbiology and Functional Aspects*. Salminen S and von Wright A, Editors. Marcel Dekker, Inc. New York. Basel.
- Stiles MH, Wilhelm H, Holzapfel WH. 1997. Lactic acid bacteria of foods and their current taxonomy. *International Journal of Food Microbiology* 36:1-29.

#### Module 3. Classification and physiology: *Bifidobacterium* and *Propionibacterium*

- Sela DA, Price NPJ, Mills DA. 2010. Metabolism of Bifidobacteria. In *Bifidobacteria: Genomics and Molecular Aspects* (Edited by: Baltasar Mayo and Douwe van Sinderen). Caister Academic Press, U.K.
- Zarate G, 2012. Dairy Propionibacteria: Less Conventional Probiotics to Improve the Human and Animal Health. Ch 8. In *"Probiotic in Animals"*, book edited by Everlon Cid Rigobelo. Published: October 3, 2012 under [CC BY 3.0 license](#). © The Author(s).
- Poonam, Pophaly SD, Tomar SK, De S, Singh R. 2012. Multifaceted attributes of dairy propionibacteria: a review. *World J Microbiol Biotechnol* . 28:3081-95.

#### Module 4. Impact of genomics on the characterization of probiotics

- Frese SA, Benson AK, Tannock GW, Loach DM, Kim J, et al. 2011. The Evolution of Host Specialization in the Vertebrate Gut Symbiont *Lactobacillus reuteri*. *PLoS Genet* 7(2): e1001314.
- Van Pijkeren J-P, O'Toole PW. 2009. Comparative and Functional Genomics of the Genus *Lactobacillus*. In *Lactobacillus molecular biology: From genomics to probiotics*. Ed. Ljungh, A., & Wadström, T. Norfolk, UK: Caister Academic.

- Kelleher et al. 2017. Comparative and functional genomics of the *Lactococcus lactis* taxon; insights into evolution and niche adaptation. BMC Genomics 18:267.
- Lukjancenko O, Ussery DW, Wassenaar TM. 2012. Comparative Genomics of *Bifidobacterium*, *Lactobacillus* and Related Probiotic Genera. Microb Ecol. 63: 651–673.
- Lugli GA, Milani C, Turrone F, Duranti S, Mancabelli L, Mangifesta M, Ferrario C, Modesto M, Mattarelli P, Jiří K, van Sinderen D, Ventura M. 2017. Comparative genomic and phylogenomic analyses of the Bifidobacteriaceae family. BMC Genomics 18:568.

## Unit 2. Biotechnological applications of Lactic acid bacteria

### **Module 5. The uses of LAB in food fermentation**

- Shiby VK, Mishra HN. 2013. Fermented Milks and Milk Products as Functional Foods —A Review, Critical Reviews in Food Science and Nutrition 53:482-496.
- Zannini E, Waters DM, Coffey A, Arendt EK. 2016. Production, properties, and industrial food application of lactic acid bacteria-derived exopolysaccharides. Appl Microbiol Biotechnol. 100:1121-35.
- Leroy F, Verluyten J, De Vuyst L. 2006. Functional meat starter cultures for improved sausage fermentation. Int J Food Microbiol. 106:270-85.

### **Module 6. Antimicrobials components of LAB**

- Alvarez-Sieiro P, Montalbán-López M, Mu D, Kuipers OP. 2016. Bacteriocins of lactic acid bacteria: extending the family. Appl Microbiol Biotechnol. 100:2939-51.

### **Module 7. Bacteriophages from LAB**

- Mullan WMA. 2002. Morphology of bacteriophages for lactic acid bacteria. [On-line].
- Mahony J, McDonnell B, Casey E, van Sinderen D. 2016. Phage-Host Interactions of Cheese-Making Lactic Acid Bacteria. Annu Rev Food Sci Technol 7:267-85.
- Mahony J, Ainsworth S, Stockdale S, van Sinderen D. 2012. Phages of lactic acid bacteria: the role of genetics in understanding phage-host interactions and their co-evolutionary processes. Virology 434:143-50.

### **Module 8. Nutraceuticals and high value metabolites produced by LABs**

- Sauer M, Russmayer H, Grabherr R, Peterbauer CK, Marx H. 2017. The Efficient Clade: Lactic Acid Bacteria for Industrial Chemical Production. *Trends Biotechnol.* 35:756-769.
- Bosma EF, Forster J, Nielsen AT. 2017. Lactobacilli and pediococci as versatile cell factories - Evaluation of strain properties and genetic tools. *Biotechnol Adv* 35:419-442.
- Song AA, In LLA, Lim SHE, Rahim RA. 2017. A review on *Lactococcus lactis*: from food to factory. *Microb Cell Fact* 16:55. Erratum in: *Microb Cell Fact.* 2017 16:139.
- Lee NK, Paik HD. 2017. Bioconversion Using Lactic Acid Bacteria: Ginsenosides, GABA, and Phenolic Compounds. *J Microbiol Biotechnol* 27:869-877.
- Brown L, Pingitore EV, Mozzi F, Saavedra L, Villegas JM, Hebert EM. 2017. Lactic Acid Bacteria as Cell Factories for the Generation of Bioactive Peptides. *Protein Pept Lett.* 24:146-155.

### Unit 3. Interactions of probiotics with the host immune system

#### **Module 10. Immunomodulatory properties of probiotics: bacterial surface proteins**

- Hynönen U, Palva A. 2013. *Lactobacillus* surface layer proteins: structure, function and applications. *Appl Microbiol Biotechnol* 97:5225-43.
- Sánchez B, Bressollier P, Urdaci MC. 2008. Exported proteins in probiotic bacteria: adhesion to intestinal surfaces, host immunomodulation and molecular cross-talking with the host. *FEMS Immunol Med Microbiol* 54:1-17

#### **Module 11. Immunomodulatory properties of probiotics: interactions with the immune system**

- O'Callaghan J, O'Toole PW. 2013. *Lactobacillus*: host-microbe relationships. *Curr Top Microbiol Immunol.* 358:119-54.
- Lebeer S, Vanderleyden J, De Keersmaecker SC. 2008. Genes and molecules of lactobacilli supporting probiotic action. *Microbiol Mol Biol Rev.* 72:728-64.
- Hevia A, Delgado S, Sánchez B, Margolles A. 2015. Molecular Players Involved in the Interaction Between Beneficial Bacteria and the Immune System. *Front Microbiol* 6:1285.
- Lebeer S, Vanderleyden J, De Keersmaecker SC. 2010. Host interactions of probiotic bacterial surface molecules: comparison with commensals and pathogens. *Nat Rev Microbiol.* 8:171-84.

- Tsai YT, Cheng PC, Pan TM. 2012. The immunomodulatory effects of lactic acid bacteria for improving immune functions and benefits. *Appl Microbiol Biotechnol*. 96:853-62.

## **Module 12. Engineering LAB and *Bifidobacterium* for mucosal delivery of health-associated molecules**

- Bosma EF, Forster J, Nielsen AT. 2017. Lactobacilli and pediococci as versatile cell factories - Evaluation of strain properties and genetic tools. *Biotechnol Adv*. 35:419-442.
- Song AA, In LLA, Lim SHE, Rahim RA. 2017. A review on *Lactococcus lactis*: from food to factory. *Microb Cell Fact*. 16:55. Erratum in: *Microb Cell Fact* 16:139.
- Bermúdez-Humarán LG, Aubry C, Motta JP, Deraison C, Steidler L, Vergnolle N, Chatel JM, Langella P. 2013. Engineering lactococci and lactobacilli for human health. *Curr Opin Microbiol* 16:278-83.

## Unit 4. Probiotics safety and efficacy

### **Module 13. FAO/WHO Guidelines on Probiotics**

- FAO/WHO. 2002. Guidelines for the evaluation of Probiotics in Food.

### **Module 14. Safety considerations on probiotics**

- Salminen S, von Wright A, Morelli L, Marteau P, Brassart D, de Vos WM, Fondén R, Saxelin M, Collins K, Mogensen G, Birkeland SE, Mattila-Sandholm T. 1998. Demonstration of safety of probiotics -- a review. *Int J Food Microbiol* 44:93-106.
- Sanders ME, Akkermans LM, Haller D, Hammeman C, Heimbach J, Hörmannspurger G, Huys G, Levy DD, Lutgendorff F, Mack D, Phothirath P, Solano-Aguilar G, Vaughan E. 2010. Safety assessment of probiotics for human use. *Gut Microbes* 1:164-85.
- Vanderhoof JA, Young R. 2008. Probiotics in the United States. *Clin Infect Dis*. 46 Suppl 2:S67-72; discussion S144-51.

### **Module 15. Environmental factors influencing the efficacy of probiotic bacteria**

- Marco ML, Tachon S. 2013. Environmental factors influencing the efficacy of probiotic bacteria. *Curr Opin Biotechnol*. 24:207-13.

## Module 16. Efficacy of probiotics in Human Subjects

- Salminen S, Deighton MA, Benno Y, Gorbach SL. 1998. Lactic acid bacteria in health and disease. Ch 7. In Lactic acid bacteria, Microbiology and Functional Aspects. Salminen S and von Wright A, Editors. Marcel Dekker, Inc. New York, Basel.
- Vlasova AN, Kandasamy S, Chattha KS, Rajashekara G, Saif LJ. 2016. Comparison of probiotic lactobacilli and bifidobacteria effects, immune responses and rotavirus vaccines and infection in different host species. Vet Immunol Immunopathol. 172:72-84.
- McCollum DL, Martin Rodriguez J. 2012. Detection, Treatment, and Prevention of *Clostridium difficile* Infection. Clinical Gastroenterology and Hepatology 10: 581-592.
- Varankovich NV, Nickerson MT, Korber DR. 2015. Probiotic-based strategies for therapeutic and prophylactic use against multiple gastrointestinal diseases. Front Microbiol 6:685.
- NASPGHAN NUTRITION REPORT COMMITTEE. 2006. Clinical Practice Guideline Clinical Efficacy of Probiotics: Review of the Evidence With Focus on Children. J Pediatr Gastroenterol Nutr 43:550- 557.
- Bron PA, Kleerebezem M, Brummer RJ, Cani PD, Mercenier A, MacDonald TT, Garcia-Ródenas CL, Wells JM. 2017. Can probiotics modulate human disease by impacting intestinal barrier function? Br J Nutr. 117:93-107.
- Dimidi E, Christodoulides S, Fragkos KC, Scott SM, Whelan K. 2014. The effect of probiotics on functional constipation in adults: a systematic review and meta-analysis of randomized controlled trials. Am J Clin Nutr. 100:1075-84.
- Kim S, Lee H, Lee S, Lee J, Ha J, Choi Y, Yoon Y, Choi KH. 2017. Invited review: Microbe-mediated aflatoxin decontamination of dairy products and feeds. J Dairy Sci. 100:871-880.
- Azcárate-Peril MA, Sikes M, Bruno-Bárcena JM. 2011. The intestinal microbiota, gastrointestinal environment and colorectal cancer: a putative role for probiotics in prevention of colorectal cancer? Am J Physiol Gastrointest Liver Physiol. 301:G401-24.
- Czaja AJ. 2016. Factoring the intestinal microbiome into the pathogenesis of autoimmune hepatitis. World J Gastroenterol. 22:9257-9278.
- Mu Q, Kirby J, Reilly CM and Luo XM. 2017. Leaky Gut as a Danger Signal for Autoimmune Diseases. Front. Immunol. 8:598.

- Esmaeili SA, Mahmoudi M, Momtazi AA, Sahebkar A, Doulabi H, Rastin M. 2017. Tolerogenic probiotics: potential immunoregulators in Systemic Lupus Erythematosus. *J Cell Physiol.* 232:1994-2007.
- Gomes AC, Bueno AA, de Souza RG, Mota JF. 2014. Gut microbiota, probiotics and diabetes. *Nutr J.* 2014 13:60.
- Marinelli L, Tenore GC, Novellino E. 2017. Probiotic species in the modulation of the anticancer immune response. *Semin Cancer Biol.* 46:182-190.

### **Module 17. Probiotics in Animal Production and Health**

- Hossain MI, Sadekuzzaman M, Ha SD. 2017. Probiotics as potential alternative biocontrol agents in the agriculture and food industries: A review. *Food Res Int.* 100:63-73.
- Angelakis E. 2017. Weight gain by gut microbiota manipulation in productive animals. *Microb Pathog.* 106:162-170.
- Chaucheyras-Durand F, Durand H. Probiotics in animal nutrition and health. 2010. *Benef Microbes* 1:3-9.
- C De B, Meena DK, Behera BK, Das P, Das Mohapatra PK, Sharma AP. 2014. Probiotics in fish and shellfish culture: immunomodulatory and ecophysiological responses. *Fish Physiol Biochem.* 40:921-71.

## **Unit 5. New frontiers in probiotic's development**

### **Module 18. Overview on the microbiome**

- Workshop Slides - JCVI Blog - J. Craig Venter Institute
- Blottière HM, de Vos WM, Ehrlich, D, Doré J. 2013. Human intestinal metagenomics: state of the art and future. *Curr Opin Microbiol* 16: 232-239.
- Morgan XC, Huttenhower C. 2012. Chapter 12: Human microbiome analysis. *PLoS Comput Biol* 8:e1002808.
- Morgan XC, Huttenhower C. 2014. Meta'omic analytic techniques for studying the intestinal microbiome. *Gastroenterology* 146:1437-1448.
- Human Microbiome Project

### **Module 19. Manipulation of the microbiome by probiotics**

- Tojo R, Suárez A, Clemente MG, de los Reyes-Gavilán CG, Margolles A, Gueimonde M, Ruas-Madiedo P. 2014. Intestinal microbiota in health and disease: role of bifidobacteria in gut homeostasis. *World J Gastroenterol* 20:15163-76.
- McFarland LV. 2014. Use of probiotics to correct dysbiosis of normal microbiota following disease or disruptive events: a systematic review. *BMJ Open* 4:e005047.
- Collado MC, Bäuerl C, Pérez-Martínez G. 2012. Defining microbiota for developing new probiotics. *Microb Ecol Health Dis.* 23.
- Walter J. 2008. Ecological role of lactobacilli in the gastrointestinal tract: implications for fundamental and biomedical research. *Appl Environ Microbiol* 74:4985-96.

### **Module 20. Microbiome research to identify new probiotic microorganisms**

- Neef A, Sanz Y. 2013. Future for probiotic science in functional food and dietary supplement development. *Curr Opin Clin Nutr Metab Care.* 16:679-87.
- El Hage R, Hernandez-Sanabria E, Van de Wiele T. 2017. Emerging Trends in "Smart Probiotics": Functional Consideration for the Development of Novel Health and Industrial Applications. *Front Microbiol* 8:1889.
- Miquel S, Martín R, Rossi O, Bermúdez-Humarán LG, Chatel JM, Sokol H, Thomas M, Wells JM, Langella P. 2013. *Faecalibacterium prausnitzii* and human intestinal health. *Curr Opin Microbiol.* 16:255-61.
- Cani PD and de Vos WM. 2017. Next-Generation Beneficial Microbes: The Case of *Akkermansia muciniphila*. *Front. Microbiol.* 8:1765.

### **Module 21. Fecal transplants as probiotics**

- Borody TJ, Paramsothy S., Agrawal G. 2013. Fecal Microbiota Transplantation: Indications, Methods, Evidence, and Future Directions. *Curr Gastroenterol Rep.* 15:337.

### **Module 22. Probiotics, prebiotics and symbiotics**

- Rastall RA, Gibson GR. 2015. Recent developments in prebiotics to selectively impact beneficial microbes and promote intestinal health. *Curr Opin Biotech* 32:42-46.
- Pandey KR, Naik SR, Vakil BV. 2015. Probiotics, prebiotics and synbiotics- a review. *J Food Sci Technol* 52: 7577–7587.

- Patel R, DuPont HL. 2015. New Approaches for Bacteriotherapy: Prebiotics, New-Generation Probiotics, and Synbiotics. *Clin Infect Dis* 60:S108–S121.
- Pineiro M, Asp N-G, Reid G, Macfarlane S, Morelli L, Brunser O, Tuohy K. 2008. FAO Technical Meeting on Prebiotics. *J Clin Gastroent* 42:S156-S159.
- Markowiak P, Slizewska K. 2017. Effects of Probiotics, Prebiotics, and Synbiotics on Human Health. *Nutrients* 9:1021

### **Module 23. Psychobiotics: manipulation of bacteria–gut–brain signals**

- Wasilewski A, Zielińska M, Storr M, Fichna J. 2015. Beneficial Effects of Probiotics, Prebiotics, Synbiotics, and Psychobiotics in Inflammatory Bowel Disease. *Inflamm Bowel Dis*. 21:1674-82.
- Liu X, Cao S, Zhang X. 2015. Modulation of Gut Microbiota-Brain Axis by Probiotics, Prebiotics, and Diet. *J Agric Food Chem*. 63:7885-95.
- Kim N, Yun M, Oh YJ, Choi HJ. 2018. Mind-altering with the gut: Modulation of the gut-brain axis with probiotics. *J Microbiol*. 56:172-182.
- Fung TC, Olson CA, Hsiao EY. 2017. Interactions between the microbiota, immune and nervous systems in health and disease. *Nature Neuroscience* 20:145–155.
- Powell N, Walker MM, Talley NJ. 2017. The mucosal immune system: master regulator of bidirectional gut–brain communications. *Nat Rev Gastroent Hepat* 14:143–159.
- Smith PA. 2015. The tantalizing links between gut microbes and the brain. *Nature News*. 14 October 2015.

## Cover Sheet: Request 12960

### SWS 6XXX - Landscape Hydrology

#### Info

Process	Course New Grad
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Michael Sisk mjsisk@ufl.edu
Created	8/23/2018 10:40:34 AM
Updated	8/24/2018 10:14:06 AM
Description of request	New Graduate Course in Soil and Water Sciences Department

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Soil and Water Science 514921000	Thomas Obreza		8/24/2018
SWS_6XXX Landscape Hydrology Syllabus UCC_8_23_18.pdf					8/23/2018
College	Pending	CALS - College of Agricultural and Life Sciences			8/24/2018
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 12960

### Info

**Request:** SWS 6XXX - Landscape Hydrology

**Description of request:** New Graduate Course in Soil and Water Sciences Department

**Submitter:** Michael Sisk mjsisk@ufl.edu

**Created:** 8/23/2018 10:24:22 AM

**Form version:** 1

### Responses

**Recommended Prefix** SWS

**Course Level** 6

**Number** XXX

**Category of Instruction** Intermediate

**Lab Code** None

**Course Title** Landscape Hydrology

**Transcript Title** Landscape Hydrology

**Degree Type** Graduate

**Delivery Method(s)** On-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

**S/U Only?** No

**Contact Type** Regularly Scheduled

**Weekly Contact Hours** 3

**Course Description** Landscape hydrology applies modern techniques within parsimonious model frameworks to study water resource problems of societal relevance. Advanced quantitative principles are applied at larger spatial scales (> 100 km<sup>2</sup>) and integrate surface and subsurface processes. This course is of interest to environmental and agricultural scientists and engineers.

**Prerequisites** Prior coursework in hydrology (subsurface or surface hydrology) and statistics.

**Co-requisites** N/A

**Rationale and Placement in Curriculum** This graduate course supports the hydrology and water resource programs within the department at the University. The physics-based landscape-scale perspective is consistent with the graduate program and training objectives of the curriculum in the department and in the hydrologic sciences overall.

**Course Objectives** The course will center around two main themes:

1. Characterizing "landscapes", including not just traditional "watersheds" but also springsheds, wetlandscapes, lakesheds, airsheds, cities, and entire regions of anthropogenically modified land use and land cover (such as intensive agriculture), and
2. Understanding natural stochasticity by incorporating a probabilistic approach to consider mean behavior and variability in both time and space. Observed statistical properties of hydrologic data will be related to their physical generation processes.

**Course Textbook(s) and/or Other Assigned Reading** Each topic on the list below has assigned readings (in bold) plus supplemental suggested readings. Note that this list is not final – other papers may be added or substituted. There is no required textbook for the course. All papers listed below will be available on the course Canvas site.

#### Background: Statistics for hydrologists

Helsel, D.R. and R. M. Hirsch, 2002. Statistical Methods in Water Resources Techniques of Water Resources Investigations, Book 4, chapter A3. U.S. Geological Survey. 522 pages. [chapters 1-3]

#### Topic 1 Water budgets

McVicar et al., 2012. Less bluster ahead? Ecohydrological implications of global trends of terrestrial near-surface wind speeds. *Ecohydrol.* 5, 381–388.

McMahon et al., 2013. Estimating actual, potential, reference crop and pan evaporation using standard meteorological data: A pragmatic synthesis, *Hydrol. Earth Syst. Sci.*, 17, 1331–1363.

Sanford, W.E. and D.L. Selnick, 2012. Estimation of evapotranspiration across the conterminous United States using a regression with climate and land-cover data. *Journal of the American Water Resources Association*, 49(1): 217-230.

Healy et al., 2007. Water budgets: Foundations for effective water-resources and environmental management, U.S. Geological Survey Circular 1308, 90 p.

#### Topic 2 Partitioning water and energy

Roderick, M. L., and G. D. Farquhar, 2011. A simple framework for relating variations in runoff to variations in climatic conditions and catchment properties, *Water Resources Research*, 47, W00G07.

Wang, D., and M. Hejazi, 2011. Quantifying the relative contribution of the climate and direct human impacts on mean annual streamflow in the contiguous United States, *Water Resour. Res.*, 47, W00J12, doi:10.1029/2010WR010283.

Istanbulluoglu et al., 2012. Interpretation of hydrologic trends from a water balance perspective: The role of groundwater storage in the Budyko hypothesis, *Water Resources Research*, Vol. 48, W00H16.

Zhang, L., Dawes, W.R., and Walker, G.R., 2001. Response of mean annual evapotranspiration to vegetation changes at catchment scale, *Water Resources Research*, 37(3): 701-708.

#### Topic 3 Hydroclimatic forcing

Burton et al., 2008. RainSim: A spatial–temporal stochastic rainfall modelling system, *Environmental Modelling & Software*, 23: 1356–1369.

Enfield, D.B., Mestas-Nunez, A.M., Trimble, P.J., 2001. The Atlantic multidecadal oscillation and its relation to rainfall and river flows in the continental US, *Geophysical Research Letters*, 28: 2077-2080.

Russo, S., A. Dosio, A. Sterl, P. Barbosa, and J. Vogt, 2013. Projection of occurrence of extreme dry-wet years and seasons in Europe with stationary and nonstationary Standardized Precipitation Indices, *Journal of Geophysical Research: Atmospheres*, 118, 7628–7639.

#### Topic 4 Hydrologic Response

Botter, G., Bertuzzo, E., Rinaldo, A., 2012. Transport in the hydrologic response: Travel time distributions, soil moisture dynamics, and the old water paradox, *Water Resources Research*, 46, W03514, doi:10.1029/2009WR008371

McDonnell et al., 2010. How old is streamwater? Open questions in catchment transit time conceptualization, modelling and analysis, *Hydrological Processes*, 24: 1745–1754

#### Topic 5 Biogeochemical Response

Musolff A, Fleckenstein JH, Rao PSC, and JW Jawitz, 2017. Emergent archetype patterns of coupled hydrologic and biogeochemical responses in catchments, *Geophysical Research Letters* 44 (9), 4143-4151.

Nolan et al., 2006. Vulnerability of shallow groundwater and drinking-water wells to nitrate in the United States, *Environ. Sci. Technol.*, 40, 7834-7840.

Howarth et al., 2012. Nitrogen fluxes from the landscape are controlled by net anthropogenic nitrogen inputs and by climate, *Front Ecol Environ*, 10(1): 37–43, doi:10.1890/100178

Jawitz, J.W., and Mitchell, J., 2011. Temporal inequality of catchment discharge and solute export. *Water Resources Research*, 47, W00J14, doi:10.1029/2010WR010197.

#### Topic 6 Landscape Filtering

Godsey et al., 2010. Generality of fractal 1/f scaling in catchment tracer time series, and its implications for catchment travel time distributions, *Hydrol. Process.*, 24, 1660–1671.

Park, J., Gall, H.E., Niyogi, D., and Rao, P.S.C., 2013. Temporal trajectories of wet deposition across hydro-climatic regimes: Role of urbanization and regulations at U.S. and East Asia sites, *Atmospheric Environment*, 70: 280-288.

Kirchner, J.W., and Neal, C., 2013. Universal fractal scaling in stream chemistry and its implications

for solute transport and water quality trend detection, PNAS, 110(30): 12213–12218.  
 Wörman et al., 2010. Drifting runoff periodicity during the 20th century due to changing surface water volume, Hydrological Processes, 24, 3772–3784.

#### Topic 7 Heterogeneous Landscapes

Van Meter, K.J., and Basu, N.B., 2015. Signatures of human impact: size distributions and spatial organization of wetlands in the Prairie Pothole landscape. *Ecological Applications*, 25(2): 451–465.  
 McDonald et al., 2012. The regional abundance and size distribution of lakes and reservoirs in the United States and implications for estimates of global lake extent, *Limnol. Oceanogr.*, 57(2): 597–606.  
 Krugman, P., 1996. Confronting the mystery of urban hierarchy, *Journal of the Japanese and International Economies*, 10: 399–418.

#### Topic 8 Human Landscapes

Mejia et al., 2014. A stochastic model of streamflow for urbanized basins, *Water Resources Research*, 50, 1984–2001, doi:10.1002/2013WR014834  
 Viglione et al., 2014. Insights from socio-hydrology modelling on dealing with flood risk – Roles of collective memory, risk-taking attitude and trust, *Journal of Hydrology*, 518: 71–82.  
 Ackland et al., 2007. Cultural hitchhiking on the wave of advance of beneficial technologies, PNAS, 104: 21, 8714–8719

### Weekly Schedule of Topics Course Schedule

Week	Topic	Assignments Due Dates
1	1. Regional water and solute budgets Landscapes + hydrology Probabilistic representation of hydrologic data Relative significance of water budget components	
2	Spatial variability in hydrologic parameters Temporal trends in water budget components	HW 1: Water budget (8/31)
3	2. Partitioning rainfall into E and Q Partitioning incoming water and energy Predicting water availability under variable climate	
4	Effects of land cover change Human influence or climatic variability?	HW 2: Energy budget (9/14)
5	3. Hydroclimatic forcing Poisson rainfall Indices of extreme events	
6	Long-wave nonstationarity 4. Hydrologic response Runoff pdfs, flow duration curves and beyond	HW 3: Stochastic rain (9/28)
7	Linear reservoir and convolution Goodness of fit	
8	Lorenz inequality and Gini coefficient Regression models	HW 4: Stochastic runoff (10/12)
9	5. Biogeochemical response Lagrangian travel time pdfs Landscape-scale controls	
10	Concentration vs discharge Landscape heterogeneity	HW 5: Spectral methods (10/26)
11	6. Landscape filtering Spectral power Atmospheric deposition	
12	7. Heterogeneous landscapes Power law universality? Types of heterogeneity	HW 6: Solute response (11/2)
13	8. Human landscapes People on the landscape Landscape change (land cover)	
14	Water transfers and vulnerability	
15	Final project presentations	(11/30 - 12/5)

### **Links and Policies Grades and Grade Points**

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>.

