

**Description** An introduction to biological invasions including plants, animals, and microbes. Biology and ecology of invasive species and exploration of invaded ecosystems. Role of humans in invasions, impacts of invasions on communities and ecosystems, management of invaded natural areas. Offered every fall term.

Biological invasions can have significant ecological effects on communities and ecosystems. Monitoring, prevention, management, and impacts of invasions are a significant drain on the global economy. In this course, we provide a broad overview of non-native invaders with emphasis on invasive species in Florida. We will cover the stages of the invasion process, mechanisms underlying invasions, characteristics of communities vulnerable to invasions, impacts of invasions, and management approaches.

<b>Time and Location</b>	T 10:40-11:30 (Period 4) MCCB 3096	R 10:40-12:35 (Period 4-5) MCCB 3096
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<b>Instructor</b>	S. Luke Flory Professor and Associate Chair Agronomy Department, IFAS University of Florida Gainesville, FL 32611 Email: <a href="mailto:flory@ufl.edu">flory@ufl.edu</a>	Office location: McCarty B 3127A Office hours: by appointment Cell: 352-231-2376 Office: 352-294-1581 Web: <a href="http://florylab.com">florylab.com</a>
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<b>Co-instructor</b>	Drew Hiatt	Email: <a href="mailto:dhiatt@ufl.edu">dhiatt@ufl.edu</a>
<b>Teaching Assistant</b>	Hannah Brown	Email: <a href="mailto:hbrown2@ufl.edu">hbrown2@ufl.edu</a>

**Prerequisites** None, but some biology or ecology would be helpful. Appropriate for majors or non-majors.

**Textbook** None required

**Additional Reading List**

Davis, Mark A., et al. "Don't judge species on their origins." *Nature* 474.735 (2011): 153.

Simberloff, Daniel, et al. "Non-natives: 141 scientists object." *Nature* 475.7354 (2011).

Thompson, Helen. "Plant science: the chestnut resurrection." *Nature News* 490.7418 (2012): 22.

Quinn, Lauren D., et al. "Bioenergy feedstocks at low risk for invasion in the USA: a "white list" approach." *BioEnergy Research* 8.2 (2015): 471-481.

\*\*\*Other reading assignments will be added to this list throughout the semester and will be available via Canvas.

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Course Objectives	Upon completion of this course, students should be able to: <ol style="list-style-type: none"> <li>1. Define invasive species and provide characteristics of common invasive species and invaded habitats.</li> <li>2. Describe the stages of the invasion process.</li> <li>3. Summarize the general hypotheses to explain what causes invasions.</li> <li>4. Explain the effects of invasions on communities and ecosystems.</li> <li>5. List possible management strategies for invasions and their pros and cons.</li> <li>6. Name and describe some of the most ecologically damaging invasive species.</li> </ol>
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Grades Your grade will be based on essays, presentations on an invasive species and a current event, two exams, and participation in discussion.

Task	Description	Points	% of grade
Essays	Three 1-page essays on specific topics (25 pts each)	75	20
Presentation	Group presentation on an invasive species of interest	50	13
Current event	Short (2 min) presentation on invasive species in the news	10	2.5
1 <sup>st</sup> exam	Covers the first half of the course	100	27
2 <sup>nd</sup> exam	Comprehensive – may include general material from the entire semester	100	27
Participation	Contribution in-class discussions	40	10.5
<b>Total</b>		<b>375</b>	<b>100</b>

Grades will be assigned using the following scale:

94.0-100 = A; 90-93.9 = A-; 87.0-89.9 = B+; 83.0-86.9 = B; 80.0-82.9 = B-;  
 77.0-79.9 = C+; 73.0-76.9 = C; 70.0-72.9 = C-; 67.0-69.9 = D+; 63.0-66.9 = D;  
 60.0-62.9 = D-; < 60 = E.

UF grades and grading policies:

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

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### Weekly schedule

- Week 1.** What are invasive species?
- Week 2.** Stages of the invasion process
- Week 3.** Biodiversity, isolation, and ecological barriers
- Week 4.** Transportation and the introduction of non-native species
- Week 5.** Characteristics of invaders
- Week 6.** Mechanisms of invasions
- Week 7.** Review/Midterm Exam
- Week 8.** Community impacts
- Week 9.** Ecosystem impacts
- Week 10.** Interactions with other global change drivers
- Week 11.** Invasive pests and diseases
- Week 12.** Policies to prevent invasions
- Week 13.** Biological control
- Week 14.** Fall Break
- Week 15.** Chemical and mechanical management
- Week 16.** Second Exam (no final exam)

## Assignments, Exams, and Participation

\*Refer to full assignment descriptions for due dates and grading rubrics.

