

# CONSEQUENCES OF BIOLOGICAL INVASIONS (ALS 4162) & TOPICS IN BIOLOGICAL INVASIONS (ALS 6935)

ALS 4162/6935

3 CREDITS

SPRING/2020

“We must make no mistake: we are seeing one of the great historical convulsions in the world’s fauna and flora . . . Charles Elton, 1958

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**OFFICE HOURS:** Tuesday, and Thursday 8:30am-9:30am or by appointment

**COURSE TA OR COORDINATOR:** Ariane McCorquodale or TBN  
Email: [amccorquodale@ufl.edu](mailto:amccorquodale@ufl.edu)

**COURSE WEBSITE:** <https://ufl.instructure.com/>

## **COURSE COMMUNICATIONS:**

Please ask any questions and set up appointments through the CANVAS course management system

## REQUIRED TEXT:

Biological Invasions: Economic and Environmental Costs of Alien Plant, Animal and Microbe Species, David Pimentel (ed.), 2002, ISBN# 0-8493-0836-4, CRC Press. This book can be purchased at the UF bookstore, or through various online vendors. eBook also available at

<http://site.ebrary.com/lib/univflorida/docDetail.action?docID=10143770>

Biological Invasions: Economic and Environmental Costs of Alien Plant, Animal and Microbe Species, 2<sup>nd</sup> Edition. David Pimentel (ed.), 2011, ISBN# 978-1-4398-2990-5, CRC Press. This book can be purchased at the UF bookstore, through various online vendors, or is available as an eBook at

<http://site.ebrary.com/lib/univflorida/docDetail.action?docID=10473079>

(Note: In order to access the free ebooks of David Pimentel's two editions of Biological Invasions, students need to be on VPN, VDI, or using a UF computer. See below.)

Go to <https://vpn.ufl.edu/+CSCOE+/logon.html> and login OR

Go to <https://vdi.ifas.ufl.edu/portal/webclient/index.html#/>

Invasive & Introduced Plants & Animals: Human Perceptions, Attitudes and Approaches to Management. Ian D. Rotherham & Robert A Lambert (eds.), 2011, ISBN# 978-1-84971-071-8, Earthscan Ltd, London. This book can be purchased at the UF bookstore, through various online vendors, or is available as an eBook at <http://lib.mylibrary.com/ProductDetail.aspx?id=419980>

## ADDITIONAL RESOURCES:

- 1) <https://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Our-Forests/Forest-Health/Invasive-Non-Native-Plants/Invasive-Non-native-Plant-Links>
- 2) <http://edis.ifas.ufl.edu/>
- 3) <http://www.invasive.org/>
- 4) <http://www.fleppc.org/index.cfm>
- 5) <http://tncinvasives.ucdavis.edu/>
- 6) <http://www.iucngisd.org/gisd/>
- 7) <http://www.invasivespeciesinfo.gov/>

## **COURSE DESCRIPTION:**

This course provides an overview of non-native species invasions and the environmental effects of these invaders. Students will acquire a working knowledge of important global invaders and develop critical thinking skills for assessing the consequences of biological invasions. This course is oriented toward students majoring in Environmental Management or related disciplines.

## **PREREQUISITE KNOWLEDGE AND SKILLS:**

- 1) Integrated Principles of Biology 1 and Laboratory (BSC 2010 and 2010L) or equivalent.
- 2) Integrated Principles of Biology 2 and Laboratory (BSC 2011 and 2011L) or equivalent.

## **PURPOSE OF COURSE:**

“The invasion of nonnative species into new ecosystems is accelerating as the world’s human population multiplies and goods are transported ever more rapidly on an increasing global scale. The impact of invasive species is second only to that of human population growth and associated activities as a cause of the loss of biodiversity throughout the world” (Pimentel (2011). In this course, a number of important invasive species representing a range of taxa will be examined from a global perspective.

## **COURSE GOALS AND/OR OBJECTIVES:**

The course goal is to instill an appreciation for the global economic costs and environmental impacts of biological invasions;

By the end of the course, students will be able to:

- describe the principles and basic practices of pest exclusion, eradication, and management tactics for biological invaders from six continents;
- Assimilate information on biological invaders and identify general trends from case study examples.