### **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/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**

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/](http://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.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu](http://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/](http://www.umatter.ufl.edu/)
- Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

**Student Complaints:**

- Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>

**Grading Scheme** Student Evaluation and Grading Procedures: No exams! Six (6) quantitative homework assignments, and a final project. Homework assignments will be due 1 week from the date assigned.

Course components	Points
Class participation	12
Assignments 1, 2, and 3 (9 each)	27
Assignments 4, 5, and 6 (12 each)	36
Individual project, including in-class presentation	25
Total points	100
A>90>A->87>B+>84>B>81>B->78>C+>75>C>72>C->69>D+ >66>D> 63>D->60>E	

Assignments 1-3 can be re-submitted following corrections. Not all assignments have equal weight. Late submissions will be penalized 10% per day. Class participation entails regular, on-time attendance, and active engagement during lectures and discussions. Students are strongly encouraged to use scripts/codes for computational problem solving. This is good scientific practice for both documentation and reproducibility. I will be using RStudio, but Matlab and Python are also good choices.

**Instructor(s)** Dr. James W. Jawitz

# SWS 6XXX Landscape Hydrology

3 credits | Fall semester | Odd years

T 3, R 2-3

James W. Jawitz, Professor

2191 McCarty Hall, 352.294.3141, 294-3141, [jawitz@ufl.edu](mailto:jawitz@ufl.edu)

Office hours: Come talk to me anytime, or after class, or schedule an appointment.

**Course Description:** Landscape hydrology applies modern techniques within parsimonious model frameworks to study water resource problems of societal relevance. Advanced quantitative principles are applied at larger spatial scales ( $> 100 \text{ km}^2$ ) and integrate surface and subsurface processes. This course is of interest to environmental and agricultural scientists and engineers.

**Course Objectives:** The course will center around two main themes:

1. Characterizing “landscapes”, including not just traditional “watersheds” but also springsheds, wetlandscapes, lakesheds, airsheds, cities, and entire regions of anthropogenically modified land use and land cover (such as intensive agriculture), and
2. Understanding natural stochasticity by incorporating a probabilistic approach to consider mean behavior and variability in both time and space. Observed statistical properties of hydrologic data will be related to their physical generation processes.

**Prerequisites:** Prior coursework in hydrology (subsurface or surface hydrology) and statistics.

**Student Evaluation and Grading Procedures:** No exams! Six (6) quantitative homework assignments, and a final project. Homework assignments will be due 1 week from the date assigned.

Course components	Points
Class participation	12
Assignments 1, 2, and 3 (9 each)	27
Assignments 4, 5, and 6 (12 each)	36
Individual project, including in-class presentation	25
Total points	<u>100</u>

A>90>A->87>B+>84>B>81>B->78>C+>75>C>72>C->69>D+ >66>D> 63>D->60>E

Assignments 1-3 can be re-submitted following corrections. Not all assignments have equal weight. Late submissions will be penalized 10% per day. Class participation entails regular, on-time attendance, and active engagement during lectures and discussions. Students are strongly encouraged to use scripts/codes for computational problem solving. This is good scientific practice for both documentation and reproducibility. I will be using RStudio, but Matlab and Python are also good choices.

## Course Schedule

Week	Topic	Assignments Due Dates
<b>1</b>	<b>1. Regional water and solute budgets</b> Landscapes + hydrology Probabilistic representation of hydrologic data Relative significance of water budget components	
<b>2</b>	Spatial variability in hydrologic parameters Temporal trends in water budget components	HW 1: Water budget (8/31)
<b>3</b>	<b>2. Partitioning rainfall into E and Q</b> Partitioning incoming water and energy Predicting water availability under variable climate	
<b>4</b>	Effects of land cover change Human influence or climatic variability?	HW 2: Energy budget (9/14)
<b>5</b>	<b>3. Hydroclimatic forcing</b> Poisson rainfall Indices of extreme events	
<b>6</b>	Long-wave nonstationarity <b>4. Hydrologic response</b> Runoff pdfs, flow duration curves and beyond	HW 3: Stochastic rain (9/28)
<b>7</b>	Linear reservoir and convolution Goodness of fit	
<b>8</b>	Lorenz inequality and Gini coefficient Regression models	HW 4: Stochastic runoff (10/12)
<b>9</b>	<b>5. Biogeochemical response</b> Lagrangian travel time pdfs Landscape-scale controls	
<b>10</b>	Concentration vs discharge Landscape heterogeneity	HW 5: Spectral methods (10/26)
<b>11</b>	<b>6. Landscape filtering</b> Spectral power Atmospheric deposition	
<b>12</b>	<b>7. Heterogeneous landscapes</b> Power law universality? Types of heterogeneity	HW 6: Solute response (11/2)
<b>13</b>	<b>8. Human landscapes</b> People on the landscape Landscape change (land cover)	
<b>14</b>	Water transfers and vulnerability	
<b>15</b>	<b>Final project presentations</b>	(11/30 - 12/5)

**Assigned Readings:** Each topic on the list below has assigned readings (**in bold**) plus supplemental suggested readings. Note that this list is not final – other papers may be added or substituted. There is no required textbook for the course. All papers listed below will be available on the course Canvas site.

### **Background: Statistics for hydrologists**

Helsel, D.R. and R. M. Hirsch, 2002. *Statistical Methods in Water Resources Techniques of Water Resources Investigations*, Book 4, chapter A3. U.S. Geological Survey. 522 pages. **[chapters 1-3]**

### **Topic 1 Water budgets**

McVicar et al., 2012. Less bluster ahead? Ecohydrological implications of global trends of terrestrial near-surface wind speeds. *Ecohydrol.* 5, 381–388.

McMahon et al., 2013. Estimating actual, potential, reference crop and pan evaporation using standard meteorological data: A pragmatic synthesis, *Hydrol. Earth Syst. Sci.*, 17, 1331–1363.

Sanford, W.E. and D.L. Selnick, 2012. Estimation of evapotranspiration across the conterminous United States using a regression with climate and land-cover data. *Journal of the American Water Resources Association*, 49(1): 217-230.

Healy et al., 2007. Water budgets: Foundations for effective water-resources and environmental management, U.S. Geological Survey Circular 1308, 90 p.

### **Topic 2 Partitioning water and energy**

Roderick, M. L., and G. D. Farquhar, 2011. A simple framework for relating variations in runoff to variations in climatic conditions and catchment properties, *Water Resources Research*, 47, W00G07.

Wang, D., and M. Hejazi, 2011. Quantifying the relative contribution of the climate and direct human impacts on mean annual streamflow in the contiguous United States, *Water Resour. Res.*, 47, W00J12, doi:10.1029/2010WR010283.

Istanbulluoglu et al., 2012. Interpretation of hydrologic trends from a water balance perspective: The role of groundwater storage in the Budyko hypothesis, *Water Resources Research*, Vol. 48, W00H16.

Zhang, L., Dawes, W.R., and Walker, G.R., 2001. Response of mean annual evapotranspiration to vegetation changes at catchment scale, *Water Resources Research*, 37(3): 701-708.

### **Topic 3 Hydroclimatic forcing**

Burton et al., 2008. RainSim: A spatial–temporal stochastic rainfall modelling system, *Environmental Modelling & Software*, 23: 1356–1369.

Enfield, D.B., Mestas-Nunez, A.M., Trimble, P.J., 2001. The Atlantic multidecadal oscillation and its relation to rainfall and river flows in the continental US, *Geophysical Research Letters*, 28: 2077-2080.

Russo, S., A. Dosio, A. Sterl, P. Barbosa, and J. Vogt, 2013. Projection of occurrence of extreme dry-wet years and seasons in Europe with stationary and nonstationary Standardized Precipitation Indices, *Journal of Geophysical Research: Atmospheres*, 118, 7628–7639.

### **Topic 4 Hydrologic Response**

Botter, G., Bertuzzo, E., Rinaldo, A., 2012. Transport in the hydrologic response: Travel time distributions, soil moisture dynamics, and the old water paradox, *Water Resources Research*, 46, W03514, doi:10.1029/2009WR008371

McDonnell et al., 2010. How old is streamwater? Open questions in catchment transit time conceptualization, modelling and analysis, *Hydrological Processes*, 24: 1745–1754

#### **Topic 5 Biogeochemical Response**

**Musolff A, Fleckenstein JH, Rao PSC, and JW Jawitz, 2017. Emergent archetype patterns of coupled hydrologic and biogeochemical responses in catchments, *Geophysical Research Letters* 44 (9), 4143–4151.**

Nolan et al., 2006. Vulnerability of shallow groundwater and drinking-water wells to nitrate in the United States, *Environ. Sci. Technol.*, 40, 7834–7840.

Howarth et al., 2012. Nitrogen fluxes from the landscape are controlled by net anthropogenic nitrogen inputs and by climate, *Front Ecol Environ*, 10(1): 37–43, doi:10.1890/100178

Jawitz, J.W., and Mitchell, J., 2011. Temporal inequality of catchment discharge and solute export. *Water Resources Research*, 47, W00J14, doi:10.1029/2010WR010197.

#### **Topic 6 Landscape Filtering**

**Godsey et al., 2010. Generality of fractal 1/f scaling in catchment tracer time series, and its implications for catchment travel time distributions, *Hydrol. Process.*, 24, 1660–1671.**

Park, J., Gall, H.E., Niyogi, D., and Rao, P.S.C., 2013. Temporal trajectories of wet deposition across hydro-climatic regimes: Role of urbanization and regulations at U.S. and East Asia sites, *Atmospheric Environment*, 70: 280–288.

Kirchner, J.W., and Neal, C., 2013. Universal fractal scaling in stream chemistry and its implications for solute transport and water quality trend detection, *PNAS*, 110(30): 12213–12218.

Wörman et al., 2010. Drifting runoff periodicity during the 20th century due to changing surface water volume, *Hydrological Processes*, 24, 3772–3784.

#### **Topic 7 Heterogeneous Landscapes**

**Van Meter, K.J., and Basu, N.B., 2015. Signatures of human impact: size distributions and spatial organization of wetlands in the Prairie Pothole landscape. *Ecological Applications*, 25(2): 451–465.**

McDonald et al., 2012. The regional abundance and size distribution of lakes and reservoirs in the United States and implications for estimates of global lake extent, *Limnol. Oceanogr.*, 57(2): 597–606.

Krugman, P., 1996. Confronting the mystery of urban hierarchy, *Journal of the Japanese and International Economies*, 10: 399–418.

#### **Topic 8 Human Landscapes**

**Mejia et al., 2014. A stochastic model of streamflow for urbanized basins, *Water Resources Research*, 50, 1984–2001, doi:10.1002/2013WR014834**

Viglione et al., 2014. Insights from socio-hydrology modelling on dealing with flood risk – Roles of collective memory, risk-taking attitude and trust, *Journal of Hydrology*, 518: 71–82.

Ackland et al., 2007. Cultural hitchhiking on the wave of advance of beneficial technologies, *PNAS*, 104: 21, 8714–8719

### **Grades and Grade Points**

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>.

### **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/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**

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/](http://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.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu](http://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/](http://www.umatter.ufl.edu/)
- Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

### **Student Complaints:**

- Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>

## Cover Sheet: Request 12955

### Changing credit value of HUN6321

#### Info

Process	Course Modify Grad
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Robin da Silva robindasilva@ufl.edu
Created	8/21/2018 1:25:57 PM
Updated	8/21/2018 4:01:36 PM
Description of request	Changing credit value of HUN6321 to meet the needs of the department

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Food Science and Human Nutrition 514915000	Susan Percival	I support this change in credit. It is now the same as most of our other graduate courses.	8/21/2018
No document changes					
College	Pending	CALS - College of Agricultural and Life Sciences			8/21/2018
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|Modify for request 12955

### Info

**Request:** Changing credit value of HUN6321

**Description of request:** Changing credit value of HUN6321 to meet the needs of the department

**Submitter:** Robin da Silva robindasilva@ufl.edu

**Created:** 8/21/2018 1:20:50 PM

**Form version:** 1

### Responses

**Current Prefix** HUN

**Course Level** 6

**Number** 321

**Lab Code** None

**Course Title** Proteins and Amino acids in Nutrition

**Effective Term** Fall

**Effective Year** 2019

**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** 3

**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** 3

**Change Course Description?** No

**Change Prerequisites?** No

**Change Co-requisites?** No

**Rationale** Reducing credit hours to meet departmental need.

*Old*

**HUN 6321**

***Proteins and Amino Acids in Nutrition***

Fall 2018

**Lecture:** 4 Credits, Tuesday and Friday, Periods 2-3 (8:30-10:25 am) MAEB 0238

**Instructor:** Robin da Silva

FSHN - Room 449

Tel: (352) 294-3751

Email: robindasilva@ufl.edu

**Office Hours:** Monday and Wednesdays 2:00 – 4:00 pm

**Prerequisites:** HUN 3221 and BCH 3025 or equivalent

**Description:**

Nutritional aspects of proteins and amino acids, with emphasis on metabolism, nitrogen and amino acid requirements, assessment of protein quality, effects of deficiencies, toxicities and physiological stresses, and techniques for improving protein nutrition.

**Format:**

Two, two-hour classes per week. The general format will be a combination of lectures and discussions on current concepts in protein and amino acid nutrition in humans.

**EXPECTED OUTCOMES:**

**Course Learning Objectives:**

Demonstrate knowledge of the physiological, biochemical, and molecular factors that control protein and amino acid metabolism in humans.

Review and write literature related to amino acid and protein metabolism from a nutritional perspective

Develop independent critical thinking and conversational skills.

**Required Textbooks:** There is no required textbook for this course. Students will use relevant literature available through UF libraries (both physical and online).

Students will find some pertinent information in the most updated version of:

Amino Acids: Biochemistry and Nutrition 1<sup>st</sup> Edition, Wu

Lehninger's Principles of Biochemistry 7<sup>th</sup> Edition Nelson, Cox

**Recommended Materials:** There are no additional fees for materials in this course.

**Topics (Subject to change)**

Week	Topic
1	Introduction (1)
2	Basic Amino acid and Protein Metabolism
3	Protein Digestion
4	Requirements Essential amino acids
5	Amino acid synthesis
6	Amino acid degradation
7	Urea cycle
8	Protein synthesis
9	Protein degradation
10	Requirements Essential amino acids
11	Inborn Errors of Amino Acid Metabolism
12	Presentations
13	Presentations
14	Thanksgiving
15	Presentations

**Critical Dates:**

Quiz 1 Sept 7<sup>th</sup>

Quiz 2 Sept 21<sup>st</sup>

Quiz 3 October 5<sup>th</sup>

Presentations: October to Late December

Major Assignment Due: November 10th

**Evaluation Scheme:**

There will be 3 quizzes, one major assignment and in class presentations

Major assignment: Each student will write a mini-review article on the topic of your choosing. The review should be related to amino acids or protein research. Students are encouraged to relate their review to their own research but must not focus on their specific work. This will be discussed further in class.

Presentations: Students will have to give a 50 minute presentation on

Quizzes	30%
Major Assignment	50%
Presentation	20%

**UF Grading Policy:**

Grade %	Letter Grade	GPA
93.4-100	A	4.00
90.0-93.3	A-	3.67
86.7-89.9	B+	3.33
83.4-86.6	B	3.00
80.0-83.3	B-	2.67
76.7-79.9	C+	2.33
73.4-76.6	C	2.00
70.0-73.3	C-	1.67
66.7-69.9	D+	1.33
63.4-66.6	D	1.00
60.0-63.3	D-	0.67
0-59.9	E	0.00

**Class Attendance:**

Class attendance and participation are mandatory in accordance with the University of Florida's policy on attendance that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Students will behave in an appropriate manner in class, taking care not to disrupt other students learning activities. Students are asked to be punctual and submit assignments on time.

**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 available 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/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:**

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  
Rm 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://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.

University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,  
[www.counseling.ufl.edu/cwc/](http://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/](http://www.umatter.ufl.edu/)

Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

**Student Complaints:**

The University of Florida believes strongly in the ability of students to express concerns regarding their experiences at the University. The University encourages its students who wish to file a written complaint to submit that complaint directly to the department that manages that policy. More information can be found here:

[https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

*New*  
**HUN 6321**  
***Proteins and Amino Acids in Nutrition***  
Spring 2019

**Lecture:** 3 Credits, Tuesday, Periods 2-4 in MAEB 0238

**Instructor:** Robin da Silva

FSHN - Room 449

Tel: (352) 294-3751

Email: robindasilva@ufl.edu

**Office Hours:** Monday and Wednesdays 2:00 – 4:00 pm

**Prerequisites:** HUN 3221 and BCH 3025 or equivalent

**Description:**

Nutritional aspects of proteins and amino acids, with emphasis on metabolism, nitrogen and amino acid requirements, assessment of protein quality, effects of deficiencies, toxicities and physiological stresses, and techniques for improving protein nutrition.

**Format:**

One three-hour classes per week. The general format will be a combination of lectures and discussions on current concepts in protein and amino acid nutrition in humans.

**EXPECTED OUTCOMES:**

**Course Learning Objectives:**

Demonstrate knowledge of the physiological, biochemical, and molecular factors that control protein and amino acid metabolism in humans.

Review and write literature related to amino acid and protein metabolism from a nutritional perspective

Develop independent critical thinking and conversational skills.

**Required Textbooks:** There is no required textbook for this course. Students will use relevant literature available through UF libraries (both physical and online).

Students will find some pertinent information in the most updated version of:

Amino Acids: Biochemistry and Nutrition 1<sup>st</sup> Edition, Wu

Lehninger's Principles of Biochemistry 7<sup>th</sup> Edition Nelson, Cox

**Recommended Materials:** There are no additional fees for materials in this course.

**Topics (Subject to change)**

Week	Topic
1	Introduction (1)
2	Basic Amino acid and Protein Metabolism
3	Protein Digestion
4	Requirements Essential amino acids
5	Amino acid synthesis
6	Amino acid degradation
7	Urea cycle
8	Protein synthesis
9	Protein degradation
10	Requirements Essential amino acids
11	Inborn Errors of Amino Acid Metabolism
12	Presentations
13	Presentations
14	Thanksgiving
15	Presentations

**Critical Dates:**

Presentations: October to Late December

Major Assignment Due: November 10th

**Evaluation Scheme:**

There will be 3 quizzes, one major assignment and in class presentations

Major assignment: Each student will write a mini-review article on the topic of your choosing. The review should be related to amino acids or protein research. Students are encouraged to relate their review to their own research but must not focus on their specific work. This will be discussed further in class.

Presentations: Students will have to give a 50 minute presentation on

Quizzes	30%
Major Assignment	50%
Presentation	20%

**UF Grading Policy:**

Grade %	Letter Grade	GPA
93.4-100	A	4.00
90.0-93.3	A-	3.67
86.7-89.9	B+	3.33
83.4-86.6	B	3.00
80.0-83.3	B-	2.67
76.7-79.9	C+	2.33
73.4-76.6	C	2.00
70.0-73.3	C-	1.67
66.7-69.9	D+	1.33
63.4-66.6	D	1.00
60.0-63.3	D-	0.67
0-59.9	E	0.00

**Class Attendance:**

Class attendance and participation are mandatory in accordance with the University of Florida's policy on attendance that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Students will behave in an appropriate manner in class, taking care not to disrupt other students learning activities. Students are asked to be punctual and submit assignments on time.

**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 available 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/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:**

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  
Rm 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://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.

University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,  
[www.counseling.ufl.edu/cwc/](http://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/](http://www.umatter.ufl.edu/)

Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

**Student Complaints:**

The University of Florida believes strongly in the ability of students to express concerns regarding their experiences at the University. The University encourages its students who wish to file a written complaint to submit that complaint directly to the department that manages that policy. More information can be found here:

[https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

## Cover Sheet: Request 12998

### HOS 3XXX – Genetics and Breeding of Fruit Crops

#### Info

Process	Course New Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Gerardo Nunez Villegas g.nunez@ufl.edu
Created	9/5/2018 1:52:12 PM
Updated	9/5/2018 3:34:23 PM
Description of request	We request to create a new course titled HOS 3XXX – Genetics and Breeding of Fruit Crops

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Horticultural Sciences 514923000	Christine Chase		9/5/2018
Syllabus HOS3XXX - Genetics and Breeding of Fruit Crops.pdf					9/5/2018
Support letter - HOS 3XXX Genetics and Breeding of Fruit Crops.pdf					9/5/2018
K. Kenworthy - Outside consult - Agronomy.pdf					9/5/2018
College	Pending	CALS - College of Agricultural and Life Sciences			9/5/2018
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					

**From:** [Kenworthy, Kevin E](#)  
**To:** [Darnell, Rebecca L](#)  
**Cc:** [Macdonald, Gregory E](#); [Gilbert, Robert A](#); [Babar, Md Ali](#); [Rios, Esteban E](#); [Altpeter, Fredy](#); [Nunez, Gerardo](#); [Chase, Christine D](#)  
**Subject:** RE: Proposed HOS courses in Medicinal Plants and Fruit Breeding  
**Date:** Wednesday, August 08, 2018 1:23:43 PM  
**Attachments:** [Syllabus HOS3XXX - Breeding and Production of Medicinal Plants and Herbs....docx](#)  
[Syllabus HOS3XXX - Genetics and Breeding of Fruit Crops.docx](#)

---

Hi Rebecca,

I just got the syllabi yesterday and am using this email to convey my thoughts at this point.

First, I think that Rob and Ali need to review the syllabi and compare with our plant breeding course (AGR 4320) to determine the overlap and potential impact.

You are requiring AGR3303 as a prerequisite, but what about the Agronomy plant breeding course. If the intention is to replace AGR 4320, how many students do you anticipate taking your courses? We would need to know the impact on AGR 4320.

Right now, I am not too concerned about the medicinal plants course; but I am concerned about the fruit crops course and it directly competing with AGR 4320. At least half of the course is an overlap with AGR 4320. Does Mike Kane teach a micropropagation course? Some of this material might overlap; therefore, he and EH should review.

At a broader level, I am concerned about offering such specialized breeding courses for undergrads. It seems that specialized courses like these will devalue our graduate courses and graduate degrees. Does HS still teach the Breeding Perennial Crops graduate course? The fruit course appears to be an undergraduate version of this Perennial Breeding course formerly taught by Paul Lyrene (not sure if Olmstead taught the course). I will bring this up at next week's Plant Breeders Working Group meeting. I would support both courses at the graduate level.

Perhaps a better approach would be for folks in HS to meet with Ali and provide him some fruit crop examples/case studies so that these can be integrated into AGR 4320. Ali's class is probably heavy on agronomic crops, but could easily be tweaked to include other examples. Breeding methods are often similar. My turf breeding program is essentially the same as the blueberry program.

I could see a very useful course that could be developed that includes the other aspects of these two courses regarding the chemistry of medicinal plants and flavor in fruit crops. The incorporation of these traits in a breeding program could be a nice graduate course without having to include the breeding methods that would be taught in AGR 4320.

Thank you for giving us an opportunity to review the proposed courses.

Kevin

Kevin Kenworthy, Ph.D.  
Professor, Plant Breeding  
UF/IFAS Agronomy Department  
2005 SW 23rd St  
P.O. Box 110965  
Gainesville, FL 32611

Cell: 352-262-8719  
Email: [kenworth@ufl.edu](mailto:kenworth@ufl.edu)

-----Original Message-----

From: Darnell,Rebecca L

Sent: Wednesday, August 8, 2018 9:23 AM

To: Kenworthy, Kevin E

Cc: Macdonald,Gregory E; Gilbert,Robert A; Babar,Md Ali; Rios,Esteban F; Altpeter,Fredy; Nunez, Gerardo; Chase,Christine D

Subject: Re: Proposed HOS courses in Medicinal Plants and Fruit Breeding

Hi Kevin

Have you and the other breeding faculty had a chance to look over the two proposed syllabi we sent? We'd like to incorporate any suggestions you have.

Thanks

Rebecca

> On Aug 4, 2018, at 3:50 PM, Darnell,Rebecca L <rld@ufl.edu> wrote:

>

> Hi Kevin

>

> I'm in Glacier right now. I sent Greg and Rob the syllabi with the original email. Can one of them forward that to you?

>

> Thanks

> Rebecca

>

>> On Aug 2, 2018, at 8:50 AM, Kenworthy, Kevin E <kenworth@ufl.edu> wrote:

>>

>> Hi Rebecca,

>>

>> Sorry for my slow response. I am not back in the office.

>>

>> I will need the syllabi for the two proposed courses. I have copied other main campus Agronomy breeders so that they can also provide their input to me which I will then summarize for you. Please reply all with the syllabi attached. I see that you are out of the office so perhaps Greg can forward them to the group.

>>

>> Thank You,

>>

>> Kevin

>>

>> Kevin Kenworthy, Ph.D.

>> Professor, Plant Breeding

>> UF/IFAS Agronomy Department

>> 2005 SW 23rd St

>> P.O. Box 110965

>> Gainesville, FL 32611

>>

>> Cell: 352-262-8719

>> Email: kenworth@ufl.edu

>>

>>

>> -----Original Message-----

>> From: Darnell,Rebecca L

>> Sent: Wednesday, July 25, 2018 1:01 PM

>> To: Macdonald,Gregory E; Gilbert,Robert A

>> Cc: Kenworthy, Kevin E

>> Subject: RE: Proposed HOS courses in Medicinal Plants and Fruit Breeding

>>

>> Thanks, Greg. I'll wait to hear back from Kevin.

>>

>>

---

>> From: Macdonald, Gregory E

>> Sent: Wednesday, July 25, 2018 12:57 PM

>> To: Darnell, Rebecca L; Gilbert, Robert A

>> Cc: Kenworthy, Kevin E

>> Subject: RE: Proposed HOS courses in Medicinal Plants and Fruit Breeding

>>

>> I don't have an issue with either course, but I would need Kevin's input to make sure there isn't overlap with our plant breeding course, or other courses.

>>

>> Greg

>>

>>

>>

>> Greg MacDonald

>> Professor of Weed Science and Agronomy

>> 2059 McCarty Hall, P.O. Box 110500

>> University of Florida

>> Gainesville, FL 32611-0500

>> Office - (352) 294-1594

>> Cell - (352) 262-8393

>> Email - [pineacre@ufl.edu](mailto:pineacre@ufl.edu)

>>

>> From: Darnell, Rebecca L

>> Sent: Tuesday, July 24, 2018 4:45 PM

>> To: Macdonald, Gregory E <[pineacre@ufl.edu](mailto:pineacre@ufl.edu)>; Gilbert, Robert A <[ragilber@ufl.edu](mailto:ragilber@ufl.edu)>

>> Cc: Kenworthy, Kevin E <[kenworth@ufl.edu](mailto:kenworth@ufl.edu)>

>> Subject: RE: Proposed HOS courses in Medicinal Plants and Fruit Breeding

>>

>> Thanks, Greg. I just found out that the deadline to get the first course returned to the CALS curriculum committee is Aug. 8. It was submitted initially at the April 13, 2018 CALS meeting, at which time the committee asked us to get approval from several departments. If possible, can we hear back from you prior to that deadline?

