



ORCHID BIOLOGY AND CULTURE

ORH5282

3 CREDITS

SPRING 2023

“Orchid Hunting is a mortal occupation.”

- Susan Orlean, *The Orchid Thief*

WEB – ONLINE



INSTRUCTOR:

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TEACHING ASSISTANT:

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OFFICE HOURS: *By appointment or to be arranged via live chat, phone call or zoom.*

COURSE WEBSITE: <http://lss.at.ufl.edu>

COURSE FORMAT: Online, 100% Asynchronous

All course PowerPoint lectures, reading materials, quizzes, assignments and learning activities can be accessed through Canvas at the e-Learning website (lss.at.ufl.edu). Click on the e-Learning Login icon and enter your GatorLink username and password. Students must have an active GatorLink ID to access e-Learning. Students who do not have GatorLink IDs, who cannot remember their GatorLink login information, who experience difficulties with Canvas, or whose IDs do not work, should contact the GatorLink website <http://gatorlink.ufl.edu> or the UF Computing Help Desk for assistance: Hub 132 or 392-HELP.

COURSE COMMUNICATIONS: *General questions should be posted to the course's discussion board. Private questions should be sent to the instructor through the course management system.*

REQUIRED TEXT: *There is no required textbook for this course, but recommended textbooks are listed:*

Motes, M. 2008. Florida Orchid Growing. Redland Press, Redland, FL.

Arditti, J. 1992. Fundamentals of Orchid Biology. John Wiley & Sons, New York, NY.

Northern, R.T. 1990. Home Orchid Growing. Simon & Schuster, New York, NY.

ADDITIONAL RESOURCES: *Additional reading material will be provided.*

COURSE DESCRIPTION: The principles and practices involved in the biology and production of orchid plants and flowers, including nomenclature, breeding, seed culture, harvesting, and handling.

PREREQUISITE KNOWLEDGE AND SKILLS: Plant Diversity - BOT 2011 or Integrated Principles of Biology - BSC 2011. Course prerequisites can be substituted by similar coursework and/or sufficient knowledge in plant biology and horticulture.

PURPOSE OF COURSE: The purpose of Orchidology, ORH4280 is to provide students with general knowledge on the principles and practices of orchid biology and culture. This includes exposing students to the beautiful and exciting diverse world of orchids. We aim to provide students with a broad perspective and greater appreciation for orchids, as well as to elucidate their potential and value as a commercial ornamental crop.

COURSE GOALS AND/OR OBJECTIVES: *By the end of this course, students will:*

- Understand the history of orchids and why these plants are so popular and important
- Understand the ecology and evolution of orchids (i.e., habitats, distribution, etc.), as well as conservation approaches
- Appreciate the complexity of orchid classification and tools used for classifying orchids
- Understand orchid nomenclature and terminology used for species and hybrids
- Explain the vegetative morphology of orchids (i.e., flower parts, types of pseudobulbs, etc.)
- Explain the reproductive morphology of orchids (i.e., pollinia, reproductive structures, etc.)
- Explain the mechanisms that regulate flowering in orchids (i.e., photoperiodism, thermoperiodism, etc.)
- Describe the basics of orchid culture, including different media and growing environments
- Understand the basics behind orchid genetics, as specifically related to flower colors
- Understand the basics of plant nutrition and the role of hormones in orchids
- Explain the main pests and diseases that affect orchids
- Appreciate the complexity of pollination mechanisms and the interaction flower-pollinator in orchids
- Describe the different methods for orchid sexual and asexual propagation, including tissue culture
- Appreciate the ethnobotanical utilization of orchids
- Understand the different systems for commercial production of orchids and respective markets

TEACHING PHILOSOPHY: I am a strong advocate of developing creative and critical thinking in students. I perceive teaching as stimulating students to think and develop skills to analyze and solve problems, in order to make timely and sound decisions independently. Students should be exposed to different practical challenges to better assimilate and retain the basic concepts. I make a concerted effort to assure active

participation and interaction in the classroom, which helps me to give meaning and to concretize abstractions, thus inducing additional creative and critical thoughts.