## **TEACHING PHILOSOPHY:**

I have always tried to motivate/inspire my students to further their knowledge and provide them an intellectual roadmap for pursuing their professional goals. For instance, I am very passionate about the discipline of biological control, and several years ago I coined the phrase “BioControl Fever. Catch It!” that was based on an ad campaign for Major League Baseball. I try to cultivate this same enthusiasm, or “fever”

for biological control in my students. My current mentoring philosophy focuses on guiding students to increase their knowledge and application of entomology, invasive species, and gaining an appreciation for the foundational role that biological control plays in integrated pest management. The success (or failure) of the next generation of scientists to apply sustainable practices like biological control for solving the global agricultural and environmental problems that we create is clearly our responsibility as mentors.

As a mentor of undergraduate students, I strive to present relevant information in an organized and logical manner so that students are engaged, understand the concepts, and can apply their new knowledge in practical ways. I create a positive atmosphere by being approachable, flexible, and capable of learning from my students. Finally, I try to create a positive nurturing environment that reflects this philosophy so that my undergraduate students can learn, grow, and excel.

## COURSE POLICIES:

**ATTENDANCE POLICY:** This is an online or distance education course. Lectures will be recorded and available to students throughout the semester.

### **ASSIGNMENT/QUIZ/EXAM POLICY:**

#### **Discussion Questions:**

All students are required to respond to the prompts provided for the weekly discussions. Students must cite the source for the facts they use to support their reasoning- there must be at least one citation or link to a source outside class modules or notes. These postings could be opinion, but they must be educated opinions. Students are also required to respond to at least one of the posts made by other students in the course for each discussion.

#### **Quizzes**

There will be a weekly quiz in addition to the weekly discussions- 5 questions, multiple choice.

#### **Exams - Exams will be given electronically using Canvas.**

There will be 4 Exams; the first 3 are divided by course content, while the 4th would be a comprehensive final. All examinations will be 50 questions, multiple choice.

Exam #1: Modules 1 through 4.

Exam #2: Modules 5 through 8.

Exam #3: Modules 9 through 11

Exam #4: Modules 12, 13, and previous: Comprehensive Final

You must have a Gatorlink account to access the exams. Students will be using HonorLock to sign up for the exam during the day 7:00 AM until 10:59 PM.

Students must sign up for a test time-slot 48 hours before the exam through Honorlock. The computer being used must have a camera and no outside materials or notes are allowed during the exam. You will be asked to lock your browser. You may not cut and paste information or consult current or former students for answers. You may be asked to submit course materials to "Turn It In" for plagiarism evaluation. There is a time limit for the exams; once you begin the exam, it must be submitted within 1 hour. On average, the exams take about 50 minutes to complete. *Please try not to take longer than 1 hour on any exam. Grades will be posted immediately following the exam using the ELearning grade book.*

\*Note: there is a user fee associated with Honorlock. (<https://honorlock.com/students>).

### **Weed Risk Assessment**

All students are required to fill in the columns (Y/N/UNK) to the best of their ability, provide resources for their answer in the Resources column, and provide the excerpt of data from the source in the "source data" column. After receiving the score which should autocomplete in the Excel spreadsheet, students should write in the "more info" box whether they should accept, reject, or study further based on that score. Additionally, a sentence or two should be written to support or explain this answer.  
Featured Creatures-

### **For Grad Students ONLY:**

Graduate students are required to complete the Citrus Greening Training Module. Dr. Cuda or **TA (Ariane McCorquodale or TBN)** will provide more information.

### **Extra Credit**

There is no extra credit offered for the course, but the points for the Discussion posts do add up. Students are advised to submit posts even if they are late for at least a few points.

**Additional help:**

There are no office hours for this course, since it is online, but appointments for a conference call can be made with the TA or professor through Canvas. Rely on each other and communicate through chat in Canvas and feel free to help other students in the course with what you find. BE SURE, HOWEVER, NOT TO PLAGIARIZE ANOTHER STUDENT'S WORK.