>>

>> Thanks!

>> Rebecca

>>

>> From: Macdonald, Gregory E

>> Sent: Monday, July 23, 2018 4:37 PM

>> To: Darnell, Rebecca L <[rld@ufl.edu](mailto:rld@ufl.edu)<<mailto:rld@ufl.edu>>>; Gilbert, Robert A <[ragilber@ufl.edu](mailto:ragilber@ufl.edu)<<mailto:ragilber@ufl.edu>>>

>> Cc: Kenworthy, Kevin E <[kenworth@ufl.edu](mailto:kenworth@ufl.edu)<<mailto:kenworth@ufl.edu>>>

>> Subject: RE: Proposed HOS courses in Medicinal Plants and Fruit Breeding

>>

>> I copied Kevin Kenworthy who works closely with the undergraduate plant breeding majors to gather his input on these courses.

>>

>> Greg

>>

>> From: Darnell, Rebecca L

>> Sent: Monday, July 23, 2018 11:55 AM

>> To: Macdonald, Gregory E; Gilbert, Robert A

>> Subject: Proposed HOS courses in Medicinal Plants and Fruit Breeding

>>

>> Dear Greg and Rob,

>>

>> Our department is proposing two new undergraduate courses: "Breeding and Production of Medicinal Plants and Herbs" and "Genetics and Breeding of Fruit Crops". We are reaching out to you to ensure there is minimal overlap between what we propose and any courses you currently offer at the undergraduate level. We propose that both courses have AGR 3303 as a prerequisite. If our proposed courses are agreeable to you, we would need an email to confirm your approval. I've attached the proposed syllabus. Please let me know if there are any concerns and/or comments. We would appreciate your response by August 13 so we can make any edits that are required. Feel free to contact me if there are questions.

>>

>> Thank you.

>>

>> Regards.

>> Rebecca

>>

>> Rebecca Darnell

>> Professor & Associate Chair

>> Horticultural Sciences Dept.

>> University of Florida

>> Gainesville, FL 32611

>>



University of Florida Institute of Food and Agricultural Science  
Horticultural Sciences Department  
August 9, 2018

1251 Fifield Hall  
PO Box 110690  
Gainesville, FL 32611  
352-392-1928

CALS Curriculum Committee

Dear colleagues in the CALS curriculum committee,

I write this letter in support of our new course request for HOS 3XXX – Genetics and Breeding of Fruit Crops. This course is being created as a breeding elective for undergraduate students in our proposed Plant Biotechnology and Improvement specialization, and as a general elective for undergraduate students in our Organic Horticultural Systems and Science and Technology of Horticultural Crops specializations. The Horticultural Sciences Department is home to internationally recognized fruit breeding programs. We are excited to introduce undergraduates to the unique aspects of fruit crop species biology and genetics in the context of strategies for genetic improvement.

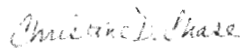
In response to the concerns expressed by the Agronomy Department, I would like to point out that our curriculum is designed to be synergistic with the Agronomy Department's breeding and genetics courses. AGR3303 is a required course for all three of our proposed specializations, and students in the Plant Biotechnology and Improvement specialization are also required to take AGR4320. AGR3303 covers the foundational principles of genetics and AGR4320 covers foundational principles of plant breeding along with conventional and biotechnology approaches to plant improvement. The proposed new course applies these concepts to the unique biology of specialty crops. This is not to say that fundamental principles are not reviewed in the proposed new course, but here the focus is on their application to achieve desirable traits in horticultural crop plants and their high-value commodities.

Examples of topics with unique emphasis in HOS 3XXX Genetics and Breeding of Fruit Crops include:

- The history and importance of genetic improvement in fruit crops
- Reproductive biology of woody perennial species with emphasis on fruit development
- Genetic approaches of importance in woody perennial species such as rootstock breeding, bud sport selection and asexual propagation, and somatic cell hybridization and cybridization
- Commodity traits of importance in fruit crops such as color, taste, aroma, texture and post-harvest performance
- Plant breeding career tracks, the cultivar release process, and intellectual property protection strategies
- Breeding strategies in the current Horticultural Sciences Department peach, blueberry, citrus and tropical fruit breeding programs

We do not believe that introducing undergraduate students to the exciting opportunities and challenges in the genetic improvement of fruit crops in any way de-values our graduate courses or graduate degrees. One mission of our department is to prepare undergraduate students for the many possible careers in horticultural sciences. Our proposed course is well in line with that mission. Our colleagues at Driscoll's Berries and Fall Creek Nurseries often contact us about internship and employment opportunities for B.S. students and graduates with fruit breeding interests and expertise. The proposed course will enable us to better prepare students for these opportunities. Our programs strive to inspire the next generation of horticultural scientists to contribute to a future of improved food quality and security.

Sincerely,

A handwritten signature in cursive script that reads "Christine D. Chase".

Christine D. Chase  
Professor and Interim Chair  
Horticultural Sciences Department

## Course|New for request 12998

### Info

**Request:** HOS 3XXX – Genetics and Breeding of Fruit Crops

**Description of request:** We request to create a new course titled HOS 3XXX – Genetics and Breeding of Fruit Crops

**Submitter:** Gerardo Nunez Villegas g.nunez@ufl.edu

**Created:** 9/5/2018 1:38:30 PM

**Form version:** 1

### Responses

**Recommended Prefix** HOS

**Course Level** 3

**Number** XXX

**Category of Instruction** Intermediate

**Lab Code** None

**Course Title** Genetics and Breeding of Fruit Crops

**Transcript Title** Genetics Breed Fruits

**Degree Type** Baccalaureate

**Delivery Method(s)** On-Campus

**Co-Listing** No

**Co-Listing Explanation** Not applicable

**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 genetic improvement of perennial fruit crops presents unique challenges and opportunities to enhance traits of value to producers and consumers. This course explores the application of breeding, genetics, and biotechnology approaches to the improvement of woody perennial fruit crops and an analysis of the challenges in breeding these crops.

**Prerequisites** AGR 3303 or equivalent

**Co-requisites** None

**Rationale and Placement in Curriculum** Our industry stakeholders often contact us about internship and employment opportunities for B.S. students and graduates with fruit breeding interests and expertise.

This course is being created as a breeding elective for undergraduate students in our proposed Plant Biotechnology and Improvement specialization, and as a general elective for undergraduate students in our Organic Horticultural Systems and Science and Technology of Horticultural Crops specializations.

**Course Objectives** Upon successful completion of the course, students will be able to:

- Explain challenges for breeding woody perennial crops
- Discuss conventional and biotechnological approaches to fruit crop breeding
- Analyze and discuss published breeding approaches for fruit crops
- Identify and apply successful breeding strategies for various fruit crops

**Course Textbook(s) and/or Other Assigned Reading** There is no required textbook for this course. Links to reading materials will be made available via Canvas. Optional textbooks are listed below:

- Temperate Fruit Crop Breeding: Germplasm to Genomics, Hancock, J. (ed)., Springer, 2008. ISBN 978-1-4020-6907-9.
- Fruit Breeding, Badenes, M and Byrne, D (eds)., Springer, 2012. ISBN 978-1-4419-0762-2.

### **Weekly Schedule of Topics Week 1**

History and importance of genetic improvement in fruit crops  
Asexual vs sexual reproduction

### **Week 2**

Reproductive biology and pollination in woody perennial crops

### **Week 3**

Review of Mendelian qualitative and quantitative inheritance

Breeding strategies – sources of genetic variation

### **Week 4**

Breeding strategies – vegetative propagation; rootstocks; self-pollinated crops

### **Week 5**

Breeding strategies – cross-pollinated crops; interspecific hybridization and polyploidy Case

discussion 1 - resistance to peach gummosis in peach-almond crosses

### **Week 6**

Breeding tools – genetic markers and maps; QTL mapping; marker assisted selection

### **Week 7**

Breeding tools – somatic cell hybridization and cybridization; genetic transformation

Case discussion 2 - genetic transformation for papaya ringspot virus resistance - 18 years on

### **Week 8**

Breeding tools – plant genome projects ("RosBREED", International Grape Genome Program);

genome editing; phenomics

Midterm exam

### **Week 9**

Breeding targets – fruit crop traits and phenotypes; fruit traits and phenotypes; mechanical harvesting

Case discussion 3 - influence of citrus rootstock on fruit size

### **Week 10**

Breeding targets – fruit postharvest traits and their evaluation

Taste panel participation

### **Week 11**

Plant breeding careers – public and private

### **Week 12**

Cultivar release requirements and process

Intellectual property protection

### **Week 13**

Overview – UF/IFAS HOS breeding programs – blueberry, peach, strawberry

### **Week 14**

Overview – UF/IFAS HOS breeding programs – citrus, tropical fruits

Potential new fruit crops for Florida

### **Week 15**

Student breeding strategy presentations

**Links and Policies** Grades and Grade Points: For information on current UF policies for assigning grade points, see [catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/](http://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/)

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:

[catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/](http://catalog.ufl.edu/UGRD/academic-regulations/attendance-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 [www.evaluations.ufl.edu](http://www.evaluations.ufl.edu)

Evaluations are typically open during the last two or three weeks of the semester. Students will be notified of the specific times when evaluations for this course are open. Summary results of these assessments are available to students at: [www.evaluations.ufl.edu/results](http://www.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:

[www.dso.ufl.edu/sccr/process/student-conduct-honor-code](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 when appropriate.

#### 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.

- Disability Resource Center, 0001 Reid Hall, (352) 392-8565, [www.dso.ufl.edu/drc/](http://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.

- University Counseling and Wellness Center, 3190 Radio Road, 392-1575, [www.counseling.ufl.edu](http://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](http://www.umatter.ufl.edu)
- Career Resource Center, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

#### Student Complaints

- Residential Courses: [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)
- Online Course: [www.distance.ufl.edu/student-complaint-process](http://www.distance.ufl.edu/student-complaint-process)

#### Grading Scheme Class attendance (10 pts)

Breeding strategy project (30 pts)

Each student will select a fruit crop, identify a current problem or trait that can be improved through a breeding, genetic or biotechnology approach, develop a written plan to achieve the desired genetic improvement (15 points), and make a 10 minute oral presentation covering the crop, breeding target and plan (15 points).

Breeding case discussions (30 pts)

Three published examples illustrating successful breeding approaches to production problems or trait improvement in fruit crops will be assigned for class discussion. Students will prepare and turn in written answers to questions about the case (5 points each), and then discuss them as a class (5 points each).

Exams (30 pts)

There will be a mid-term and final exam, each worth 15 points. The final will be given during final exam week.

#### Grading Scale (points)

A	>89.4 – 100	C	>69.4 – 75.4
B+	>84.4 - 89.4	D+	>65.4 – 69.4
B	>79.4 – 84.4	D	59.5 – 65.4
C+	>75.4-79.4	E	<59.5

Instructor(s) TBD

## HOS 3XXX – Genetics and Breeding of Fruit Crops

**Instructor:** TBD

**Office hours:** TBD

**Prerequisite:** AGR 3303 or equivalent

**Credit hours:** 3

**Meeting Times and Location:** TBD

**Course Description:** The genetic improvement of perennial fruit crops presents unique challenges and opportunities to enhance traits of value to producers and consumers. This course explores the application of breeding, genetics, and biotechnology approaches to the improvement of woody perennial fruit crops and an analysis of the challenges in breeding these crops.

**Learning objectives:** Upon successful completion of the course, students will be able to:

- Explain challenges for breeding woody perennial crops
- Discuss conventional and biotechnological approaches to fruit crop breeding
- Analyze and discuss published breeding approaches for fruit crops
- Identify and apply successful breeding strategies for various fruit crops

**Textbooks:** There is no required textbook for this course. Links to reading materials will be made available via Canvas. Optional textbooks are listed below:

- Temperate Fruit Crop Breeding: Germplasm to Genomics, Hancock, J. (ed)., Springer, 2008. ISBN 978-1-4020-6907-9.
- Fruit Breeding, Badenes, M and Byrne, D (eds)., Springer, 2012. ISBN 978-1-4419-0762-2.

### Grading:

Class attendance	10 pts
------------------	--------

Breeding strategy project	30 pts
---------------------------	--------

Each student will select a fruit crop, identify a current problem or trait that can be improved through a breeding, genetic or biotechnology approach, develop a written plan to achieve the desired genetic improvement (15 points), and make a 10 minute oral presentation covering the crop, breeding target and plan (15 points).

**Breeding case discussions**

30 pts

Three published examples illustrating successful breeding approaches to production problems or trait improvement in fruit crops will be assigned for class discussion. Students will prepare and turn in written answers to questions about the case (5 points each), and then discuss them as a class (5 points each).

**Exams**

30 pts

There will be a mid-term and final exam, each worth 15 points. The final will be given during final exam week.

**Grading Scale (points)**

A	>89.4 – 100	C	>69.4 – 75.4
B+	>84.4 - 89.4	D+	>65.4 – 69.4
B	>79.4 – 84.4	D	59.5 – 65.4
C+	>75.4-79.4	E	<59.5

Grades and Grade Points: For information on current UF policies for assigning grade points, see [catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/](http://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/)

**Course Policies**

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: [catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/](http://catalog.ufl.edu/UGRD/academic-regulations/attendance-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 [www.evaluations.ufl.edu](http://www.evaluations.ufl.edu)

Evaluations are typically open during the last two or three weeks of the semester. Students will be notified of the specific times when evaluations for this course are open. Summary results of these assessments are available to students at: [www.evaluations.ufl.edu/results](http://www.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: [www.dso.ufl.edu/sccr/process/student-conduct-honor-code](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 when appropriate.

### 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.

- Disability Resource Center, 0001 Reid Hall, (352) 392-8565, [www.dso.ufl.edu/drc/](http://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.

- University Counseling and Wellness Center, 3190 Radio Road, 392-1575, [www.counseling.ufl.edu](http://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](http://www.umatter.ufl.edu)
- Career Resource Center, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

#### Student Complaints

- Residential Courses: [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)
- Online Course: [www.distance.ufl.edu/student-complaint-process](http://www.distance.ufl.edu/student-complaint-process)

<b>Week</b>	<b>Lecture Topics</b>
1	History and importance of genetic improvement in fruit crops Asexual vs sexual reproduction
2	Reproductive biology and pollination in woody perennial crops
3	Review of Mendelian qualitative and quantitative inheritance Breeding strategies – sources of genetic variation
4	Breeding strategies – vegetative propagation; rootstocks; self-pollinated crops
5	Breeding strategies – cross-pollinated crops; interspecific hybridization and polyploidy <b>Case discussion 1</b> - resistance to peach gummosis in peach-almond crosses
6	Breeding tools – genetic markers and maps; QTL mapping; marker assisted selection
7	Breeding tools – somatic cell hybridization and cybridization; genetic transformation <b>Case discussion 2</b> - genetic transformation for papaya ringspot virus resistance - 18 years on
8	Breeding tools – plant genome projects (“RosBREED”, International Grape Genome Program); genome editing; phenomics <b>Midterm exam</b>
9	Breeding targets – fruit crop traits and phenotypes; fruit traits and phenotypes; mechanical harvesting <b>Case discussion 3</b> - influence of citrus rootstock on fruit size
10	Breeding targets – fruit postharvest traits and their evaluation <b>Taste panel participation</b>
11	Plant breeding careers – public and private
12	Cultivar release requirements and process Intellectual property protection
13	Overview – UF/IFAS HOS breeding programs – blueberry, peach, strawberry
14	Overview – UF/IFAS HOS breeding programs – citrus, tropical fruits Potential new fruit crops for Florida
15	Student breeding strategy presentations

## Cover Sheet: Request 12997

### HOS 3XXX – Innovations in Organic Agriculture

#### Info

Process	Course New Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Gerardo Nunez Villegas g.nunez@ufl.edu
Created	9/5/2018 1:28:39 PM
Updated	9/5/2018 3:42:36 PM
Description of request	We request to create a new course titled HOS 3XXX – Innovations in Organic Agriculture.

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Horticultural Sciences 514923000	Christine Chase		9/5/2018
Syllabus - HOS 3XXX - Innovations in Organic Agriculture.pdf					9/5/2018
College	Pending	CALS - College of Agricultural and Life Sciences			9/5/2018
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 12997

### Info

**Request:** HOS 3XXX – Innovations in Organic Agriculture

**Description of request:** We request to create a new course titled HOS 3XXX – Innovations in Organic Agriculture.

**Submitter:** Gerardo Nunez Villegas g.nunez@ufl.edu

**Created:** 9/5/2018 1:04:58 PM

**Form version:** 1

### Responses

**Recommended Prefix** HOS

**Course Level** 3

**Number** XXX

**Category of Instruction** Intermediate

**Lab Code** None

**Course Title** Innovations in Organic Agriculture

**Transcript Title** Innovation Organic Ag

**Degree Type** Baccalaureate

**Delivery Method(s)** On-Campus

**Co-Listing** No

**Co-Listing Explanation** Not applicable

**Effective Term** Earliest Available

**Effective Year** Earliest Available

**Rotating Topic?** No

**Repeatable Credit?** No

**Amount of Credit** 1

**S/U Only?** No

**Contact Type** Regularly Scheduled

**Weekly Contact Hours** 1

**Course Description** As a rapidly developing production system worldwide, organic farming plays a unique role in promoting sustainable agriculture development. This course provides a critical analysis of organic agriculture growth and regulations, and discusses transdisciplinary advancements and innovations in organic agriculture towards enhancing environmental, economic, and social sustainability of food production.

**Prerequisites** Junior standing

**Co-requisites** None

**Rationale and Placement in Curriculum** This course complements our existing courses in organic horticulture by focusing on current and emerging technologies and regulations that affect organic agriculture.

This course will be required in our Organic Horticultural Systems specialization and elective for students in other specializations in the BS in Horticultural Sciences.

**Course Objectives** Upon successful completion of this course, students will be able to:

- Explain the systems approach used in organic production.
- Evaluate the dynamics of organic agriculture regulations at both national and international levels.
- Analyze the key aspects of interdisciplinary innovations in organic farming for advancing sustainable agriculture and food systems.
- Identify major challenges in organic agriculture development to address food security.
- Discuss critical areas for future innovations in organic farming for long-term sustainability.

**Course Textbook(s) and/or Other Assigned Reading** There are no required textbooks for this course. Journal articles, websites, videos, and other materials will be collectively used.

**Weekly Schedule of Topics** Week 1

Introduction and course requirements; Effective use of library resources

Week 2

History of organic agriculture

Week 3

The National Organic Program and organic certification

Week 4

Growth of organic markets and consumer demand

Week 5

Sustainable agriculture framework

Week 6

Organic crop production system overview (case study report #1 due)

Week 7

Organic animal production system overview

Week 8

International organic movement and the organic debate

Week 9

Organic innovation 1.0

Week 10

Organic innovation 2.0 (case study report #2 due)

Week 11

Organic innovation 3.0

Week 12

Organic farming and food security

Week 13

A virtual meeting with innovative organic farmers

Week 14

The organic struggle (case study report #3 due)

Week 15

The future of organic agriculture

Final exams week

(Organic agriculture innovation video due)

**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, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.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 violator. Because such violations are also against university policies and rules, disciplinary action will be taken when appropriate.

#### 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.

- Disability Resource Center, 0001 Reid Hall, (352) 392-8565, [www.dso.ufl.edu/drc/](http://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](http://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](http://www.umatter.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 Resource Center, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

#### 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](http://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](http://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, [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

#### **Grading Scheme** 1. Quizzes (150 points)

There will be ten online open-book quizzes during the semester. Students will take each of the 15-point quizzes within 20 minutes on E-learning between Thursday and the following Monday after the quiz is posted in E-learning. Students must work individually.

#### 2. Case study reports (150 points)

Each student will conduct three case studies and complete the analytical reports for each case study during the semester. In each case study, students will choose a specific area to critically analyze the role of organic agriculture innovations in developing sustainable food systems as well as potential challenges and issues.

#### 3. Organic agriculture innovation video (100 points)

Each student will produce a 5-minute video to discuss major advancements and challenges in organic agriculture development and identify directions for future innovations to overcome those challenges.

#### 4. Class Participation (50 points)

At the beginning of every class, students will be chosen at random and asked to provide a 1-minute verbal summary of the previous lecture. Additionally, throughout the course there will be opportunities for students to ask or answer questions. Class interaction and class summaries will be graded out of 25 points according to the rubrics below. The sum of your class summary and class interaction scores will be used as your participation grade.

Participation frequency will be rated between Never (5 points) and Always (25 points). Participation quality will be rated between poor (5 points) and Excellent (25 points).

All points earned in the course will be summed to calculate your final grade. Letter grades will be based on the performance of each student relative to the following standard percentages (%) out of a

total of 450 points:

100- 93 A

<93-90 A-

<90-87 B+

<87-83 B

<83-80 B-

<80-77 C+

<77-73 C

<73-70 C-

<70-67 D+

<67-63 D

<63-60 D-

<60 E

**Instructor(s)** Xin Zhao



## **HOS 3XXX – Innovations in Organic Agriculture**

**1 CREDIT**

**Fall Semester 20XX**

**W Period 9, 4:05-4:55 PM**

**2316 Fifield**

### **INSTRUCTOR**

**Dr. Xin Zhao**

**1235 Fifield Hall**

**(352) 273-4773**

**Email: [zxin@ufl.edu](mailto:zxin@ufl.edu)**

**Office hours:** MW 1:50-2:30 PM. If you are unable to meet me at this time, feel free to email me to request an appointment.

### **PRE-REQUISITES:**

**Junior standing**

### **COURSE DESCRIPTION**

As a rapidly developing production system worldwide, organic farming plays a unique role in promoting sustainable agriculture development. This course provides a critical analysis of organic agriculture growth and regulations, and discusses transdisciplinary advancements and innovations in organic agriculture towards enhancing environmental, economic, and social sustainability of food production.

### **LEARNING OBJECTIVES**

Upon successful completion of this course, students will be able to:

- Explain the systems approach used in organic production.
- Evaluate the dynamics of organic agriculture regulations at both national and international levels.
- Analyze the key aspects of interdisciplinary innovations in organic farming for advancing sustainable agriculture and food systems.
- Identify major challenges in organic agriculture development to address food security.
- Discuss critical areas for future innovations in organic farming for long-term sustainability.

**TEXTBOOK:** There are no required textbooks for this course. Journal articles, websites, videos, and other materials will be collectively used. E-learning (<http://elearning.ufl.edu/>) is also used in this course to post lectures, assignments, reading materials, useful websites, video clips, study guides, and grades.

### **COURSE GRADE**

#### **1. Quizzes**

**150 points**

There will be ten online open-book quizzes during the semester. Students will take each of the 15-point quizzes within 20 minutes on E-learning between Thursday and the following Monday after the quiz is posted in E-learning. Students must work individually.

## 2. Case study reports

**150 points**

Each student will conduct three case studies and complete the analytical reports for each case study during the semester. In each case study, students will choose a specific area to critically analyze the role of organic agriculture innovations in developing sustainable food systems as well as potential challenges and issues.

## 3. Organic agriculture innovation video

**100 points**

Each student will produce a 5-minute video to discuss major advancements and challenges in organic agriculture development and identify directions for future innovations to overcome those challenges.

## 4. Class Participation

**50 points**

At the beginning of every class, students will be chosen at random and asked to provide a 1-minute verbal summary of the previous lecture. Additionally, throughout the course there will be opportunities for students to ask or answer questions. Class interaction and class summaries will be graded out of 25 points according to the rubrics below. The sum of your class summary and class interaction scores will be used as your participation grade.

Participation frequency	Score
Never	5
Rarely	10
Sometimes	15
Often	20
Always	25

Participation quality	Score
Poor	5
Fair	10
Good	15
Very good	20
Excellent	25

All points earned in the course will be summed to calculate your final grade. Letter grades will be based on the performance of each student relative to the following standard percentages (%) out of a total of 450 points:

100- 93	A	<77-73	C
<93-90	A-	<73-70	C-
<90-87	B+	<70-67	D+
<87-83	B	<67-63	D
<83-80	B-	<63-60	D-
<80-77	C+	<60	E

Please feel free to discuss your grades with the instructor at any time during the semester. Additional information on current UF grading policies for assigning grade points can be found here:

- *Grading policy*, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

## **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*, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.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 violator. Because such violations are also against university policies and rules, disciplinary action will be taken when appropriate.

### 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.

- *Disability Resource Center*, 0001 Reid Hall, (352) 392-8565, [www.dso.ufl.edu/drc/](http://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](http://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](http://www.umatter.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 Resource Center*, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

#### 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](http://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](http://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*, [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

**Lecture Schedule**  
**HOSXXXX – Innovations in Organic Agriculture**

<b>Date</b>	<b>Lecture topic</b>
Week 1	Introduction and course requirements; Effective use of library resources
Week 2	History of organic agriculture
Week 3	The National Organic Program and organic certification
Week 4	Growth of organic markets and consumer demand
Week 5	Sustainable agriculture framework
Week 6	Organic crop production system overview ( <i>case study report #1 due</i> )
Week 7	Organic animal production system overview
Week 8	International organic movement and the organic debate
Week 9	Organic innovation 1.0
Week 10	Organic innovation 2.0 ( <i>case study report #2 due</i> )
Week 11	Organic innovation 3.0
Week 12	Organic farming and food security
Week 13	A virtual meeting with innovative organic farmers
Week 14	The organic struggle ( <i>case study report #3 due</i> )
Week 15	The future of organic agriculture
Final exams week	( <i>Organic agriculture innovation video due</i> )

## Cover Sheet: Request 13001

### HOS 4XXX C – Principles of Postharvest Horticulture

#### Info

Process	Course New Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Gerardo Nunez Villegas g.nunez@ufl.edu
Created	9/5/2018 3:41:52 PM
Updated	9/5/2018 3:44:05 PM
Description of request	We request to create a new course titled HOS 4XXX C – Principles of Postharvest Horticulture

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Horticultural Sciences 514923000	Christine Chase		9/5/2018
Syllabus - HOS 4XXXC - Principles of Postharvest Horticulture - Final.pdf					9/5/2018
College	Pending	CALS - College of Agricultural and Life Sciences			9/5/2018
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 13001

### Info

**Request:** HOS 4XXX C – Principles of Postharvest Horticulture

**Description of request:** We request to create a new course titled HOS 4XXX C – Principles of Postharvest Horticulture

**Submitter:** Gerardo Nunez Villegas g.nunez@ufl.edu

**Created:** 9/5/2018 3:25:16 PM

**Form version:** 1

### Responses

**Recommended Prefix** HOS

**Course Level** 4

**Number** XXX

**Category of Instruction** Advanced

**Lab Code** C

**Course Title** Principles of Postharvest Horticulture

**Transcript Title** Postharvest Hort

**Degree Type** Baccalaureate

**Delivery Method(s)** Online

**Co-Listing** No

**Co-Listing Explanation** Not applicable

**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** Biological principles involved in harvesting, grading, packaging, transportation, and marketing horticultural crops, and their effects on quality maintenance. Commercial postharvest practices explained in relation to general procedures and technologies as well as the recommended postharvest best handling practices and optimum postharvest conditions for different types of horticultural crops.