INSTRUCTIONAL METHODS: My basic approach to teaching is appropriately adapted to each subject matter. After introducing the basic concepts to the students, I encourage discussion to critically evaluate those concepts and guide students towards a common conclusion. This type of interaction significantly enhances the learning process, allowing students to grasp a concept and move on to the next level. I use practical and real-life examples as essential elements in my lectures to stimulate critical thinking. My style and methods of teaching are very open. I like to expose concepts, ideas, examples and other material using a combination of discussion, PowerPoint presentations, and videos.

COURSE POLICIES:

This is a web-based online course with weekly lectures, assignments, and/or learning activities. Lectures are presented in narrated PowerPoint format. Videos and reading material complement the lectures. All course materials are available via the CANVAS course website.

Students are expected to login to the course website at least once a week and complete all activities listed for each module, following the course schedule. This includes completion of quizzes, and submission of assignments and learning activities reports by the respective due dates.

ATTENDANCE AND MAKE-UP WORK: Participation is key to your success in the course, and each aspect of the class is designed to support your learning. If you know you will be unable to complete quizzes, submit assignments and learning activities, please let me know via email or Canvas as soon as possible. Make up work and extensions will be permitted if properly justified, university-approved or otherwise approved by the instructor.

Requirements for class attendance, absences, and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at:

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

MINIMUM TECHNOLOGY REQUIREMENTS: Students entering an online program are expected to acquire computer hardware and software appropriate to his or her degree program. Most computer configurations can meet the following general requirements:

- Headphones and/or speakers
- Broadband connection to the Internet and related equipment (Cable/DSL modem)
- Microsoft Office Suite installed (provided by the university)

Computers, Internet, and Web browsers: Canvas runs on Windows, Mac, Linux, iOS, Android, or any other device with a modern web browser. It is recommended to use a computer less than five years old with at least 1GB of RAM. It is recommended to have a minimum internet speed of 512kbps. It is **strongly recommended** to not use a wireless connection, phone, tablet, or notepad for critical course tasks such as exams and discussions.

Canvas currently supports the following browsers: Chrome, Safari, Firefox, Edge. Canvas supports the last two versions of most browsers. It is **highly recommended** updating to the newest version of whatever browser you are using. Note that your computer's operating system may affect browser function. Failure to use one of these browsers will cause problems.

For more information on approved computers and browsers please visit:

<https://community.canvaslms.com/t5/canvas-basics-guide/what-are-the-browser-and-computer-requirements-for-canvas/ta-p/66> on this web page there is an area titled "Is My Browser Up To Date?" Use it to check each computer and browser you may use in this course. There is another important area on "Browser Privacy Settings." Read the section(s) for any browser intended for use. For example, **note that**: in browsers such as Safari, insecure content will never be displayed in the browser. Return to the page to check for updates on technology issues in Canvas.

If you encounter technical difficulties in this course, contact the UF computing help desk right away to troubleshoot. <https://helpdesk.ufl.edu/> or (352) 392-help. If the problem cannot be fixed immediately, notify your instructor, and **provide them with the help desk ticket number**.

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 <http://www.dso.ufl.edu/students.php>.

NETIQUETTE: COMMUNICATION COURTESY: All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. [Describe what is expected and what will occur as a result of improper behavior] <http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf>

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.

GETTING HELP:

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

- Learning-support@ufl.edu
- (352) 392-4357
- <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.

Campus Resources:

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact 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.

Academic Resources

E-learning technical support: Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at 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](#).

ADDITIONAL INFORMATION:

This course is 100% asynchronous. No face-to-face instructional sessions will be conducted or required. Some assignments originally required you to visit some stores and nurseries. However, in response to the COVID-19 circumstances, such activities will be substituted with online assignments. Please, remember to follow proper guidelines and requirements on campus, as per UF policies. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.

