

ALS4404: Feast or Famine: Insects in Italy.

The role of entomology in art, history, and our future

Location: Florence, Italy; Summer A 2017.

Catalog Description: (3 credits) Learn the history of how insects, fungi, and insect-vectored diseases have shaped the food we eat and human history by exploring art, science, and food production in Italy. Students will visit multiple museums, historical locations, and tour agricultural operations to explore these intertwined disciplines.

General Education Objectives and Learning Outcomes

This course is **PENDING APPROVAL** as a biological sciences (B) subject area course in the UF General Education Program. Biological science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the life sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern biological systems. Students will formulate empirically-testable hypotheses derived from the study of living things, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

General Education and Course Learning Objectives: Students completing this course will be able to:

1. Explain the historical significance of insects and crops on Italian development.
2. Recognize the risks that agriculture and our food security face with diminishing resources.
3. Illustrate the biological influences driving science and art in the Middle Ages.
4. Assess the benefits and costs of current biological issues facing science and society.
5. Compare and contrast Italian and American experiences in art, agriculture, and other biological sciences.

At the end of this course, students will be expected to have achieved the following learning outcomes in content, communication and critical thinking:

Content: *Biological science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the life sciences. Insects in Italy* will utilize a flipped classroom design to allow students sufficient time to review introductory scientific materials provided through narrated PowerPoints, videos, reading assignments, and experiential assignments. In class, we will discuss how each topic relates to the scientific method and the resultant societal impacts. Given that *Insects in Italy* is taught as unit topics, each topic will require a reinforcement of the basic concepts of biological sciences, including the formation of theories and testing the scientific method. Insects have had a profound impact on Italian history, and thus on world history, from the Roman Empire through the Renaissance and current issues with GMOs and the ongoing devastating insect-vectored pathogens that are destroying Italy's olive and viticulture industries. Using examples from all of these areas, we will illustrate to students how entomology, agricultural, and other biological sciences have impacted modern agriculture, art and science. Content evaluations

will consist of twice-weekly pre-class and in-class quizzes, twice-weekly online and in-class discussions and weekly written assignments. Content understanding will be necessary for students to successfully complete their individual and group presentations.

Communication: *Course focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern biological systems. *Insects in Italy* was developed specifically to take advantage of the birthplace of the Renaissance and its close ties with the study of biological sciences. Students will develop communication skills in *Insects in Italy* in each of the weekly topics. Through exposure to current scientific topics such as GMOs, crops at risk due to honey bee decline and new olive diseases, and food safety/security concerns, students will have access to excellent content for their discussion postings and in-person exchanges. Introduction to concepts such as bubonic plague and malaria that have shaped not only Italian history (allowed Florence, rather than Sienna to become the foothold of the Renaissance), but influenced geopolitical wars, created cultures of prejudice and shaped major historical events (deaths of artists, royalty and instituted famines). The current olive and grape disease issues and topics regarding the capacity of GMOs to address these issues put scientists in the crosshairs of special interest groups, who often represent societies larger interests. Discussion of these topics provides students the exposure and scientific examination often lacking with 10-second news clips and social media commentary. Communication skills will be evaluated through online and in-class discussion and participation (twice-weekly), an individual presentation, weekly written assignments and a group project presentation. Through this design, students are provided multiple opportunities and styles by which they can demonstrate their capacity to convey their ideas. Our approach is to begin slowly, allowing students to master their communication skillset through multi-weekly low-risk assignments (discussion posts/participation), weekly written assignments and course conclusion individual and group oral presentations with much higher point values.*

Critical Thinking: *Students will formulate empirically-testable hypotheses derived from the study of living things, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.*

We anticipate that this exercise will encompass portions of two days and will occur in conjunction with Weeks 3 and 4 of the syllabus, allowing time for students to complete both reading and written assignments:

Day 1: Discussion of the problem of house flies in relation to food safety and animal welfare, with an introduction to pest control will be provided. The students will read Kaufman et al. (2010) prior to class. During class, students will be lead through the creation of an individual testable hypothesis in relation to causes of insecticide resistance. Students will be asked to read the Seraydar and Kaufman (2015) article prior to the "Day 2" session on this topic. Students will be provided with electronic copies of the summarized data and an annotated statistical analysis conducted on the data to enhance their understanding of scientific data analysis and interpretation.

Seraydar, K.R., and P.E. Kaufman. 2015. Does behavior play a role in house fly resistance to imidacloprid-containing baits? *Med. Vet. Entomol.* 29: 60-67. doi:10.1111/mve.12095.

Kaufman, P. E., S. C. Nunez, C. J. Geden, and M. E. Scharf. 2010. Selection for resistance to imidacloprid in the house fly (Diptera: Muscidae). *J. Econ. Entomol.* 103: 1937-1942.