**Prerequisites** HOS4304

**Co-requisites** None

**Rationale and Placement in Curriculum** Horticulture does not end at harvest. Postharvest horticulture is an important aspect of horticultural production quality and efficiency.

This course will be required in the Organic Horticultural Systems and Science and Technology of Horticultural Crops specializations (BS in Horticultural Sciences). Additionally, this course will be an elective in the Plant Biotechnology and Improvement specialization (BS in Horticultural Sciences).

**Course Objectives** Upon completion of the course, students will be prepared to,

1. Recognize the factors related to quality deterioration and wastage of horticultural commodities after harvest, including physiological, biochemical, and pathological considerations, as well as compositional and physical changes occurring during maturation and deterioration.
2. Relate commercial procedures for harvesting, preparation, packaging, transportation, and storage of horticultural crops to the biological principles and individual commodity requirements and responses.
3. Evaluate postharvest handling systems and recommend improved practices that will better maintain product quality during the postharvest period.

**Course Textbook(s) and/or Other Assigned Reading** No textbook is required for the course. However, the following supplemental reading sources may be helpful during this course.

- Postharvest: An Introduction to the Physiology and Handling of Fruit and Vegetables 6th

edition, 2016, by R. B. H. Wills et al. (CAB International, New York).

- Postharvest technology of horticultural crops, 3rd edition, 2002, edited by A. A. Kader (Coop. Ext., Univ. of Calif. Div. Nat. Res., Berkeley, CA).
- Postharvest physiology and pathology of vegetables. 2nd edition, 2003, edited by J.A. Bartz and J.K. Brecht (Marcel Dekker, Inc., New York)
- Postharvest biology. 2004, S.J. Kays and R.E. Paull (Exon Press, Athens, GA).
- Postharvest Handling. A Systems Approach, 3rd edition, 2014, edited by W.J. Florkowski, R.L. Shewfelt, B. Brueckner, and S.E. Prussia (Academic Press, San Diego)

#### **Weekly Schedule of Topics** Week 1

Introduction - Postharvest deterioration and losses

Morphology, structure, growth and development

Week 2

Composition of horticultural crops

Compositional changes during maturation & ripening

Week 3

Ethylene & other plant hormones - role in senescence

Ethylene and fruit ripening

Week 4

Respiration - introduction, measurement

Respiration - internal and environmental factors

Week 5

Transpiration & water loss

Physiological disorders

Week 6

Postharvest pathology - host-parasite interactions

Postharv. pathol. - environmental factors & control

Week 7

Maturity and quality standards

Food safety & quarantine treatments

Week 8

Harvesting, handling and packinghouse operations

Temp. management - cooling methods & principles

Week 9

Commercial storage; modified & controlled atmospheres

Transportation & the distribution system

Week 10

Subtropical fruits

Tropical fruits

Week 11

Small fruits

Pome & Stone fruits

Week 12

Vegetables – leafy & succulent

Vegetables – storage organs

Week 13

Vegetables – immature & mature fruits

Fresh-cut vegetables & fruits

Week 14

Cut flowers & potted plants

Week 15

Review and Final Exam

#### **Links and Policies** Grading Policy

Additional information on current UF grading policies for assigning grade points can be found here:

- Grading policy, <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-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:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

- UF Attendance policy, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.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 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/](http://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](http://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](http://www.umatter.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 Resource Center, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

#### 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](http://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](http://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,  
[www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

<b>Grading Scheme</b>	
1. Midterm 1	100 points
2. Midterm 2	100 points
3. Final Exam	200 points
4. Laboratory reports	100 points
Total	500 points

Exams will be open book with 1 week to complete.

Students will conduct laboratory exercises during the semester and create PowerPoint reports for other students to view. Detailed instructions for the laboratory exercises will be distributed separately.

#### GRADING SCALE

A (4.0)

= 470 - 500 points (94-100%)  
A- (3.67)

= 450 - <470 points (90-93%)  
B+ (3.33)

= 435 - <450 points (87-89%)  
B (3.0)

= 415 - <435 points (83-86%)  
B- (2.67)

= 400 - <415 points (80-82%)  
C+ (2.33)

= 385 - <400 points (77-79%)  
C (2.0)

= 365 - <385 points (73-76%)  
C- (1.67)

= 350 - <365 points (70-72%)  
D+ (1.33)

= 335 - <350 points (67-69%)  
D (1.0)

= 315 - <335 points (63-66%)  
D- (0.67)

= 300 - <315 points (60-62%)  
E (0)

=

< 300 points (<60%)

**Instructor(s)** Jeffrey K. Brecht  
Mark Ritenour



## **HOS 4XXX C – Principles of Postharvest Horticulture**

3 CREDITS

### **MEETING TIMES AND LOCATION**

Students view web-based lecture and demonstration materials and participate in a weekly discussion session (day/time TBD) conducted either in-person or by videoconferencing according to student needs.

### **INSTRUCTORS**

**Dr. Jeffrey K. Brecht**

1217 Fifield Hall

(352) 273-4778

[jkbrecht@ufl.edu](mailto:jkbrecht@ufl.edu)

**Dr. Mark Ritenour**

IRREC – Ft. Pierce

(772) 201-5548

[ritenour@ufl.edu](mailto:ritenour@ufl.edu)

Office hours Mondays 3:00PM- 5:00PM, but students are encouraged to contact instructors via e-mail or phone outside of office hours whenever questions are encountered.

### **PRE-REQUISITES**

HOS 4304 – Horticultural Physiology

### **COURSE DESCRIPTION**

Biological principles involved in harvesting, grading, packaging, transportation, and marketing horticultural crops, and their effects on quality maintenance. Commercial postharvest practices explained in relation to general procedures and technologies as well as the recommended postharvest best handling practices and optimum postharvest conditions for different types of horticultural crops.

### **LEARNING OBJECTIVES**

Upon completion of the course, students will be prepared to,

1. Recognize the factors related to quality deterioration and wastage of horticultural commodities after harvest, including physiological, biochemical, and pathological considerations, as well as compositional and physical changes occurring during maturation and deterioration.
2. Relate commercial procedures for harvesting, preparation, packaging, transportation, and storage of horticultural crops to the biological principles and individual commodity requirements and responses.
3. Evaluate postharvest handling systems and recommend improved practices that will better maintain product quality during the postharvest period.

## COURSE GRADE

1. Midterm 1	100 points
2. Midterm 2	100 points
3. Final Exam	200 points
4. <u>Laboratory reports</u>	<u>100 points</u>
Total	500 points

Exams will be open book with 1 week to complete.

Students will conduct laboratory exercises during the semester and create PowerPoint reports for other students to view. Detailed instructions for the laboratory exercises will be distributed separately.

## GRADING SCALE

A (4.0) = 470 - 500 points (94-100%)	C (2.0) = 365 - <385 points (73-76%)
A- (3.67) = 450 - <470 points (90-93%)	C- (1.67) = 350 - <365 points (70-72%)
B+ (3.33) = 435 - <450 points (87-89%)	D+ (1.33) = 335 - <350 points (67-69%)
B (3.0) = 415 - <435 points (83-86%)	D (1.0) = 315 - <335 points (63-66%)
B- (2.67) = 400 - <415 points (80-82%)	D- (0.67) = 300 - <315 points (60-62%)
C+ (2.33) = 385 - <400 points (77-79%)	E (0) = < 300 points (<60%)

Additional information on current UF grading policies for assigning grade points can be found here:

- *Grading policy*, <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

## COURSE MATERIALS

### TEXTBOOK

No textbook is required for the course. However, the following supplemental reading sources may be helpful during this course.

- Postharvest: An Introduction to the Physiology and Handling of Fruit and Vegetables 6th edition, 2016, by R. B. H. Wills et al. (CAB International, New York).
- Postharvest technology of horticultural crops, 3rd edition, 2002, edited by A. A. Kader (Coop. Ext., Univ. of Calif. Div. Nat. Res., Berkeley, CA).
- Postharvest physiology and pathology of vegetables. 2nd edition, 2003, edited by J.A. Bartz and J.K. Brecht (Marcel Dekker, Inc., New York)
- Postharvest biology. 2004, S.J. Kays and R.E. Paull (Exon Press, Athens, GA).
- Postharvest Handling. A Systems Approach, 3rd edition, 2014, edited by W.J. Florkowski, R.L. Shewfelt, B. Brueckner, and S.E. Prussia (Academic Press, San Diego)

## 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:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

- *UF Attendance policy, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.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 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/](http://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](http://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](http://www.umatter.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 Resource Center*, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

### 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](http://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](http://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*, [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

**HOS4XXXC**  
**PRINCIPLES OF POSTHARVEST HORTICULTURE**  
**Course Schedule**

<b>Lec. #</b>	<b>Instr.</b>	<b>Lecture Topic</b>	<b>Supplemental Reading</b>
---------------	---------------	----------------------	-----------------------------

**I. BIOLOGICAL CONSIDERATIONS**

1	MAR	Introduction - Postharvest deterioration and losses	Kader Ch. 4; Wills Ch. 1
2	JKB	Morphology, structure, growth and development	Wills Ch. 2
<b>Discussion date #1:</b> (Lec. 1-2) Date TBD - Week 1			Kays & Paull Ch. 2

3	JKB	Composition of horticultural crops	Florkowski Ch. 5
4	JKB	Compositional changes during maturation & ripening	Wills Ch. 3 &
<b>Discussion date #2:</b> (Lec. 3-4) Date TBD - Week 2			

5	JKB	Ethylene & other plant hormones - role in senescence	Bartz & Brecht Ch. 3
6	JKB	Ethylene and fruit ripening	Bartz & Brecht Ch. 10
<b>Discussion date #3:</b> (Lec. 5-6) Date TBD - Week 3			

7	MAR	Respiration - introduction, measurement	Bartz & Brecht Ch. 2
8	MAR	Respiration - internal and environmental factors	Kays & Paull Ch. 3
<b>Discussion date #4:</b> (Lec. 7-8) Date TBD - Week 4			Kays & Paull Ch. 4

9	MAR	Transpiration & water loss	Bartz & Brecht Ch. 5
10	JKB	Physiological disorders	Wills Ch. 8
<b>Discussion date #5:</b> (Lec. 9-10) Date TBD - Week 5			Bartz & Brecht Ch. 19

**MIDTERM EXAM** - through physiological disorders (lectures 1-10)

**Posting date:** Friday of Week 5; **Due date:** Friday of Week 6

11	Bartz	Postharvest pathology - host-parasite interactions	Bartz & Brecht Ch. 24
12	Bartz	Postharv. pathol. - environmental factors & control	Bartz & Brecht Ch. 20-23
<b>Discussion date #6:</b> (Lec. 11-12) Date TBD - Week 6			

**II. COMMERCIAL PRACTICES**

13	JKB	Maturity and quality standards	Florkowski Ch. 8 & 14, Kader Ch. 6 & 23
14	MAR	Food safety & quarantine treatments	Kader Ch. 19 & 24

**Discussion date #7:** (Lec. 13-14) Date TBD - Week 7

15 MAR Harvesting, handling and packinghouse operations Bartz & Brecht Ch. 16

16 MAR Temp. management - cooling methods & principles Bartz & Brecht Ch. 8

**Discussion date #8:** (Lec. 15-16) Date TBD - Week 8

Bartz & Brecht Ch. 9

Kader Ch. 11

17 JKB Commercial storage; modified & controlled atmospheres Wills Ch. 6&7

18 MAR Transportation & the distribution system Kader Ch. 20

Florkowski Ch. 16

**Discussion date #9:** (Lec. 17-18) Date TBD - Week 9

**MIDTERM EXAM** – Postharvest pathology through distribution and marketing (lectures 11-18)

**Posting date:** Friday of Week 9; **Due date:** Friday of Week 10

### III. COMMODITY REQUIREMENTS

19 MAR Subtropical fruits Kader Ch. 30

20 JKB Tropical fruits Kader Ch. 31

**Discussion date #10:** (Lec. 19-20) Date TBD - Week 10

21 MAR Small fruits Kader Ch. 29

22 JKB Pome & Stone fruits Kader Ch. 27-28

**Discussion date #11:** (Lec. 21-22) Date TBD - Week 11

Kader Ch. 34

23 JKB Vegetables – leafy & succulent Bartz & Brecht Ch. 25

24 JKB Vegetables – storage organs Bartz & Brecht Ch. 26

Kader Ch. 35

**Discussion date #12:** (Lec. 23-24) Date TBD - Week 12

Kader Ch. 33

25 JKB Vegetables – immature & mature fruits Bartz & Brecht Ch. 27-28

26 JKB Fresh-cut vegetables & fruits Bartz & Brecht Ch. 29

Kader Ch. 36

**Discussion date #13:** (Lec. 25-26) Date TBD - Week 13

27 MAR Cut flowers & potted plants Kader Ch. 25

**Discussion date #14:** (Lec. 27) Date TBD - Week 14

**Review Session:** 12/4. Final Exam distributed afterwards, due 1 week later.

**December X** – Last Day of Classes

**Dec. X & Y** – Reading Days

**FINAL EXAM** – Cumulative (50%), but focusing on lectures 19–27 (50%)

**Posting date:** Last class meeting; **Due date:** 1 week later

**HOS 4XXXC**  
**PRINCIPLES OF POSTHARVEST HORTICULTURE**  
**Laboratory Schedule**

<b>Lab. #</b>	<b>Periods</b>	<b>Laboratory Topic</b>
1.	1	Introduction - tour of postharvest laboratory facilities; methods for measuring respiration and ethylene; quality evaluation systems.
2.	4	Factors affecting respiration, ethylene production and deterioration: <ul style="list-style-type: none"> <li>1. Commodity type</li> <li>2. Time and temperature</li> <li>3. Modified/controlled atmospheres</li> <li>4. Ethylene</li> <li>5. Physical damage</li> </ul>
3.	2	Factors affecting transpiration and water loss: <ul style="list-style-type: none"> <li>1. Water vapor pressure difference</li> <li>2. Air velocity</li> <li>3. Product surface to volume ratio and surface properties</li> <li>4. Water vapor barriers (films and coatings)</li> </ul>
4.	1	USDA grade standards
5.	2	Physiological disorders: <ul style="list-style-type: none"> <li>1. Low temperature (chilling) injury</li> <li>2. High temperature injury</li> </ul>
6.	2	Pathological considerations: <ul style="list-style-type: none"> <li>1. Physiological state of the commodity</li> <li>2. Temperature and moisture</li> <li>3. Surface barriers</li> <li>4. Chemical control</li> </ul>
7.	1	Field trip to observe harvesting, packinghouse, storage and transport operations.
8.	1	Field trip to a wholesale produce distribution center.

## Cover Sheet: Request 13002

### HOS 4XXX – Horticultural Sciences Capstone

#### Info

Process	Course New Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Gerardo Nunez Villegas g.nunez@ufl.edu
Created	9/5/2018 4:41:12 PM
Updated	9/5/2018 5:04:39 PM
Description of request	We request to create a new course titled HOS 4XXX – Horticultural Sciences Capstone

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Horticultural Sciences 514923000	Christine Chase		9/5/2018
Syllabus HOS 4XXX – Horticultural Sciences Capstone.pdf					9/5/2018
College	Pending	CALS - College of Agricultural and Life Sciences			9/5/2018
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 13002

### Info

**Request:** HOS 4XXX – Horticultural Sciences Capstone

**Description of request:** We request to create a new course titled HOS 4XXX – Horticultural Sciences Capstone

**Submitter:** Gerardo Nunez Villegas g.nunez@ufl.edu

**Created:** 9/5/2018 4:30:14 PM

**Form version:** 1

### Responses

**Recommended Prefix** HOS

**Course Level** 4

**Number** XXX

**Category of Instruction** Advanced

**Lab Code** None

**Course Title** Horticultural Sciences Capstone

**Transcript Title** Hort Sci Capstone

**Degree Type** Baccalaureate

**Delivery Method(s)** On-Campus, Online

**Co-Listing** No

**Co-Listing Explanation** Not applicable

**Effective Term** Earliest Available

**Effective Year** Earliest Available

**Rotating Topic?** No

**Repeatable Credit?** No

**Amount of Credit** Variable

**If variable, # min** 2

**If variable, # max** 4

**S/U Only?** Yes

**Contact Type** Directed Individual Studies

**Weekly Contact Hours** Not applicable

**Course Description** This course focuses on executing service learning, scientific research, cooperative extension, or industry liaison projects designed during students' capstone planning. Students will also perfect their professional portfolio and present the outcomes of their capstone project.

**Prerequisites** HOS 4XXX – Capstone Planning in Horticultural Sciences

**Co-requisites** None

**Rationale and Placement in Curriculum** This is the second in a two-course capstone sequence for all students in the Horticultural Sciences major. This course focuses on executing and socializing student capstone projects.

**Course Objectives** Upon successful completion of this course, students will be able to:

- Execute their individual capstone plan
- Apply knowledge gained in horticultural sciences courses and related disciplines to a 'real life' service learning, academic research, cooperative extension, or industry R&D project
- Synthesize and present their capstone experience using graphic/audiovisual media and live presentation
- Create or perfect a professional website that includes items from their e-portfolio

**Course Textbook(s) and/or Other Assigned Reading** There is no required textbook for this course. Links to additional reading materials (tutorials, websites, general knowledge, and scientific articles) will be provided through canvas.

**Weekly Schedule of Topics** Online lectures available starting on week 1 of the semester

Lecture 1: Creating a scientific poster

Lecture 2: Creating a narrated slideshow

Lecture 3: Creating a compelling video using mobile phones and free Apps

## Lecture 4: Creating a professional website

### Links and Policies Grading policy

Additional information on current UF grading policies for assigning grade points can be found here:

- Grading policy, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

### 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, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.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 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/](http://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](http://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](http://www.umatter.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 Resource Center, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

### 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](http://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](http://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,  
[www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

#### **Grading Scheme** 1. Weekly updates (45 points)

Students will upload weekly updates about their project in the course canvas site. Weekly updates can be short essays (400 words), short videos (2-5 minutes), recordings (2-5 minutes), or work-in-progress files that document the lessons learned, challenges faced, and opportunities encountered during the execution of the capstone project. Students are encouraged to upload a mix of different media. Weekly updates will be due in canvas by 11:59 PM every Sunday of the semester. Each update will be worth 3 points.

#### 2. Horticultural Sciences Day (45 points)

Students will prepare graphic (scientific poster) or audiovisual (slideshow, video, etc.) media that illustrate their individual capstone experience. Online tutorials for graphic and audiovisual media creation will be available in canvas starting on week 1 of the semester. Students will submit draft media by week 10 of the semester and receive instructor feedback (20 points). Students will present their graphic or audiovisual media during the Horticultural Sciences Day (25 points).

#### 3. Professional website and e-portfolio (10 points)

Students will update and refine existing elements in their e-portfolio by week 7 of the semester. Additionally, students will participate in a "picture day" where they will have a professional portrait taken (week 2). Then, students will create a professional website that includes their portrait, resume, and at least two elements of their e-portfolio. Online tutorials for website design will be available in canvas starting on week 1 of the semester. Links to draft (week 4) and final website designs (week 7) will be submitted via canvas by 11:59 PM on the mentioned weeks.

For the purposes of assigning a grade, students who complete all the online deliverables and execute a capstone that takes 3 hours per week will register for 2 credit hours. Students executing capstone projects that require a greater time commitment can register for additional credit hours up to 4 credit hours.

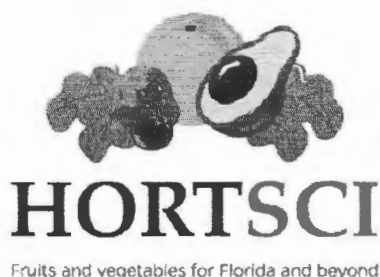
#### GRADING SCALE

S

= 80% U

= < 80%

**Instructor(s)** Gerardo Nunez



## **HOS 4XXX – Horticultural Sciences Capstone**

VARIABLE 2-4 CREDITS

### **MEETING TIMES AND LOCATION**

This is a 'blended' course that combines independent student work, web-based deliverables through canvas, and a face-to-face presentation during the Horticultural Sciences day. The Horticultural Sciences day will be held in Fifield Hall rooms 1304, 1306, and 1308, and in the Horticultural Sciences Teaching Garden.

### **INSTRUCTOR**

Gerardo Nunez, Ph.D.

[g.nunez@ufl.edu](mailto:g.nunez@ufl.edu)

1113 Fifield Hall

(352) 273 -4765

Office hours: Tuesday 2:00 PM to 3:00PM

### **PRE-REQUISITES**

HOS 4XXX – Capstone Planning in Horticultural Sciences

### **COURSE DESCRIPTION**

This course focuses on executing service learning, scientific research, cooperative extension, or industry liaison projects designed during students' capstone planning. Students will also perfect their professional portfolio and present the outcomes of their capstone project.

### **LEARNING OBJECTIVES**

Upon successful completion of this course, students will be able to:

- Execute their individual capstone plan
- Apply knowledge gained in horticultural sciences courses and related disciplines to a 'real life' service learning, academic research, cooperative extension, or industry R&D project
- Synthesize and present their capstone experience using graphic/audiovisual media and live presentation
- Create or perfect a professional website that includes items from their e-portfolio

### **COURSE MATERIALS**

#### **Textbook**

There is no required textbook for this course. Links to additional reading materials (tutorials, websites, general knowledge, and scientific articles) will be provided through canvas.

## COURSE GRADE

### 1. Weekly updates

45 points

Students will upload weekly updates about their project in the course canvas site. Weekly updates can be short essays (400 words), short videos (2-5 minutes), recordings (2-5 minutes), or work-in-progress files that document the lessons learned, challenges faced, and opportunities encountered during the execution of the capstone project. Students are encouraged to upload a mix of different media. Weekly updates will be due in canvas by 11:59 PM every Sunday of the semester. Each update will be worth 3 points.

### 2. Horticultural Sciences Day

45 points

Students will prepare graphic (scientific poster) or audiovisual (slideshow, video, etc.) media that illustrate their individual capstone experience. Online tutorials for graphic and audiovisual media creation will be available in canvas starting on week 1 of the semester. Students will submit draft media by week 10 of the semester and receive instructor feedback (20 points). Students will present their graphic or audiovisual media during the Horticultural Sciences Day (25 points).

### 3. Professional website and e-portfolio

10 points

Students will update and refine existing elements in their e-portfolio by week 7 of the semester. Additionally, students will participate in a "picture day" where they will have a professional portrait taken (week 2). Then, students will create a professional website that includes their portrait, resume, and at least two elements of their e-portfolio. Online tutorials for website design will be available in canvas starting on week 1 of the semester. Links to draft (week 4) and final website designs (week 7) will be submitted via canvas by 11:59 PM on the mentioned weeks.

For the purposes of assigning a grade, students who complete all the online deliverables and execute a capstone that takes 3 hours per week will register for 2 credit hours. Students executing capstone projects that require a greater time commitment can register for additional credit hours up to 4 credit hours.

## GRADING SCALE

S = ≥ 80%

U = < 80%

Additional information on current UF grading policies for assigning grade points can be found here:

- *Grading policy*, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

## 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*, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.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 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/](http://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](http://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](http://www.umatter.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 Resource Center*, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

#### 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](http://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](http://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*, [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

#### **Online lectures available starting on week 1 of the semester**

- Lecture 1: Creating a scientific poster
- Lecture 2: Creating a narrated slideshow
- Lecture 3: Creating a compelling video using mobile phones and free Apps
- Lecture 4: Creating a professional website

## Cover Sheet: Request 13000

### HOS 4XXX – Supervised Teaching Experience in Horticultural Sciences

#### Info

Process	Course New Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Gerardo Nunez Villegas g.nunez@ufl.edu
Created	9/5/2018 3:20:53 PM
Updated	9/5/2018 3:41:17 PM
Description of request	We request to create a new course titled HOS 4XXX – Supervised Teaching Experience in Horticultural Sciences

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Horticultural Sciences 514923000	Christine Chase		9/5/2018
Syllabus HOS 4XXX - Supervised Teaching.pdf					9/5/2018
College	Pending	CALS - College of Agricultural and Life Sciences			9/5/2018
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 13000

### Info

**Request:** HOS 4XXX – Supervised Teaching Experience in Horticultural Sciences

**Description of request:** We request to create a new course titled HOS 4XXX – Supervised Teaching Experience in Horticultural Sciences

**Submitter:** Gerardo Nunez Villegas g.nunez@ufl.edu

**Created:** 9/5/2018 3:04:28 PM

**Form version:** 1

### Responses

**Recommended Prefix** HOS

**Course Level** 4

**Number** XXX

**Category of Instruction** Advanced

**Lab Code** None

**Course Title** Supervised Teaching Experience in Horticultural Sciences

**Transcript Title** Supervised Teaching

**Degree Type** Baccalaureate

**Delivery Method(s)** On-Campus

**Co-Listing** No

**Co-Listing Explanation** Not applicable

**Effective Term** Earliest Available

**Effective Year** Earliest Available

**Rotating Topic?** No

**Repeatable Credit?** Yes

**If repeatable, # total repeatable credit allowed** 3

**Amount of Credit** Variable

**If variable, # min** 0

**If variable, # max** 3

**S/U Only?** Yes

**Contact Type** Supervision of Teaching/Research

**Weekly Contact Hours** 1

**Course Description** Teaching experience in horticultural sciences under the supervision of a faculty member. Topics include lesson planning and delivery, assessment design and grading, and professional conduct in a teaching environment.

**Prerequisites** Junior standing or higher

**Co-requisites** None

**Rationale and Placement in Curriculum** Our curriculum currently includes courses in supervised research and supervised extension. This course aims to provide a venue for advanced undergraduate students interested in teaching experience.

**Course Objectives** Upon successful completion of this course, students will be able to:

- Plan and deliver one or more 30-minute lessons in a horticultural sciences course
- Design one or more assignments for a horticultural sciences course
- Employ a grading rubric to grade one or more assignments in a horticultural sciences course
- Discuss the elements of professional conduct in a teaching environment

**Course Textbook(s) and/or Other Assigned Reading** There is no required textbook for this course. Links to additional reading materials will be provided via email. The following book is a recommended reference source.

- Methods of Teaching Agriculture (3rd Edition) – L. H. Newcomb  
ISBN-10: 0131134183

**Weekly Schedule of Topics** Week 1 Course learning objectives and lecture learning objectives

Week 2 Developing student learning outcomes

Week 3 Developing visual aids

Week 4-5 Developing engaging lectures.

Week 6-7 Independent work on lecture planning.