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Essays	Three one-page essays will be due throughout the semester. Essays will be graded on organization, grammar, content, and clarity. The essay topics include: 1) defining biodiversity, its importance, and how it varies by regional scale, 2) the benefits and risks of non-native species, and 3) the benefits and challenges of biocontrol.
Presentations	In groups of 2-4, students will select an invasive species and create and deliver a presentation that describes the species, origin and invasive range, invasion process, and management options. The presentation should also include a short quiz, and an individual worksheet should be completed demonstrating knowledge of the invasion process for the species.
Current Event	Once during the semester students will share with the class a current event related to invasive species. The objective of this assignment is to encourage exploration of current events in the news and on social media and to recognize the frequency that invasive species, and the problems they cause, are highlighted by news media. Current events will be graded as complete or incomplete.
Exams	Two exams will be administered during the course, one at the mid-point and one at the end of the semester. Exams will cover concepts presented during lecture and discussions, but <u>not</u> information from student presentations on individual species. Some exam questions will be drawn from readings and videos, in addition to lecture content.
Participation	Student participation in class is worth 40 points (10.5% of course grade). 10 points will be based on participation in group presentation quizzes. The remainder of the participation points will be based on asking and responding to questions and comments during discussions.

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### Other information

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Privacy	Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.
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Feedback Feedback will be given in the form of comments on completed assignments and exam and assignment grades. Instructors can be contacted at any time via email or in person to discuss assignments or activities in the class. The TA is also available to assist students with their essay drafts before each essay assignment is due either in person or via email. Questions regarding class content are always welcome and are encouraged.

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Missed Assignments Please contact the course instructors as soon as possible if you do not expect to complete assignments on time or if you need to reschedule an exam so that we can agree on revised due date or exam date. Assignment extensions and rescheduling of exams will be determined on a case-by-case basis due to medical, religious, or family-related reasons.

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

**The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.**

On all work submitted for credit by students at the university, the following pledge is either required or implied: **"On my honor, I have neither given nor received unauthorized aid in doing this assignment."**

The Honor Code (<https://sccr.dso.ufl.edu/policies/studenthonor-code-student-conduct-code/>) specifies several behaviors that are in violation of this code and the possible sanctions.

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office.

(Source: 2011-2012 Undergraduate Catalog)

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

This policy will always be vigorously upheld in this course. If you have any questions or concerns, please consult with the instructor or TAs in this class.

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

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Campus Helping Resources Resources are available on-campus for students having personal problems or 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.

1. *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, Training Programs, Community Provider Database
  2. *Career Resource Center*, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)
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#### Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

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#### Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the Office of Title IX Compliance, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, [title-ix@ufl.edu](mailto:title-ix@ufl.edu)

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#### Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

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#### In Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

#### Academic Resources

*E-learning technical support:*

Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu)

*Career Connections Center:*

Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

*Library Support:*

Various ways to receive assistance with respect to using the libraries or finding resources.

*Teaching Center:*

Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

*Writing Studio:*

2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

*Student Complaints On-Campus:*

Visit the Student Honor Code and Student Conduct Code webpage for more information.

*On-Line Students Complaints:* View the Distance Learning Student Complaint Process.

#### Health and Wellness

*U Matter, We Care:* If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu), 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.

*Counseling and Wellness Center:* Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.

*Student Health Care Center:* Call 352-392-1161 for 24/7 information to help you find the care you need or visit the Student Health Care Center website.

*University Police Department:* Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).

*UF Health Shands Emergency Room / Trauma Center:* For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.

*GatorWell Health Promotion Services:* For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the GatorWell website or call 352-273-4450.

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## COVID-19

In response to COVID-19, the following practices are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available at no cost and have been demonstrated to be safe and effective against the COVID-19 virus. Visit this link for details on where to get your shot, including options that do not require an appointment: <https://coronavirus.ufhealth.org/vaccinations/vaccine-availability/>. Students who receive the first dose of the vaccine somewhere off-campus and/or outside of Gainesville can still receive their second dose on campus.
- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated. Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.
  - Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
  - Hand sanitizing stations will be located in every classroom.
- If you sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email [covid@shcc.ufl.edu](mailto:covid@shcc.ufl.edu)) to be evaluated for testing and to receive further instructions about returning to campus. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.
  - Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.
  - If you are withheld from campus by the Department of Health through Screen, Test & Protect you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- Continue to regularly visit [coronavirus.UFHealth.org](https://coronavirus.UFHealth.org) and [coronavirus.ufl.edu](https://coronavirus.ufl.edu) for up-to-date information about COVID-19 and vaccination.