Day 2: Students will submit their answers to five questions, prior to class on this date. In class, we will discuss student responses and work toward a consensus among the students. This exercise will conclude by having students prepare a data-supported report on their findings with conclusions drawn on their findings either supporting or rejecting their hypothesis.

Course hashtag: #UFBugsInItaly

We encourage students to share course-related photos and information using the course hashtag and the hashtag #GlobalGators on Twitter and Instagram.

Instructors: This course will be co-taught in Florence, Italy during Summer A by two instructors.

1. Dr. Jennifer L. Gillett-Kaufman, Associate Extension Scientist, Entomology and Nematology Department, gillett@ufl.edu
2. Dr. Phillip E. Kaufman, Associate Professor, Entomology and Nematology Department, pkaufman@ufl.edu

Meeting Times: TBD, but proposed Monday, Tuesday, Wednesday, Thursday, for 150-minute class periods with several field learning experiences. Some field learning experiences (marked below with an * asterisk) will require an early start time, you will have late start periods to make up for the extra time we spend on these field learning experiences.

Meeting Location: Florence University of the Arts, Florence, Italy. Class will have both formal classroom meetings and multiple field trips during class time.

Canvas: This course utilizes the Canvas system in e-Learning at the University of Florida to supplement in-class learning. <https://elearning2.courses.ufl.edu/portal> Course materials, including narrated PowerPoints (slides available as PDFs) with associated quizzes will be placed on this site for full student access. Students are required to listen to narrated PowerPoints, read papers, and/or watch videos before class meeting times and be prepared to discuss the information from the pre-work. Student grades will be posted on this site as they are finalized. Most assignments will be submitted in class or on Canvas. All critical dates will be posted on the syllabus page in Canvas, check there for changes in the course schedule.

Office Hours: Given the uncertainty of the course location and timing, both Dr. Gillett-Kaufman and Dr. Kaufman will be available to students by appointment from 7:30 AM until 8:30 PM. Please utilize email, gillett@ufl.edu or pkaufman@ufl.edu, as appropriate to make an appointment. The instructors' cell phone numbers will be provided on Canvas and the first day of class. Please call us if you are having a problem and require immediate assistance.

Attendance Policy: Attendance is required for all sessions. 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>. Specifics on Assignment Policy and late submissions appear below.

Assignment Policy: All writing assignments are due by the date and time posted and must be submitted using Canvas as an unlocked MS Word document (*.doc or *.docx).

Late submissions: Late submissions for all writing assignments will be docked 10% on the individual component grade for each 24 hours after each deadline. Quizzes, discussions, and presentations cannot be made up unless the instructors are provided a University-accepted excused absence (see Attendance Policy URL) for which replacement exercises will be assigned.

Material and Supply Fees: TBD

Grading: Grading will be based on 300 points

Pre-class or in-class quizzes, based on narrated PPT and reading (5 pts. x 12 quizzes): 20%

Online discussion and participation (5 pts. x 12 posts): 20%

Individual presentation (30 pts.): 10%

Written assignments (weekly, 20 pts. x 6 assignments): 40%

Group project and presentation (30 pts.): 10%

ALS4404	Number	Individual Point Value	Total Points	Percent of Grade
Pre-class quiz	12	5	60	20
Discussion & participation	12	5	60	20
Individual presentation	1	30	30	10
Written assignments	6	20	120	40
Group project	1	30	30	10

Grading Scale:

Grade	Percentage	Minimum points required for grade
A	90-100	270
B+	88-89.999	264
B	80-87.999	240
C+	78-79.999	234
C	70-77.999	210
D	60-69.999	180
E	<60	<180

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

Required Readings: To maximize student interaction, instructors employ a flipped-classroom experience using Canvas to deliver readings, videos, and recorded lectures so students spend class time in the field or delivering presentations and discussing observations made on field trips. As such, readings are arranged by course week on Canvas and students will be quizzed on content before discussion/lecture, typically during the first 10 minutes of class or online before field trips.