**Please read through the following Honor Code that students must abide by for this course and attendance at the university, which can be found here:**

<https://catalog.ufl.edu/ugrad/1617/advising/info/student-honor-code.aspx>

**MAKE-UP POLICY:**

You will NOT be allowed to take the exam after the exam date *unless prior arrangements have been made.*

**ASSIGNMENT POLICY:** Assignments are to be submitted online via Canvas by midnight on the due date.

**COURSE TECHNOLOGY:** Canvas Course Management System

**UF POLICIES:**

**UNIVERSITY POLICY ON ACCOMMODATING STUDENTS WITH DISABILITIES:** Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive; therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

**UNIVERSITY POLICY ON ACADEMIC MISCONDUCT:** Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>

**NETIQUETTE: COMMUNICATION COURTESY:** All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats.

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

## GETTING HELP:

For issues with technical difficulties for E-learning in Canvas, please contact the UF Help Desk at:

- [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu)
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Other resources are available at <http://www.distance.ufl.edu/getting-help> for:

- Counseling and Wellness resources
- Disability resources
- Resources for handling student concerns and complaints
- Library Help Desk support

Should you have any complaints with your experience in this course please visit <http://www.distance.ufl.edu/student-complaints> to submit a complaint.

## GRADING POLICIES:

Assignment	Points or percentage
Quizzes (One per Module, 5 points each)	65 points
Discussions (One per Module, 5 points each)	65 points

Exam I (Modules 1-4)	100 points
Exam II (Modules 5-8)	100 points
Exam III (Modules 9-11)	100 points
Assignment (UF/IFAS Assessment of Non-Native Plants) *	50 points
Assignment (Citrus Greening Module, Grad students only)	50 points
Final Exam (Modules 1-13, comprehensive)	100 points
TOTAL (Undergraduates)	580 points
(Grad students)	630 points

\* Instructions for completing the IFAS assessment will be provided in a recorded lecture on or about Day 20.

**GRADING SCALE:** See below. For more information, see:

<http://www.isis.ufl.edu/minusgrades.html/>

Final Grading	Scale: Percentage
A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
E	0-59



## COURSE SCHEDULE:


**FINAL EXAM: TUESDAY, 28 APRIL 2020 (TENTATIVE)**

The following day-to-day or week-to-week schedule is not required but is encouraged.

Day	Date	Topic	Reading	Assignment
1	01/07/20	<b>Module 1- Course Introduction</b> Course Introduction, Navigating Canvas Review of Syllabus, Honor Code The Importance of Invasive Species to Florida's Natural Areas		Practice navigating Canvas
2	01/09/20	<b>Module 1- World Overview of Invasive Species</b> Introduction: Non-native Species in the World	Chapter 1, 2 <sup>nd</sup> edition	
3	01/14/20	<b>Module 2- Invasive Species of Australian Continent- Weeds</b> The Impacts of Alien Plants in Australia	Chapter 2, 2 <sup>nd</sup> edition	
4	01/16/20	<b>Module 2- Invasive Species of Australian Continent- Invertebrates</b> Environmental and Economic Costs of Invertebrate Invasions in Australia	Chapter 3, 2 <sup>nd</sup> edition	
5	01/21/20	<b>Module 3- Invasive Species of Australian Continent- Vertebrates</b>	Chapter 3, 1 <sup>st</sup> edition	

		Non-Indigenous Vertebrates in Australia		
6	01/23/20	<b>Module 3- Invasive Species of Australian Continent- Weeds in New Zealand</b>  Economic Impacts of Weeds in New Zealand: Some Examples	Chapter 12, 2 <sup>nd</sup> edition	
7	01/28/20	<b>Module 4- Invasive Species of Australian Continent- Invertebrates in New Zealand</b>  Alien Invertebrates in New Zealand	Chapter 12, 1 <sup>st</sup> edition	
8	01/30/20	<b>Module 4- Invasive Species of Australian Continent- Vertebrates in New Zealand</b>  Ecological and Economic Costs of Alien Vertebrates in New Zealand  Review for Lecture Exam 1	Chapter 13, 2 <sup>nd</sup> edition	
9	02/04/20	<b>EXAM 1- MODULES 1-4</b>  <b>Module 5- British Isles and Europe- Weeds</b>  Alien Plants in Britain	Chapter 5, 2 <sup>nd</sup> edition	
10	02/06/20	<b>Module 5- British Isles and Europe- British Arthropods and Plant Pathogens</b>  Non-native Invasive Species of Arthropods and Plant Pathogens in the British Isles	Chapter 8, 1 <sup>st</sup> edition	