Week 8 Lecture planning feedback

Week 9-10 Planning assessments

Week 11-15 Individual work on assignment planning and lecture delivery

#### **Links and Policies** Grading Policy

Additional information on current UF grading policies for assigning grade points can be found here:

- Grading policy, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

#### 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, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.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 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/](http://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](http://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](http://www.umatter.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 Resource Center, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

#### 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](http://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](http://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,  
[www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

#### **Grading Scheme 1.** Lecture planning and delivery (75 points)

Students will plan and deliver at least one 30-minute lecture. Lecture planning includes developing student learning outcomes (20 points), slideshows or visual aids (20 points), and a lecture rehearsal (20 points). The faculty member will review and provide feedback on the lecture planning by week 7 of the semester. Lecture delivery will take place in an undergraduate horticultural sciences course (15 points) after week 8 of the semester. The faculty member will be present during lecture delivery and assist the student with questions, examples, or additional information.

#### 2. Assignment design and grading (25 points)

Students will design and grade an assignment (quiz, short essay, etc.) where they assess learning in the lecture they delivered. The student and the faculty member will decide the impact that the student-generated assessment will have on the course being taught. Grading of additional assignments might be part of the student's responsibilities.

For the purposes of assigning a grade, planning and delivery of one lecture and design and grading of one assignment are considered equivalent to 1 credit hour. Students who plan and deliver additional lectures or design and grade additional assignments can receive additional credit hours up to 3 credit hours per semester and 3 credit hours in total in the Horticultural Sciences program of study.

#### GRADING SCALE

Satisfactory (S) or unsatisfactory (U) grades will be assigned based on these standard percentages.

S

= 80%

U

= < 80%

**Instructor(s)** To be determined (multiple)



**HOS 4XXX – Supervised Teaching Experience in**  
**Horticultural Sciences**  
VARIABLE 0-3 CREDITS

**MEETING TIMES AND LOCATION**

Meeting times to be arranged with the instructor.

**INSTRUCTOR**

TBD

Office hours TBD

**PRE-REQUISITES**

Junior standing or higher

**COURSE DESCRIPTION**

Teaching experience in horticultural sciences under the supervision of a faculty member. Topics include lesson planning and delivery, assessment design and grading, and professional conduct in a teaching environment.

**LEARNING OBJECTIVES**

Upon successful completion of this course, students will be able to:

- Plan and deliver one or more 30-minute lessons in a horticultural sciences course
- Design one or more assignments for a horticultural sciences course
- Employ a grading rubric to grade one or more assignments in a horticultural sciences course
- Discuss the elements of professional conduct in a teaching environment

**COURSE MATERIALS**

**Textbook**

There is no required textbook for this course. Links to additional reading materials will be provided via email. The following book is a recommended reference source.

- Methods of Teaching Agriculture (3rd Edition) – L. H. Newcomb ISBN-10: 0131134183

## COURSE GRADE

### 1. Lecture planning and delivery

75 points

Students will plan and deliver at least one 30-minute lecture. Lecture planning includes developing student learning outcomes (20 points), slideshows or visual aids (20 points), and a lecture rehearsal (20 points). The faculty member will review and provide feedback on the lecture planning by week 7 of the semester. Lecture delivery will take place in an undergraduate horticultural sciences course (15 points) after week 8 of the semester. The faculty member will be present during lecture delivery and assist the student with questions, examples, or additional information.

### 2. Assignment design and grading

25 points

Students will design and grade an assignment (quiz, short essay, etc.) where they assess learning in the lecture they delivered. The student and the faculty member will decide the impact that the student-generated assessment will have on the course being taught. Grading of additional assignments might be part of the student's responsibilities.

For the purposes of assigning a grade, planning and delivery of one lecture and design and grading of one assignment are considered equivalent to 1 credit hour. Students who plan and deliver additional lectures or design and grade additional assignments can receive additional credit hours up to 3 credit hours per semester and 3 credit hours in total in the Horticultural Sciences program of study.

## GRADING SCALE

Satisfactory (S) or unsatisfactory (U) grades will be assigned based on these standard percentages.

S =  $\geq 80\%$

U =  $< 80\%$

Additional information on current UF grading policies for assigning grade points can be found here:

- *Grading policy*, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

## 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*, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.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 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/](http://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](http://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](http://www.umatter.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 Resource Center*, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

### 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](http://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](http://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*, [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

### Schedule of Topics

Date	Topics for discussion with the faculty member
Week 1	Course learning objectives and lecture learning objectives
Week 2	Developing student learning outcomes
Week 3	Developing visual aids
Week 4-5	Developing engaging lectures.
Week 6-7	Independent work on lecture planning.
Week 8	Lecture planning feedback
Week 9-10	Planning assessments
Week 11-15	Individual work on assignment planning and lecture delivery

## Cover Sheet: Request 12999

### HOS 4XXX – Capstone Planning in Horticultural Sciences

#### Info

Process	Course New Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Gerardo Nunez Villegas g.nunez@ufl.edu
Created	9/5/2018 2:08:04 PM
Updated	9/5/2018 3:38:54 PM
Description of request	We request to create a new course titled HOS 4XXX – Capstone Planning in Horticultural Sciences

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Horticultural Sciences 514923000	Christine Chase		9/5/2018
Syllabus HOS 4XXX - Capstone Planning.pdf					9/5/2018
College	Pending	CALS - College of Agricultural and Life Sciences			9/5/2018
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 12999

### Info

**Request:** HOS 4XXX – Capstone Planning in Horticultural Sciences

**Description of request:** We request to create a new course titled HOS 4XXX – Capstone Planning in Horticultural Sciences

**Submitter:** Gerardo Nunez Villegas g.nunez@ufl.edu

**Created:** 9/5/2018 1:57:46 PM

**Form version:** 1

### Responses

**Recommended Prefix** HOS

**Course Level** 4

**Number** XXX

**Category of Instruction** Advanced

**Lab Code** None

**Course Title** Capstone Planning in Horticultural Sciences

**Transcript Title** Capstone Planning HS

**Degree Type** Baccalaureate

**Delivery Method(s)** On-Campus

**Co-Listing** No

**Co-Listing Explanation** Not applicable

**Effective Term** Earliest Available

**Effective Year** Earliest Available

**Rotating Topic?** No

**Repeatable Credit?** No

**Amount of Credit** 1

**S/U Only?** Yes

**Contact Type** Regularly Scheduled

**Weekly Contact Hours** 1

**Course Description** This course focuses on planning service learning, scientific research, cooperative extension, or industry liaison projects for students' Horticultural Sciences capstone. Additionally, this course aims to foster reflection of the students' academic and professional development in the major.

**Prerequisites** HOS 4933

**Co-requisites** None

**Rationale and Placement in Curriculum** This is the first in a two-course capstone sequence for all students in the Horticultural Sciences major. This course focuses on planning the capstone project.

**Course Objectives** Upon successful completion of this course, students will be able to:

- Identify a capstone mentor in the university, local, or global horticulture community
- Develop a capstone plan that leverages individual skills and interests
- Create a milestone schedule for their capstone project
- Explain in general terms how service learning, academic research, cooperative extension, and industry R&D operate in horticulture
- Assess their individual interpersonal and technical skills

**Course Textbook(s) and/or Other Assigned Reading** The following book is required for the course in digital, print, or audiobook format. Links to additional learning materials will be provided through canvas.

- The Omnivore's Dilemma – Michael Pollan (ISBN-10: 0143038583)

**Weekly Schedule of Topics** Week 1 Defining the capstone experience

Week 2 Careers in Horticultural Sciences

Week 3 Discussion: Chapter 1: The Plant: Corn's Conquest, Chapter 2: The Farm, Chapter 9: Big Organic

Week 4 Personal motivation and success

Week 5-6 Scientific research projects

G. Nunez & Center for Undergraduate Research

Week 7-8 Service learning projects

G. Nunez & David and Wanda Brown Center for Leadership and Service

Week 9-10 Industry, teaching, and cooperative extension projects

G. Nunez, TBD (Driscoll's Berries), TBD (American Society for Plant Biologists)

Week 11 Elements of a meaningful capstone

Week 12 Goal setting

Week 13 Skill building vs. task completion

Week 14 Essential tasks and Gantt charts

Week 15 Capstone planning in your e-portfolio

**Links and Policies** Additional information on current UF grading policies for assigning grade points can be found here:

- Grading policy, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

#### 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, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.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 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/](http://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](http://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](http://www.umatter.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 Resource Center, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

#### 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](http://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](http://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,  
[www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

#### Grading Scheme 1. Book discussion (10 points)

We will use select chapters of *The Omnivore's Dilemma* as discussion prompts. Discussions will start in canvas with a 200-word position statement (5 points). We will follow with an in-class conversation (5 points) where we discuss the economic, social, and environmental dimensions of horticulture, and how each individual horticulturist can find his/her calling within the industry. Discussions will be graded using the following rubric.

- UT-Austin Faculty Innovation Center,  
[https://facultyinnovate.utexas.edu/sites/default/files/Classroom\\_Discussion\\_rubric.doc](https://facultyinnovate.utexas.edu/sites/default/files/Classroom_Discussion_rubric.doc)

#### 2. Personal reflection (20 points)

Students will identify three job, internship, or assistantship announcements that interest them. Then, they will create a word cloud using only text from the preferred qualifications for those positions (5 points). Additionally, students will examine courses completed to date and elements in their e-portfolio. This word cloud and examination will serve as starting points to write a 1000-word personal reflection essay. In this essay (15 points), students will outline the knowledge and skills they have acquired to date and identify knowledge and skills that they wish to acquire by the time they finish their program of study.

#### 3. Capstone Plan (60 points)

This assessment will have multiple deliverables. First, students will identify a domain for their Horticultural Sciences Capstone (for example: service learning, scientific research, cooperative extension, or industry liaison) and write a 200-word statement of personal motivation. Then, students will update the resume they developed in HOS4933 to reflect their domain of interest. Following, students will identify a capstone mentor in the university, local, or global horticulture community. The instructor, the David & Wanda Brown Center for Leadership and Service, and the Center for Undergraduate Research will serve as liaisons to identify a capstone mentor. This process will likely entail a phone or personal interview between the student and the prospective mentor. Finally, students will develop a capstone plan where they outline the scope, goals, and milestones for a Horticultural Sciences capstone project to be carried out before graduation. A draft plan will be due by week 12 of the semester, and a final plan will be due on week 15. This is how each deliverable will contribute to the final grade:

Deliverable (Due date) Points

Statement of personal motivation (Week 6) 10

Updated resume (Week 7) 10

Capstone mentor identification (Week 10) 10

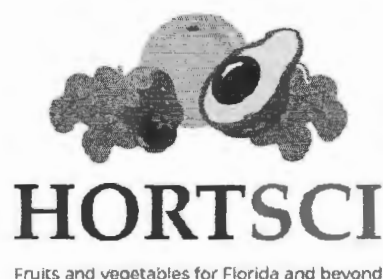
Draft capstone plan (Week 12) 10

Final capstone plan (Week 15) 20  
GRADING SCALE  
S

= = 80% U

= < 80%

**Instructor(s)** Gerardo Nunez



## **HOS 4XXX – Capstone Planning in Horticultural Sciences**

1 CREDIT

### **MEETING TIMES AND LOCATION**

Mondays

6<sup>th</sup> period 12:50PM – 1:40PM

Fifield Hall room 2318

### **INSTRUCTOR**

Gerardo Nunez, Ph.D.

[g.nunez@ufl.edu](mailto:g.nunez@ufl.edu)

1113 Fifield Hall

(352) 273 -4765

Office hours: Tuesday 2:00 PM to 3:00PM

### **PRE-REQUISITES**

HOS 4933 – Professional Development in Horticulture

### **COURSE DESCRIPTION**

This course focuses on planning service learning, scientific research, cooperative extension, or industry liaison projects for students' Horticultural Sciences capstone. Additionally, this course aims to foster reflection of the students' academic and professional development in the major.

### **LEARNING OBJECTIVES**

Upon successful completion of this course, students will be able to:

- Identify a capstone mentor in the university, local, or global horticulture community
- Develop a capstone plan that leverages individual skills and interests
- Create a milestone schedule for their capstone project
- Explain in general terms how service learning, academic research, cooperative extension, and industry R&D operate in horticulture
- Assess their individual interpersonal and technical skills

### **COURSE MATERIALS**

Textbook

The following book is required for the course in digital, print, or audiobook format. Links to additional learning materials will be provided through canvas.

- The Omnivore's Dilemma – Michael Pollan (ISBN-10: 0143038583)

## COURSE GRADE

### 1. Book discussion

10 points

We will use select chapters of *The Omnivore's Dilemma* as discussion prompts. Discussions will start in canvas with a 200-word position statement (5 points). We will follow with an in-class conversation (5 points) where we discuss the economic, social, and environmental dimensions of horticulture, and how each individual horticulturist can find his/her calling within the industry. Discussions will be graded using the following rubric.

- UT-Austin Faculty Innovation Center,  
[https://facultyinnovate.utexas.edu/sites/default/files/Classroom\\_Discussion\\_rubric.doc](https://facultyinnovate.utexas.edu/sites/default/files/Classroom_Discussion_rubric.doc).

### 2. Personal reflection

20 points

Students will identify three job, internship, or assistantship announcements that interest them. Then, they will create a word cloud using only text from the preferred qualifications for those positions (5 points). Additionally, students will examine courses completed to date and elements in their e-portfolio. This word cloud and examination will serve as starting points to write a 1000-word personal reflection essay. In this essay (15 points), students will outline the knowledge and skills they have acquired to date and identify knowledge and skills that they wish to acquire by the time they finish their program of study.

### 3. Capstone Plan

60 points

This assessment will have multiple deliverables. First, students will identify a domain for their Horticultural Sciences Capstone (for example: service learning, scientific research, cooperative extension, or industry liaison) and write a 200-word statement of personal motivation. Then, students will update the resume they developed in HOS4933 to reflect their domain of interest. Following, students will identify a capstone mentor in the university, local, or global horticulture community. The instructor, the David & Wanda Brown Center for Leadership and Service, and the Center for Undergraduate Research will serve as liaisons to identify a capstone mentor. This process will likely entail a phone or personal interview between the student and the prospective mentor. Finally, students will develop a capstone plan where they outline the scope, goals, and milestones for a Horticultural Sciences capstone project to be carried out before graduation. A draft plan will be due by week 12 of the semester, and a final plan will be due on week 15. This is how each deliverable will contribute to the final grade:

Deliverable	Due date	Points
Statement of personal motivation	Week 6	10
Updated resume	Week 7	10

Capstone mentor identification	Week 10	10
Draft capstone plan	Week 12	10
Final capstone plan	Week 15	20

## GRADING SCALE

S = ≥ 80%

U = < 80%

Additional information on current UF grading policies for assigning grade points can be found here:

- *Grading policy*, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

## 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*, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.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 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/](http://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](http://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](http://www.umatter.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 Resource Center*, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

### 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](http://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](http://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, [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)*

**HOS4XXX – Capstone Planning in Horticultural Sciences**

<b>Date</b>	<b>Topics</b>
Week 1	Defining the capstone experience
Week 2	Careers in Horticultural Sciences
Week 3	Discussion: <i>Chapter 1: The Plant: Corn's Conquest, Chapter 2: The Farm, Chapter 9: Big Organic</i>
Week 4	Personal motivation and success
Week 5	Scientific research projects
Week 6	G. Nunez & Center for Undergraduate Research
Week 7	Service learning projects
Week 8	G. Nunez & David and Wanda Brown Center for Leadership and Service
Week 9	Industry, teaching, and cooperative extension projects
Week 10	G. Nunez, TBD (Driscoll's Berries), TBD (American Society for Plant Biologists)
Week 11	Elements of a meaningful capstone
Week 12	Goal setting
Week 13	Skill building vs. task completion
Week 14	Essential tasks and Gantt charts
Week 15	Capstone planning in your e-portfolio



## Cover Sheet: Request 12981

### HOS4XXX Organic Weed Management

#### Info

Process	Course New Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Carlene Chase cachase@ufl.edu
Created	8/30/2018 4:33:29 PM
Updated	9/5/2018 11:08:06 AM
Description of request	HOS6932 - Weed Management for Organic and Sustainable Cropping Systems has been taught for many years in alternate years in spring for graduate students. For interested undergraduate students it has been made available as HOS4932 - Organic Weed Management. A permanent course number is being requested as part of a proposed undergraduate curriculum revision by the Horticultural Sciences Department to allow inclusion as a core course for the Specialization in Organic Horticultural Systems (BS Horticultural Science).

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Horticultural Sciences 514923000	Christine Chase		8/31/2018
No document changes					
College	Pending	CALS - College of Agricultural and Life Sciences			8/31/2018
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 12981

### Info

**Request:** HOS4XXX Organic Weed Management

**Description of request:** HOS6932 - Weed Management for Organic and Sustainable Cropping Systems has been taught for many years in alternate years in spring for graduate students. For interested undergraduate students it has been made available as HOS4932 - Organic Weed Management. A permanent course number is being requested as part of a proposed undergraduate curriculum revision by the Horticultural Sciences Department to allow inclusion as a core course for the Specialization in Organic Horticultural Systems (BS Horticultural Science).

**Submitter:** Carlene Chase cachase@ufl.edu

**Created:** 8/30/2018 4:38:07 PM

**Form version:** 3

### Responses

**Recommended Prefix** HOS

**Course Level** 4

**Number** XXX

**Category of Instruction** Advanced

**Lab Code** None

**Course Title** Organic Weed Management

**Transcript Title** Organic Weed Mgt

**Degree Type** Baccalaureate

**Delivery Method(s)** On-Campus

**Co-Listing** Yes

**Co-Listing Explanation** The weighting of quizzes for undergraduate students is double that for graduate students. Undergraduate students prepare a written laboratory report based on an experiment conducted over an 8-week period. Graduate students are required to serve as discussion moderators. Graduate students develop a grant proposal on a sustainable and/or organic weed management problem formatted for submission to the Southern Sustainable Agriculture Research and Education graduate student grant program. A ten-minute PowerPoint presentation is also required.

**Effective Term** Spring

**Effective Year** 2020

**Rotating Topic?** No

**Repeatable Credit?** No

**Amount of Credit** 3

**S/U Only?** No

**Contact Type** Regularly Scheduled

**Weekly Contact Hours** 3

**Course Description** Ecological principles can be applied in agroecosystems to manage weeds sustainably. Alternative weed management approaches that are less dependent on herbicides and utilize ecological processes detrimental to weeds and their propagules will be emphasized. Students will learn actively by critically analyzing pertinent literature and participating in discussions of supplemental reading.

**Prerequisites** HOS 3020C - Principles of Horticultural Crop Production or ALS 3153 Agricultural Ecology or equivalent.

**Co-requisites** None.

**Rationale and Placement in Curriculum** Students need an understanding of plant biology and knowledge of crop production to perform at a high level in this course. Reading and discussion of journal articles can be better appreciated by upper-division undergraduate students.

**Course Objectives** Students will learn how ecological approaches can be utilized to manage weeds in a sustainable manner. In addition, students will develop or improve skills for critically analyzing scientific literature by participating in discussions of current weed science journal article with peers.

Students will polish their research and writing skills by preparing a laboratory report based on a field or greenhouse weed science experiment.

**Course Textbook(s) and/or Other Assigned Reading Recommended Texts**

Chauhan, B.S. and G. Mahajan. 2014. Recent Advances in Weed Management. Springer, New York Heidelberg Dordrecht London.

Hatcher, P.E. and R.J. Froud-Williams. 2017. Weed Research: Expanding Horizons. John Wiley & Sons, Hoboken, NJ.

Liebman, M., C.L. Mohler, and C.P. Staver. 2001. Ecological Management of Agricultural Weeds. Cambridge University Press, Cambridge.

Upadhyaya, M.K. and R.E. Blackshaw. 2007. Non-chemical Weed Management: Principles, Concepts and Technology. CABI, Wallingford.

**Supplemental Materials**

Booth, B.D., S.D. Murphy, and C.J. Swanton. 2010. Invasive plant ecology in natural and agricultural systems. Second edition. CABI Publishing.

Bowman, G. 2001. Steel in the field: a farmer's guide to weed management tools. Sustainable Agriculture Network, Beltsville.

Håkansson, S. 2003. Weeds and weed management on arable land: an ecological approach. CABI Publishing.

Radosevich, S.R., J.S. Holt, and C.M. Ghera. 2007. Ecology of Weeds and Invasive Plants: Relationship to Agriculture and Natural Resource Management, 3rd Edition. John Wiley & Sons, New York.

Ross, M.A. and C.A. Lembi. 2008. Applied Weed Science: Including the Ecology and Management of Invasive Plants. Prentice Hall, Upper Saddle River.

**Weekly Schedule of Topics Week 1**

1. Introduction and Orientation
2. Weeds – Ecological Definition, Adverse Effects and Utility
3. Ecological Weed Management

**Week 2**

1. Weed Life History
2. Preventive Measures

**Week 3**

1. The National Organic Rule - Permitted Practices
2. Herbicides permitted in organic cropping systems
3. Weed-Crop Interactions, Competition

**Week 4**

1. Weed-Crop Competition Greenhouse Experiment Initiated
2. Students assigned to independently view for in-class discussion: What Plants Talk About – <https://www.youtube.com/watch?v=CrrSAC-vjG4>
3. Allelopathy

**Week 5**

1. Biofumigation
2. Cultural Weed Management
3. Examination 1

**Week 6**

1. Cultural Weed Management
2. Quiz. Cultural Weed Management (Student-Moderated Discussion)

3. Cultural Weed Management

Week 7

1. Physical Weed Control – Mulches
2. Quiz. Physical Weed Control – Soil Solarization (Student-Moderated Discussion)
3. Physical Weed Control – Thermal methods

Week 8

1. Physical Weed Control – Grits
2. Anaerobic Soil Disinfestation
3. Mechanical Weed Control – Tillage

Week 9 NO CLASS – Spring Break

Week 10

1. Mechanical Weed Control – Cultivation
2. Quiz. Automated Weed Control (Student-Moderated Discussion)
3. Examination 2

Week 11

1. Introduction to Biological Control of Weeds
2. Quiz. Weed Seed Predation (Student-Moderated Discussion)
3. Biological Control Using Microorganisms/Bioherbicides

Week 12

1. Final data collection from Weed-Crop Competition experiment
2. Livestock for Weed Management
3. Quiz. Livestock for Weed Management (Student-Moderated Discussion)

Week 13

1. Chemical Weed Control – Soil fumigants (Proposal Drafts and Lab Introduction are due)
2. Chemical Weed Control – Synthetic Herbicides

Week 14

1. Herbicide resistance
2. Quiz. Sustainability of Herbicide-Resistant Crops (Student-Moderated Discussion)
3. Unmanned aerial vehicle use for weed management

Week 15

1. Integrated Weed Management vs Ecological Weed Management
2. Assess Graduate Student Grant Proposal Presentations
3. Submit laboratory report

Week 16

1. Review for Exam
2. Examination 3

**Links and Policies** Policies: Attendance and participation in moderating and discussions are required. Students are urged to arrive on time to avoid disrupting class. Late assignments and make-up exams are permitted only for excused absences. Acceptable documents for an excused absence include a doctor's note or a funeral program. Mobile phones must be turned off during class. Discourse during discussions must be polite and respectful.

**Academic Honesty:** Students are expected to adhere to the University of Florida Honor Code: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. Please refer to conduct regulations at <http://www.dso.ufl.edu/STG>. Violations of Academic Honesty Guidelines and the Honor code, which include cheating, plagiarism, bribery, misrepresentation, conspiracy, and fabrication, will not be tolerated.

**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.

**Counseling and Wellness Center:** Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling and Wellness Center provides confidential counseling services at no cost for currently enrolled students. 3190 Radio Road, 392-1575, [www.counseling.ufl.edu/cwc](http://www.counseling.ufl.edu/cwc).

**Students Requiring Accommodations:** 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. 001 Reid Hall, 392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/).

**Course Evaluation:** Constructive feedback from students via course evaluation is requested to contribute to enhancing course quality. Students are requested to complete online evaluations at <https://evaluations.ufl.edu> when advised that the evaluation system is open.

**Grading Scheme** Examinations (3) - 60%

These require a mix of short answers and long format answers.

Quizzes on journal articles (best 4 of 6) - 20%.

To ensure students prepare adequately for the discussion of the journal articles, short quizzes are administered on information that would be readily apparent if the reading was completed.

Lab report - 20%

Introduction (15 points)

Clearly identifies the subject and defines the research problem; provides an advanced accounting of previous work; clearly explains general approach and objectives

Materials and Methods (5 points)

Written as prose; written in sufficient detail that the experiment could be repeated; explains how data were collected, assembled, interpreted.

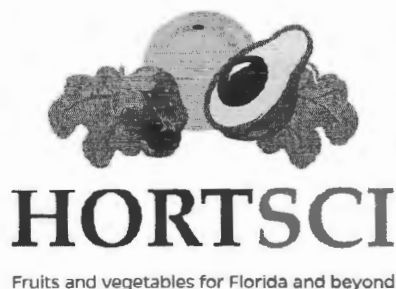
Results and Discussion (25 points total)

All figures and tables are referenced in the text; key findings clearly and logically presented; discussion clearly relates results to the objectives of the study; discussion contains a clear accounting of how the results relate to previous findings; discussion includes conclusions clearly supported by the evidence gathered.

Literature Cited (5 points total)

Literature is referenced in text using the name-year system; the reference list contains at least 5 information sources appropriately formatted; each reference cited is listed in the Literature Cited and each reference is used at least once in the report.

**Instructor(s)** Carlene A. Chase



## **HOS4XXX – Organic Weed Management**

3 CREDITS

Spring Semester 20XX

MWF Period 2, 8:30 to 9:20 AM

2316 Fifield Hall

### **INSTRUCTOR**

Dr. Carlene A. Chase  
1245 Fifield Hall  
(352) 273-4770  
Email: cachase@ufl.edu

### **OFFICE HOURS**

Thursdays 10 am -12 pm  
Fridays 1 pm - 3 pm or by appointment.

### **COURSE DESCRIPTION**

Ecological principles can be applied in agroecosystems to manage weeds sustainably. Alternative weed management approaches that are less dependent on herbicides and utilize ecological processes detrimental to weeds and their propagules will be emphasized. Students will learn actively by critically analyzing pertinent literature and participating in discussions of supplemental reading.

### **LEARNING OBJECTIVES**

Upon successful completion of this course, students will be able to:

- Describe how ecological approaches can be utilized to manage weeds in a sustainable manner
- Select and recommend ecological weed management practices that are approved for use in organic cropping systems.
- Critically analyze and discuss weed science journal articles.
- Prepare a laboratory report based on a field or greenhouse weed science experiment.

**TEXTBOOKS:** There is no required textbook.

### **Recommended Texts**

Chauhan, B.S. and G. Mahajan. 2014. Recent Advances in Weed Management. Springer, New York Heidelberg Dordrecht London.

Hatcher, P.E. and R.J. Froud-Williams. 2017. Weed Research: Expanding Horizons. John Wiley & Sons, Hoboken, NJ.