Topic	Summary	URL
Truffles and forensic entomology	Explore how flies in truffles leads to litigation	District Court Bochum (Truffles case) Germany 24 January 1996 http://cisgw3.law.pace.edu/cases/960124g1.html
Crops at risk	GMOs	Figueroa, D. 2014. Restrictions on Genetically Modified Organisms: Italy. Legal Reports. Library of Congress. http://www.loc.gov/law/help/restrictions-on-gmos/italy.php
	Floridians' perceptions on GMOs	Dodds NMW, Gorham LM, Rumble JN. 2014. Floridians' perceptions of GMOs: GMOs and Florida Citrus. UF/EDIS. 4 pp. AEC-520. http://edis.ifas.ufl.edu/wc182
	GMOs and US acceptance	Evans E, Ballen F. 2013 A synopsis of US consumer perception of genetically modified (biotech) crops. UF/EDIS. 8 pp. FE-934. https://edis.ifas.ufl.edu/fe934
Bee health exploration	Explore website on honey bees	Honey bee health and colony collapse disorder http://www.ars.usda.gov/News/docs.htm?docid=15572
Olive decline	Researchers concerned over olive disease in Europe	Purcell A, Krugner R, Almeida R. 2015. Univ. CA Berkley. http://nature.berkeley.edu/xylella/
Food safety and edible insects	Exploration of insects as food	Belluco S, Losasso C, Maggioletti M, Alonzi CC, Paoletti MG, Ricci A. 2013. Edible insects in a food safety and nutritional perspective: A critical review. Comp. Rev. Food Sci. Food Safety. 12: 296-313. http://www.venetonutrizione.it/site/public/insetti_uso_alimentare.pdf
	Explore the UN FAO website	Insects for food and feed. http://www.fao.org/forestry/edibleinsects/en/
Human diseases	Bubonic plague in Italy	McCouat P. 2012. Surviving the Black Death. J. Art Soc. http://www.artinsociety.com/surviving-the-black-death.html
		Cohn, Jr. S. 2008. Epidemiology of the Black Death and successive waves of plague. Med. Hist. Suppl. 27: 74-100. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2630035/
	History of malaria in Italy	Majori G. 2012. Short history of malaria and its eradication in Italy with short notes on the fight against the infection in the Mediterranean Basin. Med. J. Hematol. Infect. Dis. 4(1): e2012016. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3340992
	GMOs and Mosquitoes	Miller TA. 2011. Let high-tech genetically modified insects counter dengue. BioScience 61: 586-587. doi: 10.1525/bio.2011.61.8.3
		Enserink M. 2010. GM mosquito trial alarms opponents, strains ties in to Gates-funded project. Science. 330: 1030-1031 DOI: 10.1126/science.330.6007.1030
Livestock pest management	Video: Integrated fly management of livestock (3 parts, 35 min).	Waldron JK, et al. 2000. Integrated fly management around confined livestock. Cornell University, Ithaca, NY. (Video). https://www.youtube.com/watch?v=aKULdAGZ1q8&feature=share&list=PLC307D9A62CA393C8

Tentative Course Schedule:

Field learning in Venice and in Siena are scheduled for two weekends!

Week 1: Course introductions and expectations. Food, fungi, and flies. Forensic Entomology: it is not always about dead people! Bees, why we need insects.

May 16, Tuesday: Flipped-classroom activity: Review the online syllabus. *Pre-class syllabus quiz on Canvas 5 points.* Overview of course assignments, expectations and conduct. Cooperating with strangers, networking exercise. Overview of insects in Italy. Insects in historic and modern food-chain interactions and introduction to insect-vectored human pathogens.

May 17, Wednesday: Forensic entomology...for food! *Pre-class quiz on Canvas 5 points.* Want some truffles with that? Not the chocolate ones. Food contamination with insects and the basics of forensic entomology. **Class debate:** Who is at fault? Fruit fly and beetle contamination in mushroom production areas. Introduction to bees and beekeeping in Italian history. Introduction to Siena Field learning expectations.

May 18, Thursday: **Early start field learning. 8:00!** What insects are in Italy? Visit the natural history museum (Museum La Specola) preserved insect collections to see the amazing diversity of insects found in Italy. *Pre-class quiz on Canvas 5 points.*

May 20, Saturday: Siena, Capital of Culture between Tradition and Innovation. Plague impacts on Siena.

Week 2: Plant and animal pests and pathogens and insect-vectored fungi and bacteria. From apples to olives, our food system is always at risk.

May 22, Monday: **Late start class. 10:00!** Pollination debate. Are European honey bees an invasive species in the U.S.?

May 23, Tuesday: **Early start field learning. 8:00! A buzz about bees. Honey and wax production in Tuscany.** *Students who know they have allergic reactions to bee or wasp stings are encouraged to notify us before the tour and to bring along allergy medication for the field trip.* Students write a short report on their experience, due prior to next class meeting.

May 24, Wednesday: **Late start class. 10:00!** Flipped-classroom activity: Recorded lecture (Locusts and wheat in Morocco). *Pre-class quiz on Canvas 5 points.* In-class discussion on locusts in history and their migration from Africa to Europe, North Africa as Rome's bread basket. Discussion about benefits of Peace Corps service and the UF Peace Corps Prep Program.