11	02/11/20	<p><b>Module 6- British Isles and Europe- British Alien Vertebrates</b></p> <p>Economic, Environmental and Social Dimensions of Alien Vertebrate Species in Britain</p>	Chapter 6, 2 <sup>nd</sup> edition	
12	02/13/20	<p><b>Module 6- British Isles and Europe- European Plant Pathogens</b></p> <p>Invasive Plant Pathogens in Europe</p>	Chapter 9, 2 <sup>nd</sup> edition	
13	02/18/20	<p><b>Module 7- British Isles and Europe- European Invertebrates</b></p> <p>Invasive Patterns of Alien Terrestrial Invertebrates in Europe</p>	Chapter 8, 2 <sup>nd</sup> edition	
14	02/20/20	<p><b>Module 7- British Isles and Europe- European Vertebrates</b></p> <p>Impacts of Alien Vertebrates in Europe;</p>	Chapter 7, 2 <sup>nd</sup> edition	
15	02/25/20	<p><b>Module 8- South America, India and Weed Risk Assessment- Brazilian Plant Pathogens</b></p> <p>Alien Plant Pathogens in Brazil</p>	Chapter 5, 1 <sup>st</sup> edition	
16	02/27/20	<p><b>Module 8- South America, India and Weed Risk Assessment- Brazilian Vertebrates</b></p> <p>Invasive Vertebrates in Brazil</p>	Chapter 4, 2 <sup>nd</sup> edition	
	03/02- 06/20	<b>Spring Break</b>		

17	03/10/20	<b>Module 9- South America, India and Weed Risk Assessment- Indian Weeds</b>  Invasive Plants in the Indian Subcontinent  Review for Lecture Exam 2	Chapter 10, 2 <sup>nd</sup> edition	
18	03/12/20	<b>EXAM 2- MODULES 5-8</b>  <b>Module 9- South America, India and Weed Risk Assessment-Indian Plant Pathogens</b>  Alien Plant Pathogens in India	Chapter 9, 1 <sup>st</sup> edition	
19	03/17/20	<b>Module 10- South America, India and Weed Risk Assessment-Indian Invertebrates</b>  Invasive Invertebrates in India: Economic Implications	Chapter 11, 2 <sup>nd</sup> edition	
20	03/19/20	<b>Module 10- South America, India and Weed Risk Assessment- IFAS WRA</b>  The IFAS Assessment of Non-Native Plants in Florida's Natural Areas	EDIS #SS-AGR-371	<b>Activity 1: (Due 04/10/18)</b>
<p>Activity 1: Evaluate whether a proposed biomass plant species (<i>Phyllostachys edulis</i>) is suitable for large scale planting in Florida by completing the UF/IFAS Assessment of Non-native Plants.</p> <p> The Predictive tool document_03.24.09</p>				
21	03/24/20	<b>Module 11- Africa, US and World-</b>	Chapter 14,	

		<b>Weeds in South Africa</b>  Economic Consequences of the Environmental Impacts of Alien Plant Invasions in South Africa	2 <sup>nd</sup> edition	
22	03/26/20	<b>Module 11- Africa, US and World- South African Invertebrates</b>  Impact of Non-native Invertebrates in South Africa  Review for Lecture Exam 3	Chapter 15, 1 <sup>st</sup> edition	
23	03/31/20	<b>EXAM 3- MODULES 9-11</b>  <b>Module 12- Africa, US and World- Vertebrates in South Africa</b>  Invasive Vertebrates of South Africa	Chapter 15, 2 <sup>nd</sup> edition	
24	04/02/20	<b>Module 12- Africa, US and World- US Invasive Species</b>  Environmental and Economic Costs Associated with Alien Invasive Species in the United States	Chapter 17, 2 <sup>nd</sup> edition	
25	04/07/20	<b>Module 13- Africa, US and World- US Rodents and Other Vertebrates</b>  Rodents and Other Vertebrate Invaders in the United States	Chapter 16, 2 <sup>nd</sup> edition	<b>Turn in Activity 1 (all students) &amp; Citrus Greening Training Module (grad. students)</b>
26	04/09/20	<b>Module 13- Africa, US and World- Global Diseases</b>  Global Threats from Exotic Diseases	Chapter 18, 1 <sup>st</sup> edition	

27	04/14/20	<b>Module 14-</b> Discuss results for Activity 1 (IFAS WRA)		
28	04/16/20	<b>Module 14-</b> Review for Comprehensive Final Exam		Complete Course and Instructor Evaluation
29	04/21-23/20	<b>Module 15-</b> Reading Days Review for Comprehensive Final Exam		Complete Course and Instructor Evaluation
31	04/28/20	<b>Comprehensive Final Exam (TBC)</b>		

Disclaimer: This syllabus represents current course plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.