Liebman, M., C.L. Mohler, and C.P. Staver. 2001. Ecological Management of Agricultural Weeds. Cambridge University Press, Cambridge.

Upadhyaya, M.K. and R.E. Blackshaw. 2007. Non-chemical Weed Management: Principles, Concepts and Technology. CABI, Wallingford.

## Supplemental Materials

Booth, B.D., S.D. Murphy, and C.J. Swanton. 2010. Invasive plant ecology in natural and agricultural systems. Second edition. CABI Publishing.

Bowman, G. 2001. Steel in the field: a farmer's guide to weed management tools. Sustainable Agriculture Network, Beltsville.

Håkansson, S. 2003. Weeds and weed management on arable land: an ecological approach. CABI Publishing.

Radosevich, S.R., J.S. Holt, and C.M. Ghera. 2007. Ecology of Weeds and Invasive Plants: Relationship to Agriculture and Natural Resource Management, 3rd Edition. John Wiley & Sons, New York.

Ross, M.A. and C.A. Lembi. 2008. Applied Weed Science: Including the Ecology and Management of Invasive Plants. Prentice Hall, Upper Saddle River.

## COURSE GRADE

Assignment	Points
<u>Examinations</u> : Three examinations, essay type and short answer responses.	600
<u>Quizzes</u> : Students will complete quizzes based on journal articles assigned for discussion.	200
<u>Lab report</u> : Students will prepare a laboratory report based on a field or greenhouse weed science experiment. The report will include: title, objective, procedure, results and discussion, and references (Minimum of 5).	200
TOTAL	1000

## GRADING SCALE

Score	Percent	Grade
900 to 1000	90 to 100	A
850 to 899	85 to 89.9	B+
800 to 849	80 to 84.9	B
750 to 799	75 to 79.9	C+
700 to 749	70 to 74.9	C
650 to 699	65 to 69.9	D+
600 to 649	60 to 64.9	D
0 to 599	0 to 59.9	E

Additional information on current UF grading policies for assigning grade points can be found here:

- *Grading policy*, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

## COURSE POLICIES

### Attendance and Make-up Policy

You are encouraged to attend every lecture and complete quizzes and assignments by the posted deadlines. Absences will be excused and late assignments will be graded only for documented emergencies as per UF's attendance policy.

Additional information on class attendance and make-up exams, assignments and other work can be found here:

- *UF Attendance policy*, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx)

### Technical Difficulties

If you are experiencing technical difficulties with Canvas, you should immediately contact the UF Help Desk. This will generate a ticket number, which documents the date and time of your technical difficulty. Any requests to make-up late work due to technical difficulties must be accompanied by this ticket number.

- *UF Help Desk*, HUB 132, (352) - 392 - 4357, [www.lss.at.ufl.edu/help.shtml](http://www.lss.at.ufl.edu/help.shtml)

### 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 when appropriate.

### 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.

- *Disability Resource Center*, 0001 Reid Hall, (352) 392-8565, [www.dso.ufl.edu/drc/](http://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](http://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](http://www.umatter.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 Resource Center*, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

### 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](http://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](http://www.evaluations.ufl.edu/results)

## Student Complaints

You can file and resolve any complaints about your experience in this course at the following site:

- *Student complaints in residential courses*, [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

## **COURSE SCHEDULE**

<b>Date</b>	<b>Topics/Learning Experiences</b>
Week 1	1. Introduction and Orientation 2. Weeds – Ecological Definition, Adverse Effects and Utility 3. Ecological Weed Management
Week 2	1. Weed Life History 2. Preventive Measures
Week 3	1. The National Organic Rule - Permitted Practices 2. Herbicides permitted in organic cropping systems 3. Weed-Crop Interactions, Competition
Week 4	1. Weed-Crop Competition Greenhouse Experiment Initiated 2. Students assigned to independently view for in-class discussion: What Plants Talk About – <a href="https://www.youtube.com/watch?v=CrrSAc-vjG4">https://www.youtube.com/watch?v=CrrSAc-vjG4</a> 3. Allelopathy
Week 5	1. Biofumigation 2. Cultural Weed Management 3. <b>Examination 1</b>
Week 6	1. Cultural Weed Management 2. <b>Quiz.</b> Cultural Weed Management ( <i>Graduate Student-Moderated Discussion</i> ) 3. Cultural Weed Management
Week 7	1. Physical Weed Control – Mulches 2. <b>Quiz.</b> Physical Weed Control – Soil Solarization ( <i>Graduate Student-Moderated Discussion</i> ) 3. Physical Weed Control – Thermal methods
Week 8	1. Physical Weed Control – Grits 2. Anaerobic Soil Disinfestation 3. Mechanical Weed Control – Tillage
	<b>NO CLASS – Spring Break</b>
Week 9	1. Mechanical Weed Control – Cultivation 2. <b>Quiz.</b> Automated Weed Control ( <i>Graduate Student-Moderated Discussion</i> ) 3. <b>Examination 2</b>
Week 10	1. Introduction to Biological Control of Weeds 2. <b>Quiz.</b> Weed Seed Predation ( <i>Student-Moderated Discussion</i> ) 3. Biological Control Using Microorganisms/Bioherbicides
Week 11	1. Final data collection from Weed-Crop Competition experiment 2. Livestock for Weed Management

	3. <b>Quiz.</b> Livestock for Weed Management ( <i>Graduate Student-Moderated Discussion</i> )
Week 12	1. Chemical Weed Control – Soil fumigants (Lab Report Introductions are due) 2. Chemical Weed Control – Synthetic Herbicides
Week 13	1. Herbicide resistance 2. <b>Quiz.</b> Sustainability of Herbicide-Resistant Crops ( <i>Graduate Student-Moderated Discussion</i> ) 3. Unmanned aerial vehicle use for weed management
Week 14	1. Integrated Weed Management vs Ecological Weed Management 2. Assess Graduate Student Grant Proposal Presentations 3. Submit laboratory report
Week 15	1. Review for Exam 2. <b>Examination 3</b>

## Cover Sheet: Request 12932

### MCB4xxx Probiotics

#### Info

Process	Course New Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Graciela Lorca glorca@ufl.edu
Created	8/13/2018 2:03:10 PM
Updated	8/27/2018 12:49:21 PM
Description of request	New course

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Microbiology and Cell Science 514910000	Eric Triplett	We propose that FSHN teach a complimentary course in prebiotics. Having both prebiotics and probiotics courses in the CALS curriculum would be terrific.	8/21/2018
Probiotics_syllabus_4934_Final.pdf					8/14/2018
uccconsult.pdf					8/14/2018
College	Pending	CALS - College of Agricultural and Life Sciences			8/21/2018
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 12932

### Info

**Request:** MCB4xxx Probiotics  
**Description of request:** New course  
**Submitter:** Graciela Lorca glorca@ufl.edu  
**Created:** 8/13/2018 1:27:03 PM  
**Form version:** 1

### Responses

**Recommended Prefix** MCB  
**Course Level** 4  
**Number** xxx  
**Category of Instruction** Joint (Ugrad/Grad)  
**Lab Code** None  
**Course Title** Probiotics  
**Transcript Title** Probiotics  
**Degree Type** Baccalaureate

**Delivery Method(s)** Online

**Co-Listing** Yes

**Co-Listing Explanation** For the graduate level course, the students are required to complete all the activities and tests offered in the undergraduate course (70% of the grade). In addition, the students in the graduate level course have to write a Topics review paper based on at least five peer reviewed research articles (30% of the grade).

**Effective Term** Spring

**Effective Year** 2018

**Rotating Topic?** No

**Repeatable Credit?** No

**Amount of Credit** 3

**S/U Only?** No

**Contact Type** Regularly Scheduled

**Weekly Contact Hours** 3

**Course Description** MCBxxx is an upper division course on probiotics. This course will cover the use of

microorganisms to promote a health status in the host. This course will provide a conceptual background in microbiology and immunology for the use of microorganisms for the prevention or treatment of animal and human diseases.

**Prerequisites** MCB3020 or MCB3023

**Co-requisites** None

**Rationale and Placement in Curriculum** These new courses (first sections taught Spring 2018) were created in response to the growing interest (among students and the public) on the use of microorganisms in the prevention and/or treatment of some human and animal diseases, as well as their use to promote a healthy status. To my knowledge, these are the first comprehensive courses available on the topic of probiotics. These courses provide a conceptual background in microbiology and immunology for the use of microorganisms in the prevention or treatment of animal and human diseases. These courses are based on peer reviewed scientific literature. It is proposed as an elective.

**Course Objectives** After successful completion of this course, students will be able to:

- Understand the history of probiotics
- Compare and contrast the use of lactic acid bacteria, Bifidobacterium and Propionibacterium as probiotics
- Understand the range of proposed probiotics and the challenges in ensuring their safety and efficacy
- Compare and contrast the mechanisms used by probiotic microorganisms to modulate the host immune responses in the animal and in the human host

- List the proposed uses of probiotic microorganisms for the prevention or treatment of animal and human diseases
- Compare and contrast the applications of prebiotics, probiotics and symbiotics
- Discuss current research efforts and proposed applications of probiotics for animal and human health

**Course Textbook(s) and/or Other Assigned Reading** Textbook and/or assigned readings

- Textbook: no textbook is required, this course is based on peer reviewed papers either available for free through the links provided or through the UF library (ejournals).
- Suggested readings: For each module, suggested readings will be posted as pdf documents on Canvas or as links to download them from PUBMED (see working list at the end of the document). Students are instructed to connect to UF through VPN (if outside campus) before accessing the journals (<https://connect.ufl.edu/it/wiki/pages/glvpn.aspx>).

**Weekly Schedule of Topics** Date Unit Module Topic

Unit 1 Probiotics: definitions, history and classification				
8-Jan*				1. Definitions and History
				2. Classification and physiology: Lactic acid bacteria (LAB)
				3. Classification and physiology: Bifidobacterium and Propionibacterium
				4. Impact of genomics on the characterization of probiotics_Intro to genomics
				4. Impact of genomics on the characterization of probiotics_LAB part 1
				4. Impact of genomics on the characterization of probiotics_LAB part 2
29-Jan				Assignment 1 due
Unit 2				
Biotechnological applications of Lactic acid bacteria				
29-Jan*				5. The uses of LAB in food fermentation -part 1
				5. The uses of LAB in food fermentation -part 2
				6. Antimicrobials components of LAB
				7. Bacteriophages from LAB
				8. Nutraceuticals and high value metabolites produced by LABs
12-Feb				Assignment 2 due
14-Feb				Test 1
Unit 3				
Interactions of probiotics with the host immune system				
16-Feb*				9. Overview on the adaptive and innate immune response - Part 1
				9. Overview on the adaptive and innate immune response - Part 2
				10. Immunomodulatory properties of probiotics: bacterial surface proteins
				11. Immunomodulatory properties of probiotics: interactions with the immune system
				12. Engineering LAB and Bifidobacterium for mucosal delivery of health-associated
				molecules: Genetic tools
				12. Engineering LAB and Bifidobacterium for mucosal delivery of health-associated
				molecules
2-Mar				Assignment 3 due
Unit 4 Probiotics safety and efficacy				
12-Mar*				13. FAO/WHO Guidelines on Probiotics
				14. Safety considerations on probiotics
				15. Environmental factors influencing the efficacy of probiotics
				16. Efficacy of probiotics in Human Subjects: Part 1
				16. Efficacy of probiotics in Human Subjects: Part 2
				16. Efficacy of probiotics in Human Subjects: Part 3
				16. Efficacy of probiotics in Human Subjects: Probiotics by design
				17. Probiotics in Animal Production and Health
30-Mar				Assignment 4 due
2-Apr				Test 2
Unit 5 New frontiers in the probiotic's field				
4-Apr*				18. Overview on the microbiome – Part 1
				18. Overview on the microbiome – Part 2
				19. Manipulation of the microbiome with probiotics
				20. Microbiome based new probiotic microorganisms
				21. Fecal transplants as probiotics
				22. Probiotics, prebiotics and symbiotic

20-Apr 23. Psychobiotics and the Manipulation of Bacteria–Gut–Brain Signals  
 23-Apr Assignment 5 due – EXTRA CREDIT  
 Test 3

2-May Optional Final

\*Release date for the Unit on Canvas

#### **Links and Policies Students Requiring Accommodations**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://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 Resources**

Resources are available on campus for students having personal problems or lacking clear career and academic goals, which interfere with their academic performance. These resources include:

#### **Health and Wellness**

- U Matter, We Care: If you or a friend is in distress, please contact [umatter@ufl.edu](mailto: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;
- Sexual Assault Recovery Services (SARS) at the Student Health Care Center, 392-1161.
- For emergencies call: 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 [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu). <https://lss.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 with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.  
<http://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.  
<http://writing.ufl.edu/writing-studio/>

#### **Course 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/>.

#### **Class demeanor**

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

#### **Netiquette guide for online courses**

It is important to recognize that the online classroom is in fact a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for online behavior and interaction are known as netiquette.

<http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

#### **University Honesty Policy**

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 (<https://sccr.dso.ufl.edu/process/honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. 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 or TAs in this class.

Additional comments regarding academic integrity:

Students are encouraged to discuss material with each other from the course, help each other understand concepts, study together, and even discuss assessment questions with each other once the quiz window is closed. However, the following is considered academic dishonesty, and I expect that no student will ever do any of the following:

- Have another person complete a quiz in this course
- Copy another student's quiz in this course
- Collaborate with anyone during a quiz in this course
- Discuss the questions and answers of a quiz with other students while the quiz window is still open
- Manipulate and/or distribute any materials provided in this course for any purpose (including course lecture slides).
- Use any materials provided by a previous student in the 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.

Microsoft Office 365 Software is free for UF students

<http://www.it.ufl.edu/gatorcloud/free-office-365-downloads/>

Other free software is available at:

<http://www.software.ufl.edu/>

To check for availability of the media and technical requirements, contact the UF Computing Help Desk at (352)392-HELP(4357).

University of Florida Complaints Policy and Student Complaint Process

Most problems, questions and concerns about the course will be resolved by professionally communicating with the instructor or the TAs.

The University of Florida believes strongly in the ability of students to express concerns regarding their experiences at the University. The University encourages its students who wish to file a written complaint to submit that complaint directly to the department that manages that policy.

If a problem really cannot be resolved by communicating with the instructor or the TAs you can contact

- Residential Course:

[https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

- Online Course: <http://www.distance.ufl.edu/student-complaint-process>.

University of Florida Complaints Policy and Student Complaint Process

The University of Florida and most instructors believe strongly in the ability of students to express concerns regarding their experiences at the University. Most problems, questions and concerns about courses can be resolved by professionally communicating with the instructor. Please try to meet your instructor in person, make an appointment to call, or try to set up a remote meeting through Skype or other media.

If this does not help the University encourages the students who wish to file a written complaint to submit that complaint directly to the department that manages that course. If a problem really persists and cannot be resolved by communicating with the instructor and the department, contact... for Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

Online Course: <http://www.distance.ufl.edu/student-complaint-process>

This said, professionalism is a two-way-street. Unprofessional behavior of students includes, among other things: lack of communication, blaming other people or external factors, lying, affecting others negatively in a group or in the class, not accepting criticism and not being proactive in solving problems or seeking help. Furthermore, faculty often have family and other obligations to tend to. Over the weekend, replies to your inquiries or questions maybe delayed.

If a student is lacking professionalism repeatedly, the instructor has the rights to file formal complaint against the student through the Dean of Student office.

#### Grading Scheme Assessment of learning

- Assignments (250 points): Activities will be assigned by Unit. The activities include online

research on diverse topics such as "co-evolution of beneficial bacteria and its hosts", "GMO's and probiotics", "Market claims: is there scientific evidence?". The activities are mandatory and count towards the final grade. They should be completed by the deadline indicated on Canvas.

- Exams (750 points): Exams will assess your knowledge of the concepts covered during the lectures. Students must sign up on ProctorU at least 72 hours in advance.

The assessment will be performed in Three Mandatory Mid-term exams. The student will be given the option to take a final cumulative exam to improve the grade obtained through the mid-term exams.

- Mid-terms (750 points): There will be three 50 minutes proctored mid-term exams (250 points each) with multiple choice questions, true/false, fill in the blanks questions and short answers questions. All exams are mandatory and will count towards the final grade. Exams will test learning and understanding of material presented in lectures, assigned readings and in assignments.

- Optional Final to replace ONE test (with the lowest grade) will be available during Finals Week. The students MUST have taken all three tests to qualify for the Optional Final. This cumulative test will include all the content included in Units 1 to 5 and will be worth 250 points.

**Grading Scale (Total 1000 points)**

A	900 or above
A-	860-899
B+	830-859
B	790-829
B-	750-789
C+	720-749
C	690-719
C-	660-689
D+	630-659
D	600-629
D-	570-599
E	560 or below

**Instructor(s)** Instructor: Dr. Graciela L. Lorca

Office: Genetics Institute, Room 307

**MCB4934: Probiotics (3 credits)**  
**Spring 2018**

MCB4934 is an upper division course on probiotics. This course will cover the use of microorganisms to promote a health status in the animal and human host. This course will provide a conceptual background in microbiology and immunology for the use of microorganisms for the prevention or treatment of animal and human diseases.

**Student Learning Outcomes** – After successful completion of this course, students will be able to:

- Understand the history of probiotics
- Compare and contrast the use of lactic acid bacteria, *Bifidobacterium* and *Propionibacterium* as probiotics
- Understand the range of proposed probiotics and the challenges in ensuring their safety and efficacy
- Compare and contrast the mechanisms used by probiotic microorganisms to modulate the host immune responses in the animal and in the human host
- List the proposed uses of probiotic microorganisms for the prevention or treatment of animal and human diseases
- Compare and contrast the applications of prebiotics, probiotics and symbiotics
- Discuss current research efforts and proposed applications of probiotics for animal and human health

**Lectures:** Online through Canvas

**Instructor:** Dr. Graciela L Lorca

**Office:** Genetics Institute, Room 307

**WebPage:** Canvas (<https://ufl.instructure.com/>). Please select MCB4934

**On line help with classroom technology:** <http://helpdesk.ufl.edu/>

**Pre-requisite:** MCB3020 or MCB3023

**Communication:** for questions regarding class and textbook content use the Discussion Board, for issues on Home Work Assignments, class organization check first the syllabus, the announcements and calendar on Canvas, then post your questions on the discussion board. For all other issues contact Dr. Graciela Lorca.

**VIRTUAL OFFICE HOURS:** will be available every week through the **BLUE BUTTON tool in Canvas**. To participate go to Conferences in the left of your screen and join! You will receive a weekly reminder by email.

**Students in Gainesville can also come for in person office hours:**  
Fridays 2-3 PM at Genetics Institute, Room 307.

**All students:** If you cannot make it to office hours you can request an appointment. Send an e-mail with three suggested times and I will choose one for us to meet.

**Contact Information: Use TEACHER in your emails through Canvas ONLY (personal emails should only be used in a case of emergency)**

Dr. Graciela L Lorca:

**Email (the most efficient):** ONLY use Canvas e-mail (If you do not have access to the e-learning platform and need to contact me for an **emergency**, use [glorca@ufl.edu](mailto:glorca@ufl.edu))

**Phone:** 273 8090 (please leave a message).

**Office hours:** Fridays 2-3 PM at Genetics Institute, Room 307. By appointment: (only if you cannot make it to office hours) send an e-mail with three suggested times and I will choose one for us to meet.

- **Discussion Board:** A discussion board is available in Canvas. It is very useful, please post and answer your questions on class content and organization there. Postings and answers are monitored by the instructor to make sure no mistakes get propagated. There are several discussion themes. Please post your questions in the adequate section.

## **Material**

- **Textbook:** no textbook is required, this course is based on peer reviewed papers either available for free through the links provided or through the UF library (ejournals).

- **Suggested readings:** For each module, suggested readings will be posted as pdf documents on Canvas or as links to download them from PUBMED (see working list at the end of the document). Remember to connect to UF through VPN (if outside campus) before accessing the journals (<https://connect.ufl.edu/it/wiki/pages/glvpn.aspx>).

---

## **Assessment of learning**

- **Assignments (250 points):** Activities will be assigned by Unit. The activities include online research on diverse topics such as "co-evolution of beneficial bacteria and its hosts", "GMO's and probiotics", "Market claims: is there scientific evidence?". The activities are mandatory and count towards the final grade. They should be completed by the deadline indicated on Canvas.
- **Exams (750 points):** Exams will assess your knowledge of the concepts covered during the lectures. Students must sign up on ProctorU at least 72 hours in advance.

The assessment will be performed in **Three Mandatory Mid-term exams**. The student will be given the option to take a final cumulative exam to improve the grade obtained through the mid-term exams.

- *Mid-terms (750 points):* There will be three 50 minutes proctored mid-term exams (250 points each) with multiple choice questions, true/false, fill in the blanks questions and short answers questions. **All exams are mandatory and will count towards the final grade.** Exams will test learning and understanding of material presented in lectures, assigned readings and in assignments.
- *Optional Final to replace ONE test (with the lowest grade) will be available during Finals Week.* The students **MUST** have taken all three tests to qualify for the Optional Final. This cumulative test will include all the content included in Units 1 to 5 and will be worth 250 points.

*Make-Up policy:* Make-up exams will **ONLY** be allowed with a **VALID** justification. If one exam is missed, it will result in a score of 0 for the test (see below for "Excused absences").

*Excused absences:*

Documentation **MUST** be provided for absences caused by serious illness, accident, jury duty, or death in the immediate family. You must contact the instructor **IN ADVANCE (as soon as possible)** of the missed exam and I will arrange an alternative time for the exam.

*After the exam:* The grades will be available on Canvas five days after the exam, unless notified by an announcement. Test questions will be made available through Canvas. After we release the questions, the student will have **5** days to submit questions about the test or claim mistakes in grading. No claims will be considered after that time.

**Grading:** Straight scale

**Grading Scale**

<b>A</b>	900 or above
<b>A-</b>	860-899
<b>B+</b>	830-859
<b>B</b>	790-829
<b>B-</b>	750-789
<b>C+</b>	720-749
<b>C</b>	690-719
<b>C-</b>	660-689
<b>D+</b>	630-659
<b>D</b>	600-629
<b>D-</b>	570-599
<b>E</b>	560 or below

Date	Unit	Module. Topic
8-Jan*	Unit 1	<b>Probiotics: definitions, history and classification</b> <ol style="list-style-type: none"> <li>1. Definitions and History</li> <li>2. Classification and physiology: Lactic acid bacteria (LAB)</li> <li>3. Classification and physiology: <i>Bifidobacterium</i> and <i>Propionibacterium</i></li> <li>4. Impact of genomics on the characterization of probiotics_Intro to genomics</li> <li>4. Impact of genomics on the characterization of probiotics_LAB part 1</li> <li>4. Impact of genomics on the characterization of probiotics_LAB part 2</li> </ol>
29-Jan		Assignment 1 due
29-Jan*	Unit 2	<b>Biotechnological applications of Lactic acid bacteria</b> <ol style="list-style-type: none"> <li>5. The uses of LAB in food fermentation -part 1</li> <li>5. The uses of LAB in food fermentation -part 2</li> <li>6. Antimicrobials components of LAB</li> <li>7. Bacteriophages from LAB</li> <li>8. Nutraceuticals and high value metabolites produced by LABs</li> </ol>
12-Feb		Assignment 2 due
14-Feb		Test 1
16-Feb*	Unit 3	<b>Interactions of probiotics with the host immune system</b> <ol style="list-style-type: none"> <li>9. Overview on the adaptive and innate immune response - Part 1</li> <li>9. Overview on the adaptive and innate immune response - Part 2</li> <li>10. Immunomodulatory properties of probiotics: bacterial surface proteins</li> <li>11. Immunomodulatory properties of probiotics: interactions with the immune system</li> <li>12. Engineering LAB and <i>Bifidobacterium</i> for mucosal delivery of heath-associated molecules: Genetic tools</li> <li>12. Engineering LAB and <i>Bifidobacterium</i> for mucosal delivery of heath-associated molecules</li> </ol>
2-Mar		Assignment 3 due
12-Mar*	Unit 4	<b>Probiotics safety and efficacy</b> <ol style="list-style-type: none"> <li>13. FAO/WHO Guidelines on Probiotics</li> <li>14. Safety considerations on probiotics</li> <li>15. Environmental factors influencing the efficacy of probiotics</li> <li>16. Efficacy of probiotics in Human Subjects: Part 1</li> <li>16. Efficacy of probiotics in Human Subjects: Part 2</li> <li>16. Efficacy of probiotics in Human Subjects: Part 3</li> <li>16. Efficacy of probiotics in Human Subjects: Probiotics by design</li> <li>17. Probiotics in Animal Production and Health</li> </ol>
30-Mar		Assignment 4 due
2-Apr		Test 2
4-Apr*	Unit 5	<b>New frontiers in the probiotic's field</b> <ol style="list-style-type: none"> <li>18. Overview on the microbiome – Part 1</li> <li>18. Overview on the microbiome – Part 2</li> </ol>

	19. Manipulation of the microbiome with probiotics
	20. Microbiome based new probiotic microorganisms
	21. Fecal transplants as probiotics
	22. Probiotics, prebiotics and symbiotic
	23. Psychobiotics and the Manipulation of Bacteria–Gut–Brain Signals
20-Apr	Assignment 5 due – EXTRA CREDIT
23-Apr	Test 3
2-May	Optional Final

**\*Release date for the Unit on Canvas**

## **University of Florida Policies**

### **Students Requiring Accommodations**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://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 Resources**

Resources are available on campus for students having personal problems or lacking clear career and academic goals, which interfere with their academic performance. These resources include:

### **Health and Wellness**

- U Matter, We Care: If you or a friend is in distress, please contact [umatter@ufl.edu](mailto: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;
- Sexual Assault Recovery Services (SARS) at the Student Health Care Center, 392-1161.
- For emergencies call: 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 [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu). <https://lss.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 with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>

### **Course 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/>.

### **Class demeanor**

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

### **Netiquette guide for online courses**

It is important to recognize that the online classroom is in fact a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for online behavior and interaction are known as netiquette.

<http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

### **University Honesty Policy**

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 (<https://sccr.dso.ufl.edu/process/honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. 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 or TAs in this class.

### **Additional comments regarding academic integrity:**

Students are encouraged to discuss material with each other from the course, help each

other understand concepts, study together, and even discuss assessment questions with each other once the quiz window is closed. However, the following is considered academic dishonesty, and I expect that no student will ever do any of the following:

- Have another person complete a quiz in this course
- Copy another student's quiz in this course
- Collaborate with anyone during a quiz in this course
- Discuss the questions and answers of a quiz with other students while the quiz window is still open
- Manipulate and/or distribute any materials provided in this course for any purpose (including course lecture slides).
- Use any materials provided by a previous student in the 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.

#### **Microsoft Office 365 Software is free for UF students**

<http://www.it.ufl.edu/gatorcloud/free-office-365-downloads/>

#### **Other free software is available at:**

<http://www.software.ufl.edu/>

To check for availability of the media and technical requirements, contact the UF Computing Help Desk at (352)392-HELP(4357).