- If you are experiencing COVID-19 symptoms ([Click here for guidance from the CDC on symptoms of coronavirus](#)), please use the UF Health screening system and follow the instructions on whether you are able to attend class. [Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms](#).
- 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. [Find more information in the university attendance policies](#).

GRADING POLICIES:

Tasks	Points (Percentage)
Quizzes (5 points each)	$16 \times 5 = 80/300$ (27%)
Assignments (10 points each)	$5 \times 10 = 50/300$ (17%)
Learning Activities (10 points each)	$5 \times 10 = 50/300$ (17%)
Case Study (40 points each)	$1 \times 40 = 40/300$ (13%)
Term Project (60 points each)	$1 \times 60 = 60/300$ (20%)
Total	300 (100%)

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

Letter Grade	Grade Points	Numeric Scale
A	4.0	94 – 100%
A-	3.67	90 – 93.99%
B+	3.33	86 – 89.99%
B	3.0	83 – 85.99%
B-	2.67	80 – 82.99%
C+	2.33	76 – 79.99%
C	2.0	73 – 75.99%
C-	1.67	70 – 72.99%
D+	1.33	66 – 69.99%
D	1.0	63 – 65.99%
D-	0.67	60 – 62.99%
E	0.33	< 59.99%

COURSE SCHEDULE SPRING 2021:

Week	Dates	Topic	Lectures	Activities	Graded Work Due
1	Jan 9-15	Introduction and History	Module 1	<p>Reading: The Beauty of Orchids.</p> <p>Assignment 1: Introduce yourself to your instructor and classmates and state your interests and goals for the course. Post a short video on the course website (up to 2 min). Watch your instructor's intro video as an example.</p> <p>Start thinking about a topic for your term paper</p> <p>Quiz 1</p>	Jan 16 11:59 pm
2	Jan 16-22	Vegetative Morphology	Module 2	<p>Assignment 2: Identify morphological structures shown in PowerPoint (M2C-Morphology ID). Look at the pictures shown and write down your answers. Describe the potential functions, if any, of those structures.</p> <p>Quiz 2</p>	Jan 23 11:59 pm
3	Jan 23-29	Reproductive Morphology	Module 3	<p>Learning Activity 1: Acquire an orchid plant and dissect the flower, report digital images of flower parts with proper identification. Describe the functions of each part.</p> <p>Quiz 3</p>	Jan 30 11:59 pm
4	Jan 30-Feb 5	Classification and Nomenclature	Module 4	<p>Reading: DNA Data and Orchidaceae Systematics: A New Phylogenetic Classification.</p>	Feb 6 11:59 pm

				Quiz 4	
5	Feb 6-12	Flowering Physiology Evolution of Orchids	Module 5 Module 6	<p>Reading 1: The Gregarious Flowering of the Orchid <i>Dendrobium crumenatum</i>.</p> <p>Reading 2: Orchid Diversity: An Evolutionary Consequence of Deception?</p> <p>Reading 3: Dating the Origin of the Orchidaceae from a Fossil orchid with its Pollinator.</p> <p>Assignment 3: List characteristics of orchids that are considered evolutionarily advanced. Why do you think they are advanced? Discuss.</p> <p>Quiz 5 Quiz 6</p>	Feb 13 11:59 pm
6	Feb 13-19	Orchid Pollination	Module 7	<p>Reading 1: The Role of Preadaptations or Evolutionary Novelties for the Evolution of Sexually Deceptive Orchids.</p> <p>Reading 2: Discovery of Pyrazines as Pollinator Sex Pheromones and Orchid Semiochemicals: Implications for the Evolution of Sexual Deception.</p> <p>Watch videos on pollination (M7C)</p> <p>Quiz 7</p>	Feb 20 11:59 pm
7	Feb 20-26	Orchid Genetics	Module 8	<p>Reading 1: Why are Orchid Flowers so Diverse? Reduction of Evolutionary Constraints by Paralogues of Class B Floral Homeotic Genes.</p>	Feb 27 11:59 pm