May 25, Thursday: *Pre-class quiz on Canvas 5 points.* Flipped-classroom activity: Reading on introduced and invasive species, olive decline. **Early start field learning. 8:00!** What is in your olive oil? Olive decline in Italy because of an insect-vectored pathogen. Olive grove tour and

olive oil tasting. Fattoria di Maiano. Students write a short report on their experience, due prior to next class meeting.

Week 3: Insects and food production.

May 29, Monday: Late start class. 10:00! Flipped-classroom activity: Recorded lecture (Veterinary entomology), video, and reading. In-class short lecture on the impact of insects on animal agriculture. Day 1: Hypothesis development and testing. *Pre-class quiz on Canvas 5 points.*

May 30, Tuesday: Early start field learning. 8:00! Small farm dairy tours and cheese-making demonstrations. What's old is new again, the emergence of artisan products and agro-tourism. Visit traditional dairy production facilities to observe dairy production and challenges with food safety. Students write a short report on their experience from the field trip, due prior to next class meeting.

May 31, Wednesday: Late start class. 10:00! Insects in your garden. What pests have plagued our food production for years?

June 1, Thursday: Early start field learning. 8:00! Look for insects at the Medici gardens at the Medici Villa di Castello.

Week 4: Insect vectored pathogens on vertebrates.

June 5, Monday: No class today!

June 6, Tuesday: Field learning. Discuss changes in the scientific method and scientific instrumentation over time, at 9:30 tour the Galileo Museum of the History of Science.

June 7, Wednesday: Late start class. 10:00! Flipped-classroom activity: Recorded lecture (Medical entomology, diseases and disasters) and readings. *Pre-class quiz on Canvas 5 points.* Day 2: Hypothesis testing. In-class, short lecture on the impact of insects on human health and a discussion on two important diseases of man, bubonic plague (fleas), and malaria (mosquitoes). Discussion on the impact on Italian history and the arts with a special tie-in to Siena and its economic development after a plague outbreak in 1348.

June 8, Thursday: Pre-class quiz on Canvas 5 points. Field Learning! In Italy, Florence's population was reduced from 110–120 thousand inhabitants in 1338 down to 50 thousand in 1351. Where did all the bodies go??? Walk around Florence and visit buildings with design elements that are symbolic of plague. Visit a site of mass burials attributed to plague and discuss cultural significance of changes in burial practices. And visit the Basilica di Santa Croce. Students write a short report on their experience, due prior to next class meeting. **Additional

excursion/extra credit opportunity during cultural activities planned in Venice will expand on this topic.

June 10-11, Saturday & Sunday: The impossible city: Venice.

Week 5: Insects and agriculture in art and architecture.

June 12, Monday: **Early start field learning. 8:00!** Visit to the University of Firenze, Department of Sciences for Agriculture and Food Production and Environment (DISPAA) Entomology Department.

June 13, Tuesday: Insect and nature in art: An overview of symbolism.

June 14, Wednesday: Flipped-classroom activity: Recorded lecture (Introduction to insects and agriculture in art and architecture). *Pre-class quiz on Canvas 5 points.* **Field Learning!** Class will break into two teams. One instructor and one team will walk to the Uffizi Gallery and one team and instructor will walk to the Pitti Palace. Team members will select two pieces each to add to a *Feast and Famine Art Tour* the teams develop for the gallery.

June 15, Thursday: *Pre-class quiz on Canvas 5 points.* Teams work in small research groups to learn more about the pieces they selected and each student will write a brief description of how one piece they select depicts one of the course topics (serves as weekly short report). Students will select topics for Week 6 presentations.

Week 6:

June 19, Monday: Groups will each finalize and submit a gallery map and guided discussion brochure.

June 20, Tuesday: **Field Learning!** Class will walk together and team one will deliver the Uffizi Gallery *Feast and Famine Art Tour*. *Pre-class quiz on Canvas 5 points.*

June 21, Wednesday: **Field Learning!** Class will walk together and team two will deliver the Pitti Palace *Feast and Famine Art Tour*. *Pre-class quiz on Canvas 5 points.*

June 22, Thursday: Discussion: Students will self-evaluate and peer-evaluate the *Feast and Famine Art Tour* presentations (serves as weekly short report). Students will each present a 5-minute overview of a topic covered on the *Feast and Famine Art Tour*. Small group discussions and class discussions will focus on insects in Italy and how to improve critical thinking skills.

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/

Campus Helping Resources

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

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.

Your course instructors, Drs. Gillett-Kaufman and Kaufman, will provide you with cell phone numbers that you can call day or night if you need assistance.

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

Counseling Services

Groups and Workshops

Outreach and Consultation

Self-Help Library

Wellness Coaching

- *Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/*