### **University of Florida Complaints Policy and Student Complaint Process**

Most problems, questions and concerns about the course will be resolved by professionally communicating with the instructor or the TAs.

The University of Florida believes strongly in the ability of students to express concerns regarding their experiences at the University. The University encourages its students who wish to file a written complaint to submit that complaint directly to the department that manages that policy.

If a problem really cannot be resolved by communicating with the instructor or the TAs you can contact

- Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>.

### **University of Florida Complaints Policy and Student Complaint Process**

The University of Florida and most instructors believe strongly in the ability of students

to express concerns regarding their experiences at the University. Most problems, questions and concerns about courses can be resolved by professionally communicating with the instructor. Please try to meet your instructor in person, make an appointment to call, or try to set up a remote meeting through Skype or other media.

If this does not help the University encourages the students who wish to file a written complaint to submit that complaint directly to the department that manages that course. If a problem really persists and cannot be resolved by communicating with the instructor and the department, contact... for

Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

Online Course: <http://www.distance.ufl.edu/student-complaint-process>

This said, professionalism is a two-way-street. Unprofessional behavior of students includes, among other things: lack of communication, blaming other people or external factors, lying, affecting others negatively in a group or in the class, not accepting criticism and not being proactive in solving problems or seeking help. Furthermore, faculty often have family and other obligations to tend to. Over the weekend, replies to your inquiries or questions maybe delayed.

If a student is lacking professionalism repeatedly, the instructor has the rights to file formal complaint against the student through the Dean of Student office.

## **Suggested Readings and Sources**

### Unit 1. Probiotics: definitions, history and classification

#### **Module 1. Definitions and History**

- Gogineni VK, Morrow LE, Gregory PJ, Malesker MA. 2013. Probiotics: History and Evolution. J Anc Dis Prev Rem 1:107.
- Lauzon HLL, Dimitroglou A, Merrifield DL, Ringo E, Davies SJ. 2014. Probiotics and Prebiotics: Concepts, Definitions and History. In Aquaculture Nutrition: Gut Health, Probiotics and Prebiotics, First Edition. Edited by Daniel Merrifield and Einar Ringø. © 2014 John Wiley & Sons, Ltd. Published 2014 by John Wiley & Sons, Ltd.
- Soccol CR, de Souza Vandenberghe, Spier MR, et al. 2010. The Potential of Probiotics, Food Technol. Biotechnol. 48:413-434.

#### **Module 2. Classification and physiology: Lactic acid bacteria (LAB)**

- Axelsson L. 1998. Lactic acid bacteria: Classification and Physiology. Ch. 1. In Lactic acid bacteria, Microbiology and Functional Aspects. Salminen S and von Wright A, Editors. Marcel Dekker, Inc. New York. Basel.
- Stiles MH, Wilhelm H, Holzapfel WH. 1997. Lactic acid bacteria of foods and their current taxonomy. International Journal of Food Microbiology 36:1-29.

### Module 3. Classification and physiology: *Bifidobacterium* and *Propionibacterium*

- Sela DA, Price NPJ, Mills DA. 2010. Metabolism of Bifidobacteria. *In* Bifidobacteria: Genomics and Molecular Aspects (Edited by: Baltasar Mayo and Douwe van Sinderen). Caister Academic Press, U.K.
- Zarate G, 2012. Dairy Propionibacteria: Less Conventional Probiotics to Improve the Human and Animal Health. Ch 8. In *"Probiotic in Animals"*, book edited by Everlon Cid Rigobelo. Published: October 3, 2012 under CC BY 3.0 license. © The Author(s).
- Poonam, Pophaly SD, Tomar SK, De S, Singh R. 2012. Multifaceted attributes of dairy propionibacteria: a review. *World J Microbiol Biotechnol* . 28:3081-95.

### Module 4. Impact of genomics on the characterization of probiotics

- Frese SA, Benson AK, Tannock GW, Loach DM, Kim J, et al. 2011. The Evolution of Host Specialization in the Vertebrate Gut Symbiont *Lactobacillus reuteri*. *PLoS Genet* 7(2): e1001314.
- Van Pijkeren J-P, O'Toole PW. 2009. Comparative and Functional Genomics of the Genus *Lactobacillus*. *In* *Lactobacillus molecular biology: From genomics to probiotics*. Ed. Ljungh, A., & Wadström, T. Norfolk, UK: Caister Academic.
- Kelleher et al. 2017. Comparative and functional genomics of the *Lactococcus lactis* taxon; insights into evolution and niche adaptation. *BMC Genomics* 18:267.
- Lukjancenko O, Ussery DW, Wassenaar TM. 2012. Comparative Genomics of *Bifidobacterium*, *Lactobacillus* and Related Probiotic Genera. *Microb Ecol*. 63: 651–673.
- Lugli GA, Milani C, Turrone F, Duranti S, Mancabelli L, Mangifesta M, Ferrario C, Modesto M, Mattarelli P, Jiří K, van Sinderen D, Ventura M. 2017. Comparative genomic and phylogenomic analyses of the Bifidobacteriaceae family. *BMC Genomics* 18:568.

## Unit 2. Biotechnological applications of Lactic acid bacteria

### Module 5. The uses of LAB in food fermentation

- Shiby VK, Mishra HN. 2013. Fermented Milks and Milk Products as Functional Foods —A Review, *Critical Reviews in Food Science and Nutrition* 53:482-496.
- Zannini E, Waters DM, Coffey A, Arendt EK. 2016. Production, properties, and industrial food application of lactic acid bacteria-derived exopolysaccharides. *Appl Microbiol Biotechnol*. 100:1121-35.
- Leroy F, Verluyten J, De Vuyst L. 2006. Functional meat starter cultures for improved sausage fermentation. *Int J Food Microbiol*. 106:270-85.

## **Module 6. Antimicrobials components of LAB**

- Alvarez-Sieiro P, Montalbán-López M, Mu D, Kuipers OP. 2016. Bacteriocins of lactic acid bacteria: extending the family. *Appl Microbiol Biotechnol*. 100:2939-51.

## **Module 7. Bacteriophages from LAB**

- Mullan WMA. 2002. Morphology of bacteriophages for lactic acid bacteria. [On-line].
- Mahony J, McDonnell B, Casey E, van Sinderen D. 2016. Phage-Host Interactions of Cheese-Making Lactic Acid Bacteria. *Annu Rev Food Sci Technol* 7:267-85.
- Mahony J, Ainsworth S, Stockdale S, van Sinderen D. 2012. Phages of lactic acid bacteria: the role of genetics in understanding phage-host interactions and their co-evolutionary processes. *Virology* 434:143-50.

## **Module 8. Nutraceuticals and high value metabolites produced by LABs**

- Sauer M, Russmayer H, Grabherr R, Peterbauer CK, Marx H. 2017. The Efficient Clade: Lactic Acid Bacteria for Industrial Chemical Production. *Trends Biotechnol*. 35:756-769.
- Bosma EF, Forster J, Nielsen AT. 2017. Lactobacilli and pediococci as versatile cell factories - Evaluation of strain properties and genetic tools. *Biotechnol Adv* 35:419-442.
- Song AA, In LLA, Lim SHE, Rahim RA. 2017. A review on *Lactococcus lactis*: from food to factory. *Microb Cell Fact* 16:55. Erratum in: *Microb Cell Fact*. 2017 16:139.
- Lee NK, Paik HD. 2017. Bioconversion Using Lactic Acid Bacteria: Ginsenosides, GABA, and Phenolic Compounds. *J Microbiol Biotechnol* 27:869-877.
- Brown L, Pingitore EV, Mozzi F, Saavedra L, Villegas JM, Hebert EM. 2017. Lactic Acid Bacteria as Cell Factories for the Generation of Bioactive Peptides. *Protein Pept Lett*. 24:146-155.

## **Unit 3. Interactions of probiotics with the host immune system**

### **Module 10. Immunomodulatory properties of probiotics: bacterial surface proteins**

- Hynönen U, Palva A. 2013. *Lactobacillus* surface layer proteins: structure, function and applications. *Appl Microbiol Biotechnol* 97:5225-43.

- Sánchez B, Bressollier P, Urdaci MC. 2008. Exported proteins in probiotic bacteria: adhesion to intestinal surfaces, host immunomodulation and molecular cross-talking with the host. *FEMS Immunol Med Microbiol* 54:1-17

### **Module 11. Immunomodulatory properties of probiotics: interactions with the immune system**

- O'Callaghan J, O'Toole PW. 2013. *Lactobacillus*: host-microbe relationships. *Curr Top Microbiol Immunol*. 358:119-54.
- Lebeer S, Vanderleyden J, De Keersmaecker SC. 2008. Genes and molecules of lactobacilli supporting probiotic action. *Microbiol Mol Biol Rev*. 72:728-64.
- Hevia A, Delgado S, Sánchez B, Margolles A. 2015. Molecular Players Involved in the Interaction Between Beneficial Bacteria and the Immune System. *Front Microbiol* 6:1285.
- Lebeer S, Vanderleyden J, De Keersmaecker SC. 2010. Host interactions of probiotic bacterial surface molecules: comparison with commensals and pathogens. *Nat Rev Microbiol*. 8:171-84.
- Tsai YT, Cheng PC, Pan TM. 2012. The immunomodulatory effects of lactic acid bacteria for improving immune functions and benefits. *Appl Microbiol Biotechnol*. 96:853-62.

### **Module 12. Engineering LAB and *Bifidobacterium* for mucosal delivery of health-associated molecules**

- Bosma EF, Forster J, Nielsen AT. 2017. Lactobacilli and pediococci as versatile cell factories - Evaluation of strain properties and genetic tools. *Biotechnol Adv*. 35:419-442.
- Song AA, In LLA, Lim SHE, Rahim RA. 2017. A review on *Lactococcus lactis*: from food to factory. *Microb Cell Fact*. 16:55. Erratum in: *Microb Cell Fact* 16:139.
- Bermúdez-Humarán LG, Aubry C, Motta JP, Deraison C, Steidler L, Vergnolle N, Chatel JM, Langella P. 2013. Engineering lactococci and lactobacilli for human health. *Curr Opin Microbiol* 16:278-83.

## Unit 4. Probiotics safety and efficacy

### **Module 13. FAO/WHO Guidelines on Probiotics**

- FAO/WHO. 2002. Guidelines for the evaluation of Probiotics in Food.

#### **Module 14. Safety considerations on probiotics**

- Salminen S, von Wright A, Morelli L, Marteau P, Brassart D, de Vos WM, Fondén R, Saxelin M, Collins K, Mogensen G, Birkeland SE, Mattila-Sandholm T. 1998. Demonstration of safety of probiotics -- a review. *Int J Food Microbiol* 44:93-106.
- Sanders ME, Akkermans LM, Haller D, Hammerman C, Heimbach J, Hörmannspurger G, Huys G, Levy DD, Lutgendorff F, Mack D, Phothirath P, Solano-Aguilar G, Vaughan E. 2010. Safety assessment of probiotics for human use. *Gut Microbes* 1:164-85.
- Vanderhoof JA, Young R. 2008. Probiotics in the United States. *Clin Infect Dis.* 46 Suppl 2:S67-72; discussion S144-51.

#### **Module 15. Environmental factors influencing the efficacy of probiotic bacteria**

- Marco ML, Tachon S. 2013. Environmental factors influencing the efficacy of probiotic bacteria. *Curr Opin Biotechnol.* 24:207-13.

#### **Module 16. Efficacy of probiotics in Human Subjects**

- Salminen S, Deighton MA, Benno Y, Gorbach SL. 1998. Lactic acid bacteria in health and disease. Ch 7. In *Lactic acid bacteria, Microbiology and Functional Aspects*. Salminen S and von Wright A, Editors. Marcel Dekker, Inc. New York. Basel.
- Vlasova AN, Kandasamy S, Chattha KS, Rajashekara G, Saif LJ. 2016. Comparison of probiotic lactobacilli and bifidobacteria effects, immune responses and rotavirus vaccines and infection in different host species. *Vet Immunol Immunopathol.* 172:72-84.
- McCollum DL, Martin Rodriguez J. 2012. Detection, Treatment, and Prevention of *Clostridium difficile* Infection. *Clinical Gastroenterology and Hepatology* 10: 581-592.
- Varankovich NV, Nickerson MT, Korber DR. 2015. Probiotic-based strategies for therapeutic and prophylactic use against multiple gastrointestinal diseases. *Front Microbiol* 6:685.
- NASPGHAN NUTRITION REPORT COMMITTEE. 2006. Clinical Practice Guideline Clinical Efficacy of Probiotics: Review of the Evidence With Focus on Children. *J Pediatr Gastroenterol Nutr* 43:550- 557.
- Bron PA, Kleerebezem M, Brummer RJ, Cani PD, Mercenier A, MacDonald TT, Garcia-Ródenas CL, Wells JM. 2017. Can probiotics modulate human disease by impacting intestinal barrier function? *Br J Nutr.* 117:93-107.

- Dimidi E, Christodoulides S, Fragkos KC, Scott SM, Whelan K. 2014. The effect of probiotics on functional constipation in adults: a systematic review and meta-analysis of randomized controlled trials. *Am J Clin Nutr.* 100:1075-84.
- Kim S, Lee H, Lee S, Lee J, Ha J, Choi Y, Yoon Y, Choi KH. 2017. Invited review: Microbe-mediated aflatoxin decontamination of dairy products and feeds. *J Dairy Sci.* 100:871-880.
- Azcárate-Peril MA, Sikes M, Bruno-Bárcena JM. 2011. The intestinal microbiota, gastrointestinal environment and colorectal cancer: a putative role for probiotics in prevention of colorectal cancer? *Am J Physiol Gastrointest Liver Physiol.* 301:G401-24.
- Czaja AJ. 2016. Factoring the intestinal microbiome into the pathogenesis of autoimmune hepatitis. *World J Gastroenterol.* 22:9257-9278.
- Mu Q, Kirby J, Reilly CM and Luo XM. 2017. Leaky Gut as a Danger Signal for Autoimmune Diseases. *Front. Immunol.* 8:598.
- Esmaeili SA, Mahmoudi M, Momtazi AA, Sahebkar A, Doulabi H, Rastin M. 2017. Tolerogenic probiotics: potential immunoregulators in Systemic Lupus Erythematosus. *J Cell Physiol.* 232:1994-2007.
- Gomes AC, Bueno AA, de Souza RG, Mota JF. 2014. Gut microbiota, probiotics and diabetes. *Nutr J.* 2014 13:60.
- Marinelli L, Tenore GC, Novellino E. 2017. Probiotic species in the modulation of the anticancer immune response. *Semin Cancer Biol.* 46:182-190.

## **Module 17. Probiotics in Animal Production and Health**

- Hossain MI, Sadekuzzaman M, Ha SD. 2017. Probiotics as potential alternative biocontrol agents in the agriculture and food industries: A review. *Food Res Int.* 100:63-73.
- Angelakis E. 2017. Weight gain by gut microbiota manipulation in productive animals. *Microb Pathog.* 106:162-170.
- Chaucheyras-Durand F, Durand H. Probiotics in animal nutrition and health. 2010. *Benef Microbes* 1:3-9.
- C De B, Meena DK, Behera BK, Das P, Das Mohapatra PK, Sharma AP. 2014. Probiotics in fish and shellfish culture: immunomodulatory and ecophysiological responses. *Fish Physiol Biochem.* 40:921-71.

## Unit 5. New frontiers in probiotic's development

### **Module 18. Overview on the microbiome**

- Workshop Slides - JCVI Blog - J. Craig Venter Institute
- Blottière HM, de Vos WM, Ehrlich, D, Doré J. 2013. Human intestinal metagenomics: state of the art and future. *Curr Opin Microbiol* 16: 232-239.
- Morgan XC, Huttenhower C. 2012. Chapter 12: Human microbiome analysis. *PLoS Comput Biol* 8:e1002808.
- Morgan XC, Huttenhower C. 2014. Meta'omic analytic techniques for studying the intestinal microbiome. *Gastroenterology* 146:1437-1448.
- Human Microbiome Project  
<https://commonfund.nih.gov/hmp/initiatives>

### **Module 19. Manipulation of the microbiome by probiotics**

- Tojo R, Suárez A, Clemente MG, de los Reyes-Gavilán CG, Margolles A, Gueimonde M, Ruas-Madiedo P. 2014. Intestinal microbiota in health and disease: role of bifidobacteria in gut homeostasis. *World J Gastroenterol* 20:15163-76.
- McFarland LV. 2014. Use of probiotics to correct dysbiosis of normal microbiota following disease or disruptive events: a systematic review. *BMJ Open* 4:e005047.
- Collado MC, Bäuerl C, Pérez-Martínez G. 2012. Defining microbiota for developing new probiotics. *Microb Ecol Health Dis.* 23.
- Walter J. 2008. Ecological role of lactobacilli in the gastrointestinal tract: implications for fundamental and biomedical research. *Appl Environ Microbiol* 74:4985-96.

### **Module 20. Microbiome research to identify new probiotic microorganisms**

- Neef A, Sanz Y. 2013. Future for probiotic science in functional food and dietary supplement development. *Curr Opin Clin Nutr Metab Care.* 16:679-87.
- El Hage R, Hernandez-Sanabria E, Van de Wiele T. 2017. Emerging Trends in "Smart Probiotics": Functional Consideration for the Development of Novel Health and Industrial Applications. *Front Microbiol* 8:1889.

- Miquel S, Martín R, Rossi O, Bermúdez-Humarán LG, Chatel JM, Sokol H, Thomas M, Wells JM, Langella P. 2013. *Faecalibacterium prausnitzii* and human intestinal health. *Curr Opin Microbiol.* 16:255-61.
- Cani PD and de Vos WM. 2017. Next-Generation Beneficial Microbes: The Case of *Akkermansia muciniphila*. *Front. Microbiol.* 8:1765.

## **Module 21. Fecal transplants as probiotics**

- Borody TJ, Paramsothy S., Agrawal G. 2013. Fecal Microbiota Transplantation: Indications, Methods, Evidence, and Future Directions. *Curr Gastroenterol Rep.* 15:337.

## **Module 22. Probiotics, prebiotics and symbiotics**

- Rastall RA, Gibson GR. 2015. Recent developments in prebiotics to selectively impact beneficial microbes and promote intestinal health. *Curr Opin Biotech* 32:42-46.
- Pandey KR, Naik SR, Vakil BV. 2015. Probiotics, prebiotics and synbiotics- a review. *J Food Sci Technol* 52: 7577–7587.
- Patel R, DuPont HL. 2015. New Approaches for Bacteriotherapy: Prebiotics, New-Generation Probiotics, and Synbiotics. *Clin Infect Dis* 60:S108–S121.
- Pineiro M, Asp N-G, Reid G, Macfarlane S, Morelli L, Brunser O, Tuohy K. 2008. FAO Technical Meeting on Prebiotics. *J Clin Gastroent* 42:S156-S159.
- Markowiak P, Slizewska K. 2017. Effects of Probiotics, Prebiotics, and Synbiotics on Human Health. *Nutrients* 9:1021

## **Module 23. Psychobiotics: manipulation of bacteria–gut–brain signals**

- Wasilewski A, Zielińska M, Storr M, Fichna J. 2015. Beneficial Effects of Probiotics, Prebiotics, Synbiotics, and Psychobiotics in Inflammatory Bowel Disease. *Inflamm Bowel Dis.* 21:1674-82.
- Liu X, Cao S, Zhang X. 2015. Modulation of Gut Microbiota-Brain Axis by Probiotics, Prebiotics, and Diet. *J Agric Food Chem.* 63:7885-95.
- Kim N, Yun M, Oh YJ, Choi HJ. 2018. Mind-altering with the gut: Modulation of the gut-brain axis with probiotics. *J Microbiol.* 56:172-182.
- Fung TC, Olson CA, Hsiao EY. 2017. Interactions between the microbiota, immune and nervous systems in health and disease. *Nature Neuroscience* 20:145–155.

- Powell N, Walker MM, Talley NJ. 2017. The mucosal immune system: master regulator of bidirectional gut–brain communications. *Nat Rev Gastroent Hepat* 14:143–159.
- Smith PA. 2015. The tantalizing links between gut microbes and the brain. *Nature News*. 14 October 2015.

## Cover Sheet: Request 12996

### PLS 3XXX C - Hydroponic Systems

#### Info

Process	Course New Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Gerardo Nunez Villegas g.nunez@ufl.edu
Created	9/5/2018 12:40:13 PM
Updated	9/5/2018 12:43:43 PM
Description of request	We request to create a new course titled PLS 3XXX C - Hydroponic Systems

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Horticultural Sciences 514923000	Christine Chase		9/5/2018
Syllabus PLS 3XXX C - Hydroponic systems - Final.pdf					9/5/2018
College	Pending	CALS - College of Agricultural and Life Sciences			9/5/2018
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 12996

### Info

**Request:** PLS 3XXX C - Hydroponic Systems

**Description of request:** We request to create a new course titled PLS 3XXX C - Hydroponic Systems

**Submitter:** Gerardo Nunez Villegas g.nunez@ufl.edu

**Created:** 9/5/2018 12:43:44 PM

**Form version:** 2

### Responses

**Recommended Prefix** PLS

**Course Level** 3

**Number** XXX

**Category of Instruction** Intermediate

**Lab Code** C

**Course Title** Hydroponic Systems

**Transcript Title** Hydroponic Systems

**Degree Type** Baccalaureate

**Delivery Method(s)** On-Campus, Online

**Co-Listing** No

**Co-Listing Explanation** Not applicable

**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** This course offers students foundational information and hands-on experience on hydroponic and soilless cultivation of horticultural crops. Production practices, growing systems, new technologies and current challenges are discussed.

**Prerequisites** HOS 3020C or PLS 3004C

**Co-requisites** None

**Rationale and Placement in Curriculum** Hydroponic systems are fundamental tools in horticulture.

This course leverages the strengths of faculty in two departments to train students in the principles and practices involved in using hydroponic systems. This course will be an approved elective for students in the Horticultural Sciences and Plant Science programs.

**Course Objectives** Upon successful completion of this course, students will be able to:

- Describe essential components of single-pass and recirculating hydroponic systems
- Compare different substrates and hydroponic system designs
- Interpret water quality analysis results and recommend corrections
- Create nutrient solutions using salts or mixed fertilizers
- Evaluate the importance of water quality, dissolved oxygen, salinity, and pH management for hydroponic production
- Select hydroponic systems for production of leafy greens, herbs, solanaceous crops, and woody ornamentals
- Apply solution chemistry knowledge and plant biology concepts to manage hydroponic systems

**Course Textbook(s) and/or Other Assigned Reading** There is no required textbook for this course. These two textbooks are valuable reference sources.

- Hydroponics for the Home Grower – Howard M. Resh ISBN 978-1-14822-3926-3

- How to hydroponics – Keith Roberto ISBN 0-96-72026-0-4

**Weekly Schedule of Topics** Week 1: Controlled Environment Agriculture and hydroponics: Past, present, and future; Advantages and disadvantages of hydroponics; Uses of hydroponic systems;

Hydroponic crops

Week 2: Basic production principles; Growing substrates; Growing systems; System components; Practicum: Assembling and operating NFT and DWC systems

Week 3: Alkalinity and pH; Alkalinity corrections using AlkCalc; Electrical conductivity, toxic elements, biological contaminants; Water sampling; Practicum: Assembling and operating ebb & flood and vertical systems

Week 4: Introduction to nutrient solutions; Fertilizers and labels; Mixing nutrient solutions; Practicum: Mixing a custom-made nutrient solution

Week 5: Fertilizer injectors and practical problems; Basic principles of organic nutrition; Organic hydroponics; Practicum: Assembling and operating aeroponics and fogponics systems

Week 6: Introduction to aquaponics; Aquaponic systems and components; Sanitation; Common errors with hydroponic production; Practicum: Cleaning and sanitizing hydroponics systems

**Links and Policies** Additional information on current UF grading policies for assigning grade points can be found here:

- Grading policy, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.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>

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:

<https://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.

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

Syllabus – Page 5

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/](http://www.counseling.ufl.edu/cwc/)

Counseling Services Groups and Workshops

Outreach and Consultation Self-Help Library

Wellness Coaching

Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.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 accommodation.

Disability Resource Center, 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://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>.

Student Complaints:

- Online Course: <http://www.distance.ufl.edu/student-complaint-process>

#### **Grading Scheme** 1) Weekly quizzes (250 points)

Each quiz will be worth 50 points, and there will be 5 quizzes during the semester. Each quiz will be timed to 30 minutes, and it can only be taken once. Each quiz will consist of eight multiple-choice questions, as well as two essay-style questions. Students can refer to personal notes, websites, or any reference materials to complete the quiz. However, each student must work individually. Make up quizzes will be provided in accordance with the policy described below.

#### 2) Weekly discussion (250 points)

Hydroponic and soilless growth systems are buzzworthy these days. During weeks 1-5, the instructors will post an article from popular media that highlights an advantage, challenge, or opportunity faced by the industry. Students will write a 150-word reaction piece (by Wednesday each week), and comment on two reaction pieces from classmates (by Sunday each week). Both the reaction piece and the comment are to be submitted in the Discussions tab in canvas.

Participation in the discussion will be graded on a weekly basis using the following rubrics:

Reaction piece grading criteria to be scored out of 5 points:

- The reaction piece reflects that the student read and understood the assigned article.
- The reaction piece has a clear purpose: inform, persuade, or raise an interesting question.
- The reaction piece was written following the instructions (minimum word requirement).
- The reaction piece is engaging and moves the conversation forward.
- The reaction piece is written using professional grammar, punctuation, and vocabulary.

Peer comments grading criteria to be scored out of 5 points:

- Comments are substantive and reflect that the student read and understood classmates' reaction pieces.
- Comments are engaging and move the conversation forward.
- Comments indicate agreement with a classmate's post or offer an alternative viewpoint
- Comments address classmates and instructors in a respectful, professional manner.
- Comments are written using professional grammar, punctuation, and vocabulary.

#### 3) Nutrient solution formulation exercise (150 points)

The calculations necessary to mix a nutrient solution are critical for hydroponic production. This take-home exercise will test your quantitative skills to formulate a nutrient solution. The assignment will be posted on July 23rd and it is due on July 29th at 11:59PM. You can refer to personal notes, websites, or any reference materials, but you must work individually. You must show all calculations either through a scanned document or a spreadsheet. If your calculations are carried out by hand, please write as legibly as possible.

#### 4) Hydroponic systems practicum (150 points)

This course includes five hands-on practical activities where students get to assemble, operate, disassemble, and sanitize hydroponic systems. Each week, there will be assigned reading materials that must be completed before the lab session. We will meet in Fifield 2316 to receive instructions and carry out demonstrations for the practicum. Then, the class moves to greenhouse 441 east in the Horticultural Sciences Teaching Garden, where the practical activities will happen. We will work in teams of 3 students. Participation in the practical activities will be evaluated by your peers and the instructor after each activity using the following rubric. Peer evaluation scores from each activity will be averaged and added to the instructor score. The sum of scores in all activities will be your total score for the practicum.