				<p>Reading 2: Molecular Genetics of Reproductive Biology in Orchids.</p> <p>Quiz 8</p>	
8	Feb 27-Mar 5	<p>Media and Growing Environment</p> <p>Mineral Nutrition</p>	<p>Module 9</p> <p>Module 10</p>	<p>Reading 1: Fertilizer Source and Medium Composition affect Vegetative Growth and Mineral Nutrition of a Hybrid Moth Orchid.</p> <p>Reading 2: Impact of a High Phosphorus Fertilizer and Timing of Termination of Fertilization on Flowering of a Hybrid Moth Orchid.</p> <p>Assignment 4: Visit local garden store(s) and identify commercial media and fertilizers available that are specific for orchids. What do you think about fertilizers available for orchids? What types of nutrients you think would be most important for orchids and why?</p> <p>Learning Activity 2: Design your own orchid medium and explain properties. Why is it good for orchids?</p> <p>Quiz 9 Quiz 10</p>	<p>Mar 6 11:59 pm</p>

9	Mar 6-12	Propagation of Orchids	Module 11	<p>Reading 1: Micropropagation of Orchids: A Review on the Potential of Different Explants.</p> <p>Reading 2: In Vitro Propagation and Plantlet Regeneration from <i>Doritaenopsis</i> Purple Gem 'Ching Hua' Flower Explants.</p> <p>Reading 3: Orchid Mycorrhiza: Implications of a Mycophagous Life Style.</p> <p>Quiz 11</p>	Mar 13 11:59 pm
11	Mar 13-19	<p>Ecology and Conservation</p> <p>Cryopreservation</p>	<p>Module 12</p> <p>Module 13</p>	<p>Reading: Orchid Cyropreservation</p> <p>Quiz 12</p>	Mar 20 11:59 pm
12	Mar 20-26	Ethnobotany of Orchids	Module 14	<p>Reading 1: The Ethnobotany of South African Medicinal Orchids.</p> <p>Reading 2 (Short Abstract): Role of Orchid Societies and Growers in Conservation</p> <p>Quiz 14</p>	Mar 27 11:59 pm

13	Mar 27-Apr 2	Commercial Production of Orchids	Module 15	<p>Reading: Development of <i>Phalaenopsis</i> Orchids for the Mass-Market.</p> <p>Video segments - orchid nurseries: Video 1: Altria Lab Plants Video 2: Silver Vase Video 3: Motes orchids</p> <p>Assignment 5: You are starting an orchid nursery. How can you have a production system, including potential species to be commercialized that guarantees the success of your business? What strategies would you use? Be creative.</p> <p>Learning activity 3: Visit an orchid nursery and report the type of production system and production details. Is it a profitable business? How could it be improved, if necessary?</p> <p>Quiz 15</p>	Apr 3 11:59 pm
14	Apr 3-9	Orchid Culture	Module 16 No Lectures, videos only	<p>Video segments: Video 1: Aspects of Orchid Judging Video 2: Orchid Societies Video 3: Orchid Shows</p> <p>Learning activity 4: Plan to attend an orchid society meeting and/or an orchid show/exhibit that is closest to your location. Observe the society dynamics, engagement of members and components of a meeting. What would you change? Or would you?</p>	Apr 10 11:59 pm
15	Apr 10-16	Orchid Pests and Diseases	Module 17	<p>Learning activity 5: Search the scientific literature and report a recent article reporting a new orchid</p>	Apr 17 11:59 pm

				disease. Then visit a local orchid nursery and try identifying any existing pests and diseases. What are the problems and issues you identify as potential causal agents of such pests and diseases in the nursery visited? Quiz 17A Quiz 17B	
15	Apr 17-23	The Case of Sundance Orchids and Bromeliads and Hurricane Irma	Module 18	Read case study (PDF) and watch the video (YouTube link in module). Check Rubrics (PDF) for assignment evaluation.	Apr 23 11:59 pm
16	Apr 26	Classes End			
16	Apr 27-28	Case Study and Term Paper due – No extensions! Reading Days			

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