Performance criteria to be scored out of 5 points:

- The student is able to identify and describe necessary basic concepts for completion of the project.
- The student contributed to completing the task according to the instructions.
- The student is responsible for an element of the team's success.

#### 5) Final exam (200 points)

The final exam will be a take-home comprehensive test. Students will be presented with a hydroponic production scenario and asked to select among available technologies, strategies, and tradeoffs. The final exam will be posted on August 6th and it is due on August 10th at 11:59PM. The final exam can be submitted as a .doc or .pdf file in Canvas. Students can use reference materials (class slides, textbooks, etc.), but they must work individually and cite their sources as appropriate.

Grading scale

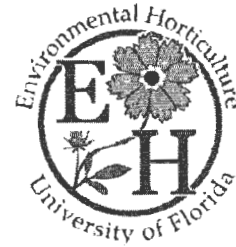
895-1000 A  
865-<895 B+  
795-<865 B  
765-<795 C+  
695-<765 C  
665-<695 D+  
595-<665 D  
<595 E

**Instructor(s)** Gerardo Nunez (Horticultural Sciences)  
Celina Gomez (Environmental Horticulture)



## **PLS 3XXX C: HYDROPONIC SYSTEMS**

3 credits  
Summer B



### **MEETING TIMES AND LOCATION**

Lecture: Online asynchronous  
Practicum: Wednesday 2<sup>nd</sup>-3<sup>rd</sup> period  
Fifield Hall room 2316 and Horticultural Sciences Teaching Garden

### **INSTRUCTORS**

Dr. Gerardo Nunez g.nunez@ufl.edu  
Horticultural Sciences Dept. 1113 Fifield Hall  
Office hours Wednesdays 1:00pm to 3:00PM

Dr. Celina Gómez cgomezv@ufl.edu  
Environmental Horticulture Dept. 2543 Fifield Hall  
Office hours: Wednesdays 1:00pm to 3:00PM

**PRE-REQUISITES** HOS 3020C or PLS 3004C

### **COURSE DESCRIPTION**

This course offers students foundational information and hands-on experience on hydroponic and soilless cultivation of horticultural crops. Production practices, growing systems, new technologies and current challenges are discussed.

### **COURSE FORMAT**

This course is taught through asynchronous online lectures delivered through Canvas and a hands-on practicum. Lectures, learning materials, and assessments go “live” every Monday at 9:00 AM. Most assignments in this course are due at 11:59 PM on Sundays. Assignments are due every week of the semester.

### **LEARNING OBJECTIVES**

Upon successful completion of this course, students will be able to:

- Describe essential components of single-pass and recirculating hydroponic systems
- Compare different substrates and hydroponic system designs
- Interpret water quality analysis results and recommend corrections
- Create nutrient solutions using salts or mixed fertilizers
- Evaluate the importance of water quality, dissolved oxygen, salinity, and pH management for hydroponic production
- Select hydroponic systems for production of leafy greens, herbs, solanaceous crops, and woody ornamentals
- Apply solution chemistry knowledge and plant biology concepts to manage hydroponic systems

## COURSE MATERIALS

There is no required textbook for this course. These two textbooks are valuable reference sources.

- Hydroponics for the Home Grower – Howard M. Resh ISBN 978-1-14822-3926-3
- How to hydroponics – Keith Roberto ISBN 0-96-72026-0-4

Digital copies of this syllabus, as well as handouts, videos, and other instructive materials will be delivered via canvas. Maps to all locations relevant to the course will also be available here.

- *E-Learning in Canvas*, [www.elearning.ufl.edu](http://www.elearning.ufl.edu)

This is a summer course in Florida. Sun protection and hydration should be your personal priorities. More information on sun protection can be found here.

- *Summer Sun Safety – Moffit Cancer Center*, <https://moffitt.org/take-charge/take-charge-story-archive/summer-sun-safety-month-learn-to-protect-yourself-year-round/>

## COURSE GRADE

### 1. Weekly quizzes

250 points

Each quiz will be worth 50 points, and there will be 5 quizzes during the semester. Each quiz will be timed to 30 minutes, and it can only be taken once. Each quiz will consist of eight multiple-choice questions, as well as two essay-style questions. Students can refer to personal notes, websites, or any reference materials to complete the quiz. However, each student must work individually. Make up quizzes will be provided in accordance with the policy described below.

### 2. Weekly discussion

250 points

Hydroponic and soilless growth systems are buzzworthy these days. During weeks 1-5, the instructors will post an article from popular media that highlights an advantage, challenge, or opportunity faced by the industry. Students will write a 150-word reaction piece (by Wednesday each week), and comment on two reaction pieces from classmates (by Sunday each week). Both the reaction piece and the comment are to be submitted in the Discussions tab in canvas.

Participation in the discussion will be graded on a weekly basis using the following rubrics:

Reaction piece	Strongly disagree	Neither agree or disagree	Strongly agree
	Possible points		
	1-2	3	4-5
The reaction piece reflects that the student read and understood the assigned article.			
The reaction piece has a clear purpose: inform, persuade, or raise an interesting question.			
The reaction piece was written following the instructions (minimum word requirement).			
The reaction piece is engaging and moves the conversation forward.			
The reaction piece is written using professional grammar, punctuation, and vocabulary.			

Peer comments	Strongly disagree	Neither agree or disagree	Strongly agree
	Possible points		
	1-2	3	4-5
Comments are substantive and reflect that the student read and understood classmates' reaction pieces.			
Comments are engaging and move the conversation forward.			
Comments indicate agreement with a classmate's post or offer an alternative viewpoint			
Comments address classmates and instructors in a respectful, professional manner.			
Comments are written using professional grammar, punctuation, and vocabulary.			

### 3. Nutrient solution formulation exercise

150 points

The calculations necessary to mix a nutrient solution are critical for hydroponic production. This take-home exercise will test your quantitative skills to formulate a nutrient solution. The assignment will be posted on July 23<sup>rd</sup> and it is due on July 29<sup>th</sup> at 11:59PM. You can refer to personal notes, websites, or any reference materials, but you must work individually. You must show all calculations either through a scanned document or a spreadsheet. If your calculations are carried out by hand, please write as legibly as possible.

### 4. Hydroponic systems practicum

150 points

This course includes five hands-on practical activities where students get to assemble, operate, disassemble, and sanitize hydroponic systems. Each week, there will be assigned reading materials that must be completed before the lab session. We will meet in Fifield 2316 to receive instructions and carry out demonstrations for the practicum. Then, the class moves to greenhouse 441 east in the Horticultural Sciences Teaching Garden, where the practical activities will happen. We will work in teams of 3 students. Participation in the practical activities will be evaluated by your peers and the instructor after each activity using the following rubric. Peer evaluation scores from each activity will be averaged and added to the instructor score. The sum of scores in all activities will be your total score for the practicum.

Performance criteria	Strongly disagree	Neither agree or disagree	Strongly agree
	Possible points		
	1-2	3	4-5
<b>Background:</b> The student is able to identify and describe necessary basic concepts for completion of the project.			
<b>Task completion:</b> The student contributed to completing the task according to the instructions.			
<b>Team work:</b> The student is responsible for an element of the team's success.			

### 5. Final exam

200 points

The final exam will be a take-home comprehensive test. Students will be presented with a hydroponic production scenario and asked to select among available technologies, strategies, and tradeoffs. The final exam will be posted on August 6<sup>th</sup> and it is due on August 10<sup>th</sup> at 11:59PM. The final exam can be submitted as a .doc or .pdf file in Canvas. Students can use reference materials (class slides, textbooks, etc.), but they must work individually and cite their sources as appropriate.

### Grading scale

895-1000	A	695-<765	C
865-<895	B+	665-<695	D+
795-<865	B	595-<665	D
765-<795	C+	<595	E

Additional information on current UF grading policies for assigning grade points can be found here:

- Grading policy, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.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>

**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: <https://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.

**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/](http://www.counseling.ufl.edu/cwc/)***

Counseling Services  
Outreach and Consultation  
Wellness Coaching

Groups and Workshops  
Self-Help Library

***Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.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 accommodation.

***Disability Resource Center, 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://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>.

**Student Complaints:**

- Online Course: <http://www.distance.ufl.edu/student-complaint-process>

## HYDROPONIC SYSTEMS

Summer B

Date	Topic	Instructor
Week 1	Controlled Environment Agriculture and hydroponics: Past, present, and future	Celina Gómez
	Advantages and disadvantages of hydroponics	
	Uses of hydroponic systems	
	Hydroponic crops	
Week 2	Basic production principles	Celina Gómez
	Growing substrates	
	Growing systems	
	System components	
	<i>Practicum: Assembling and operating NFT and DWC systems</i>	
Week 3	Alkalinity and pH	Gerardo Nunez
	Alkalinity corrections using AlkCalc	
	Electrical conductivity, toxic elements, biological contaminants	
	Water sampling	
	<i>Practicum: Assembling and operating ebb &amp; flood and vertical systems</i>	
Week 4	Introduction to nutrient solutions	Gerardo Nunez
	Fertilizers and labels	
	Mixing nutrient solutions – part 1	
	Mixing nutrient solutions – part 2	
	<i>Practicum: Mixing a custom-made nutrient solution</i>	
Week 5	Fertilizer injectors	Gerardo Nunez
	Practical problems with fertilizer injectors	
	Basic principles of organic nutrition	
	Organic hydroponics	
	<i>Practicum: Assembling and operating aeroponics and fogponics systems</i>	
Week 6	Introduction to aquaponics	Celina Gómez
	Aquaponic systems and components	
	Sanitation	
	Common errors with hydroponic production	
	<i>Practicum: Cleaning and sanitizing hydroponics systems</i>	

## Cover Sheet: Request 12995

### HOS 3020C – Principles of Horticultural Crop Production

#### Info

Process	Course Modify Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Gerardo Nunez Villegas g.nunez@ufl.edu
Created	9/5/2018 11:52:11 AM
Updated	9/5/2018 12:25:58 PM
Description of request	We request to change HOS3020 from 3 to 4 credit hours, and from L code to C code.

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Horticultural Sciences 514923000	Christine Chase		9/5/2018
Syllabus HOS 3020C - Principles of Horticultural Crop Production - Final.pdf					9/5/2018
College	Pending	CALS - College of Agricultural and Life Sciences			9/5/2018
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|Modify for request 12995

### Info

**Request:** HOS 3020C – Principles of Horticultural Crop Production

**Description of request:** We request to change HOS3020 from 3 to 4 credit hours, and from L code to C code.

**Submitter:** Gerardo Nunez Villegas g.nunez@ufl.edu

**Created:** 9/5/2018 1:07:05 PM

**Form version:** 3

### Responses

**Current Prefix** HOS

**Course Level** 3

**Number** 020

**Lab Code** None

**Course Title** Principles of Horticulture Crop Production

**Effective Term** Earliest Available

**Effective Year** Earliest Available

**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?** Yes

**Current Lab Code** None

**Proposed Lab Code** C

**Change Course Title?** Yes

**Current Course Title** Principles of Horticulture Crop Production

**Proposed Course Title** Principles of Horticultural Crop Production

**Change Transcript Title?** No

**Change Credit Hours?** Yes

**Current Credit Hours** 3

**Proposed Credit Hours** 4

**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?** Yes

**Current Course Description** Provides a basic understanding of the world fruit and vegetable industry. Emphasizes world, U.S. and Florida production regions, biology, soils, nutrition, terminology, types of fruits and vegetables, site selection and more.

**Proposed Course Description (50 words max)** This course introduces students to concepts and practices used to produce fruit and vegetable crops in Florida, the U.S., and globally. Topics covered

include production regions, crop biology, crop nutrition and types of fruits and vegetables, disease and pest management, and marketing. This course includes a hands-on practicum.

**Change Prerequisites?** Yes

**Current Prerequisites** None

**Proposed Prerequisites** Junior standing

**Change Co-requisites?** No

**Rationale** We propose to change HOS3020 from 3 to 4 credit hours, and from L code to C code. This change reflects instructor and program interest in increasing and enhancing experiential learning activities in the course. Additionally, student evaluations for this course have consistently called for more hands-on activities in the teaching garden.



## **HOS 3020C – Principles of Horticultural Crop Production**

4 CREDITS

### **MEETING TIMES AND LOCATION**

Mondays and Wednesdays

9:35 AM to 10:25 AM

Fridays

9:35 AM to 11:30 AM

Fifield Hall 2316 and Horticultural Sciences Teaching Garden

### **INSTRUCTORS**

Dr. Xin Zhao

1235 Fifield Hall  
352-273-4773  
[zxin@ufl.edu](mailto:zxin@ufl.edu)  
MW 2:00PM – 2:50PM

Dr. Gerardo Nunez

1113 Fifield Hall  
352-273-4765  
[g.nunez@ufl.edu](mailto:g.nunez@ufl.edu)  
T 2:00pm – 4:00PM

### **PRE-REQUISITES**

Junior standing

### **COURSE DESCRIPTION**

This course introduces students to concepts and practices used to produce fruit and vegetable crops in Florida, the U.S., and globally. Topics covered include production regions, crop biology, crop nutrition and types of fruits and vegetables, disease and pest management, and marketing. This course includes a hands-on practicum.

### **LEARNING OBJECTIVES**

Upon successful completion of this course, students will be able to:

- Discuss growth and development patterns for fruit and vegetable species.
- Explain production conditions and practices for fruit and vegetable crops and compare the various cultural systems.
- Develop management plans for soil fertility, irrigation, and pest control in fruit and vegetable production.
- Critically analyze data from the fruit and vegetable industries at the regional, national, and global levels.
- Discuss and evaluate different marketing strategies for fruit and vegetable crops.

- Apply irrigation, fertilization, pruning, transplanting, and harvesting techniques in fruit and vegetable production.

## COURSE MATERIALS

### Textbooks

There is not a required textbook for this course. Lectures will be presented in PowerPoint available on the course website. The following textbooks are optional reference materials. They are placed on *Course Reserve* at Marston Science Library:

- John M. Swiader and George W. Ware. 2002. Producing vegetable crops. Fifth edition. Interstate Publishers, Inc. ISBN-10: 0813432030
- Vincent E. Rubatzky and Mas Yamaguchi. 2012. World vegetables: Principles, production and nutritive values. Second edition. Springer. ISBN: 9781461560159
- Donald N. Maynard and George J. Hochmuth. 2007. Knott's handbook for vegetable growers. Fifth edition. John Wiley & Sons, Inc. ISBN-10: 047173828X
- D. Jackson, N. Looney, M. Morley-Bunker and G. Thiele. 2011. Temperate and Subtropical Fruit Production. CABI International. ISBN: 9781845935016

## COURSE GRADE

### 1. Exams

**400 points**

There will be four non-cumulative exams in the semester, two in the vegetables section and two in the fruits section. Exams 1-3 will take place during scheduled class periods. Exam 4 will take place during finals week. All exams will take 50 minutes. Each exam will be graded out of 100 points.

### 2. Quizzes

**80 points**

There will be eight online quizzes in the semester, four in the vegetables section and four in the fruits section. Each quiz will be timed to 10 minutes and can only be taken once. Students can refer to personal notes, slideshows, and other reference materials, but they must work individually. Each quiz will be graded out of 10 points.

### 3. Class Participation

**50 points**

At the beginning of every class, students will be chosen at random and asked to provide a 2-minute verbal summary of the previous lecture. Additionally, throughout the course there will be opportunities for students to ask or answer questions. Class interaction and class summaries will be graded out of 25 points according to the rubrics below. The sum of your class summary and class interaction scores will be used as your participation grade.

Participation frequency	Score
Never	5
Rarely	10
Sometimes	15
Often	20
Always	25

Participation quality	Score
Poor	5
Fair	10
Good	15
Very good	20
Excellent	25

#### 4. Horticultural Production Practicum

**150 points**

Hands-on application of the concepts covered in lecture will focus on the design and maintenance of fruits and vegetable production plots in the Horticultural Sciences Teaching Garden. Students will work in teams of 6 to grow fruits and vegetables for the duration of the semester. Your contribution to your team's plot will be evaluated every two weeks based on your performance acceptability and reflective essays. Performance acceptability points (maximum 10 points) will be allocated by the instructor according to the rubric below.

Level of performance acceptability	Score
Unacceptable	2
Slightly unacceptable	4
Neutral	6
Slightly acceptable	8
Acceptable	10

Reflective essays (maximum 10 points) will be short (200 words), well-written pieces that summarize the lessons learned in each activity. Reflective essays are due on canvas at 11:59PM on Sundays starting on week 3 of the semester. Ten additional points will be earned by preparing and delivering a short presentation (2 minutes, one visual aid) for the fall open house scheduled for week 14 of the semester. Additional guidelines for the presentation will be provided in class.

#### 5. E-portfolio

**Not graded**

Reflective essays are a good way to document your professional skills as a horticulturist. Students are encouraged to improve their reflective essays based on instructor feedback. Then, students are encouraged to deposit their fruit and vegetable production plan, season extension plan, and fruit tree grafting reports in an electronic portfolio. E-portfolios can be created using wordpress.com or wix.com. A tutorial on how to create a professional e-portfolio will be conducted in class. All students are encouraged to create an e-portfolio. Horticultural Sciences students must submit a link to their e-portfolio in the Canvas site for the major. Horticultural Sciences students will update and enhance this e-portfolio throughout their program of study.

All points earned in the course will be summed to calculate your final grade. Letter grades will be based on the performance of each student relative to the following standard percentages (%):

100-93	A	> 76.9 - 73	C
>92.9 - 90	A-	> 72.9 - 70	C-
> 89.9 - 87	B+	> 69.9 - 67	D+
> 86.9 - 83	B	> 66.9 - 63	D
> 82.9 - 80	B-	> 62.9 - 60	D-
> 79.0 - 77	C+	<60	E

Additional information on current UF grading policies for assigning grade points can be found here:

- *Grading policy*, [www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

## **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*, [www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](http://www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx)

### Technical Difficulties

If you are experiencing technical difficulties with Canvas, you should immediately contact the UF Help Desk. This will generate a ticket number, which documents the date and time of your technical difficulty. Any requests to make-up late work due to technical difficulties must be accompanied by this ticket number.

- *UF Help Desk*, HUB 132, (352) - 392 - 4357, [www.lss.at.ufl.edu/help.shtml](http://www.lss.at.ufl.edu/help.shtml)

### 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 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/](http://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](http://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](http://www.umatter.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 Resource Center*, CR-100 Reitz Union, 392-1601, [www.crc.ufl.edu/next-level](http://www.crc.ufl.edu/next-level)

### 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](http://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](http://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*, [www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](http://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

### HOS 3020C – Principles of Horticultural Crop Production

Date	Topics and assessments due
Week 1	Introduction and Course Requirements
Week 2	Fruit and vegetable industry in Florida, the U.S., and globally
Week 3	Classifying vegetables; Quality attributes
Week 4	Vegetable growing conditions and patterns; Plasticulture <i>Exam #1</i>
Week 5	Field planting and transplanting; Vegetable grafting lab
Week 6	Soil management and fertilization
Week 7	Fertilizer calculations; Drip irrigation
Week 8	Organic crop production ; Season extension
Week 9	Vegetable marketing; Technological innovations <i>Exam #2</i>
Week 10	Climate effects on fruit production; Protected agriculture
Week 11	Fruit crop propagation; Citrus grafting lab
Week 12	Juvenility ; Flower bud initiation <i>Exam #3</i>
Week 13	Dormancy; Cold acclimation
Week 14	Groove, orchard, and vineyard design <i>Fall Open House</i>
Week 15	Mechanization; Plant breeding
Final exams week	<i>Exam #4</i>

## Cover Sheet: Request 12959

### Wildlife Forensic Sciences and Conservation

#### Info

Process	Certificate Close/Modify Grad Revised
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Jason Byrd jhbyrd@ufl.edu
Created	8/23/2018 10:13:24 AM
Updated	9/6/2018 12:47:19 PM
Description of request	Wildlife Forensic Sciences and Conservation graduate certificate change from 9 hours to 15 hours.

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Wildlife Ecology and Conservation 514947000	Eric Hellgren	Increasing certificate requirement from 9 to 15 credit hours.	9/6/2018
No document changes					
College	Pending	CALS - College of Agricultural and Life Sciences			9/8/2018
No document changes					
Graduate Council					
No document changes					
Graduate School Notified					
No document changes					
University Curriculum Committee Notified					
No document changes					
Office of the Registrar					
No document changes					
OIPR Notified					
No document changes					
Academic Assessment Committee Notified					
No document changes					
Student Academic Support System					
No document changes					
College Notified					
No document changes					

## Certificate|Close-Modify for request 12959

### Info

**Request:** Wildlife Forensic Sciences and Conservation

**Description of request:** Wildlife Forensic Sciences and Conservation graduate certificate change from 9 hours to 15 hours.

**Submitter:** Jason Byrd jhbyrd@ufl.edu

**Created:** 8/23/2018 9:58:09 AM

**Form version:** 1

### Responses

**Current Certificate Name** Wildlife Forensic Sciences and Conservation

**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** Wildlife Forensic Sciences and Conservation

**Change Certificate Name on Transcript?** No

**Current Transcript Name** Wildlife Forensic Sciences and Conservation

**Proposed Transcript Name (21 char. max)** Wildlife Forensic Sci

**Change Credit Hours?** Yes

**Current Credit Hours** 9

**Proposed Credit Hours** more than 12 (please detail in description how many credits)

**Change Certificate Description?** No

**Current Certificate Description** Provides a graduate education from an accredited institution in the application of the forensic sciences and medicine to the field of wildlife conservation. The establishment of graduate education will improve the current level of investigation performed in crimes against wildlife and illegal take of protected species.

**Proposed Certificate Description (50 word max)** Provides a graduate education from an accredited institution in the application of the forensic sciences and medicine to the field of wildlife conservation. The establishment of graduate education will improve the current level of investigation performed in crimes against wildlife and illegal take of protected species.

**Change Certificate Prerequisites?** No

**Current Prerequisites** None

**Proposed Prerequisites** None

**Change Certificate Requirements?** Yes

**Current Requirements** WIS 6548- Wildlife Crime Scene Processing. Letter grade - 3 credits

WIS 6559- Contemporary Issues in Animal Protection. Letter grade - 3 credits

WIS 6557- Wildlife Conservation Laws and Legislation. Letter grade - 3 credits

**Proposed Requirements** WIS 6548- Wildlife Crime Scene Processing. Letter grade - 3 credits

WIS 6559- Contemporary Issues in Animal Protection. Letter grade - 3 credits

WIS XXX - U.S. Wildlife Law, Policy and Ethics

OR

WIS 6557 International Wildlife Conservation Law, Policy and Ethics

AND

SUR 6934 GIS Fundamentals

OR

STA 6093 Introduction to Applied Statistics fro Agriculture and Life Sciences

AND

WIS 6576 Human-Wildlife Conflict

OR

WIS 5562 Conservation Medicine

**Impact on Program** None anticipated.

**Rationale for Proposed Change(s)** Expansion of the certificate from 9 to 15 credit hours will provide a more broad-based education on the topic of wildlife forensic sciences and conservation.

**Assessment Data Review** The program goal was to provide students with access to either SUR 6934 GIS Fundamentals

OR STA 6093 Introduction to Applied Statistics for Agriculture and Life Science and to allow those courses to be taken as a certificate course and not limited to students in the new MS concentration.

**Academic Assessment Plan Changes** There are no modifications to the current assessment plan for the certificate.

## Cover Sheet: Request 12972

### Terminating Personal and Financial Planning undergraduate certificate

#### Info

Process	Certificate Close/Modify Ugrad/Pro
Status	Pending at CALS - College of Agricultural and Life Sciences
Submitter	Kathryn Ivey kbeaty@ufl.edu
Created	8/29/2018 2:44:02 PM
Updated	9/5/2018 9:42:12 AM
Description of request	Due to lack of undergraduate interest in obtaining the certificate and lack of faculty FTE in this field, we are requesting to terminate this Undergraduate certificate.

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Family, Youth and Community Sciences 514932000	Tracy Irani		9/5/2018
No document changes					
College	Pending	CALS - College of Agricultural and Life Sciences			9/5/2018
No document changes					
Associate Provost for Undergraduate Affairs					
No document changes					
University Curriculum Committee					
No document changes					
Office of the Registrar					
No document changes					
OIPR Notified					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
Academic Assessment Committee					
Notified					
No document changes					
College Notified					
No document changes					

## Certificate|Close-Modify for request 12972

### Info

**Request:** Terminating Personal and Financial Planning undergraduate certificate

**Description of request:** Due to lack of undergraduate interest in obtaining the certificate and lack of faculty FTE in this field, we are requesting to terminate this Undergraduate certificate.

**Submitter:** Kathryn Ivey kbeaty@ufl.edu

**Created:** 8/28/2018 12:36:40 PM

**Form version:** 1

### Responses

**Current Certificate Name** Personal and Family Financial Planning

**Effective Term** Earliest Available

**Effective Year** Earliest Available

**Requested Action** Terminate Certificate

**Change Certificate Name?** No

**Proposed Certificate Name** N/A

**Change Certificate Name on Transcript?** No

**Current Transcript Name** N/A

**Proposed Transcript Name (21 char. max)** N/A

**Change Credit Hours?** No

**Current Credit Hours** more than 12 (please detail in description how many credits)

**Proposed Credit Hours** more than 12 (please detail in description how many credits)

**Change Certificate Description?** No

**Current Certificate Description** This certificate creates a foundation in personal and family financial planning and addresses the Certified Financial Planner™ (CFP) Board of Standards education requirement for the certification examination, including insurance, personal investing, retirement planning, tax planning, behavioral finance and financial planning practice management. Students can sit for the exam upon completion of the certificate.

**Proposed Certificate Description (50 word max)** N/A

**Change Certificate Prerequisites?** No

**Current Prerequisites** With an overall minimum 2.5 GPA

Course List

Code Title

Credits

ACG 2021 Introduction to Financial Accounting

4

Select one:

AEB 2014 Economic Issues, Food and You

3

ECO 2013 Principles of Macroeconomics

4

ECO 2023 Principles of Microeconomics

4

STA 2023 Introduction to Statistics 3

**Proposed Prerequisites** N/A

**Change Certificate Requirements?** No

**Current Requirements** FYC 4003 Personal & Family Financial Counseling 3

FYC 4004 Personal & Family Tax Planning

3

FYC 4007

3  
FYC 4102      Personal & Family Retirement & Est Plan

3  
FYC 4905      Individual Study in FYCS

3  
FYC 4930      Personal & Family Financial Plan Cap

3

Total Credits    18

**Proposed Requirements** N/A

**Impact on Program** No students enrolled in required courses since 2012

**Rationale for Proposed Change(s)** The department no longer has the faculty in the department to sustain the certificate.

**Assessment Data Review** No students enrolled in required certificate courses other than FYC4003 which serves as an elective for our undergraduate majors. The others are not offered due to lack of faculty to support them. The prerequisite courses are also considered Universal/Critical Tracking for the major.

**Academic Assessment Plan Changes** N/A