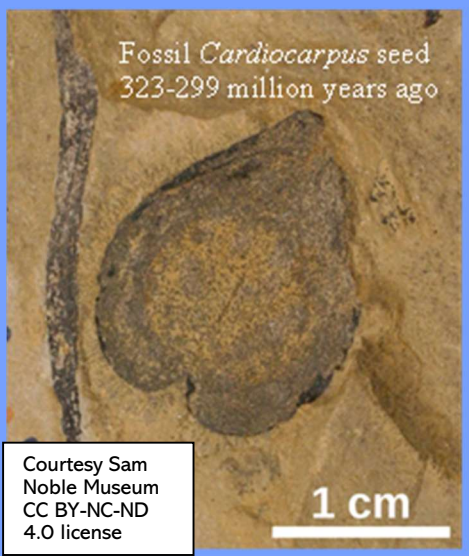
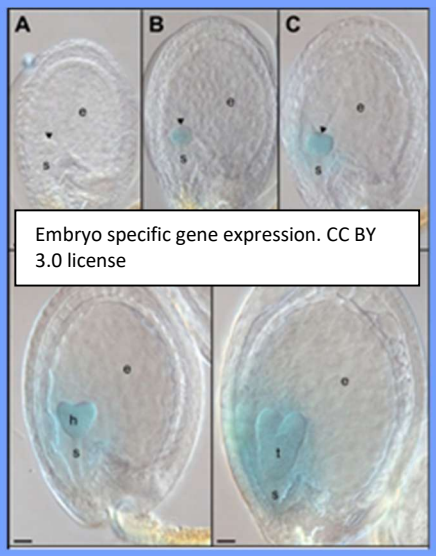
Fundamentals of Seed Biology
HOS 6991/ORH 4932 (In-person)
4 credits, Spr 2026

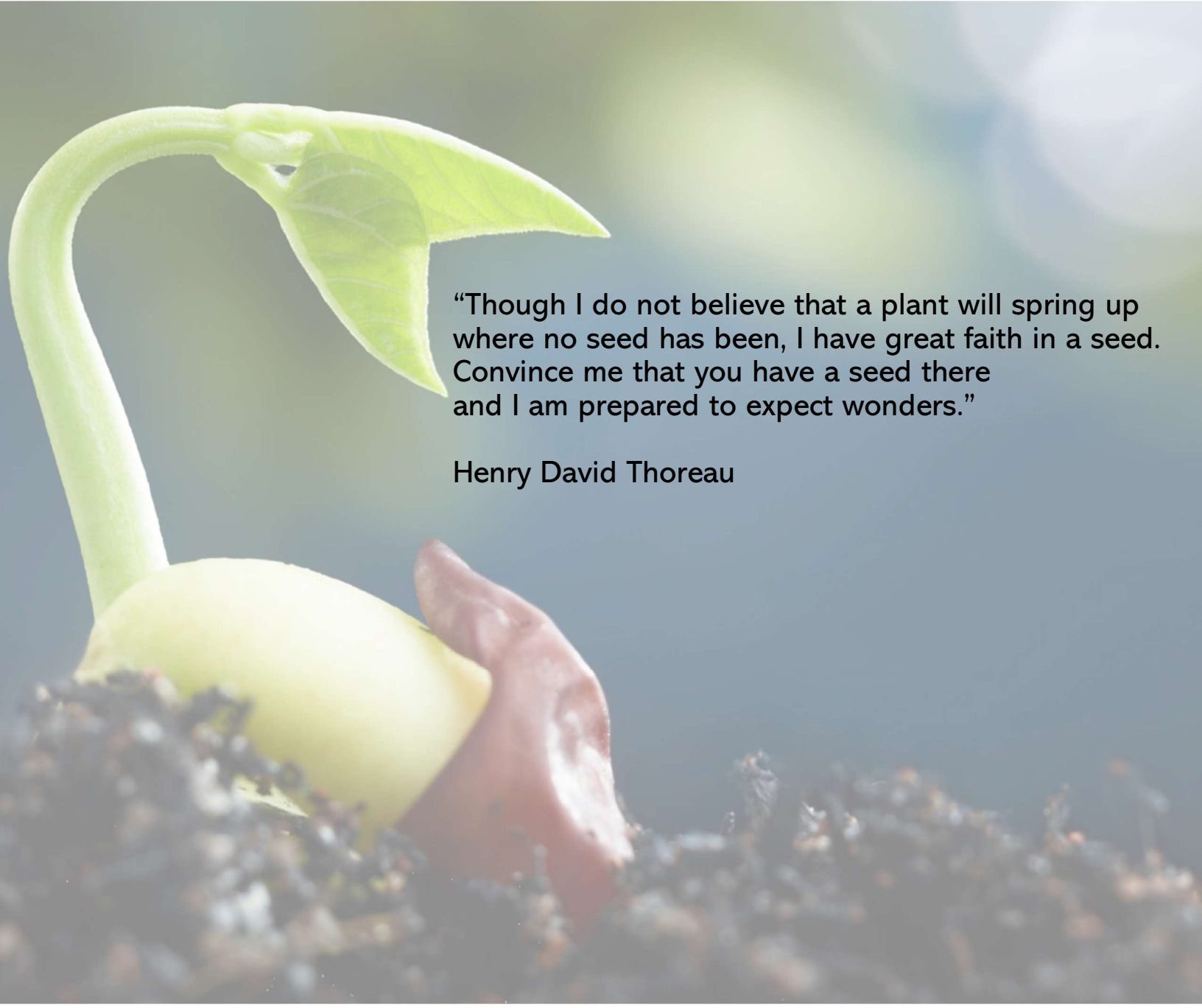


Courtesy Sam Noble Museum CC BY-NC-ND 4.0 license



Embryo specific gene expression. CC BY 3.0 license

Myrmecochory – seed dispersal by ants Exhibited by over 3,000 plant species
Courtesy Don W. Hall



Instructor:	Dr. Héctor E. Pérez (heperez@ufl.edu; (p) 352-273-4503
Office hours:	M, 1pm-3pm (Bldg 0550); after class as needed; or by appointment.
Technical Support:	UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. https://helpdesk.ufl.edu/ | 352-392-4357
Textbook, Learning Materials, Fees:	none
Prerequisites:	Basic knowledge in plant sciences, botany, and biology or equivalent courses in related fields.

Course Description – Students critically analyze pertinent seed biology literature, lead discussions, engage in student-centered mini-lectures, and complete a self-directed project throughout the semester to expand their seed biology knowledge.

Course Goals – By the end of the semester, the *conscientious* student should be able to:

- Describe major evolutionary innovations leading to the seed habit
- Justify the importance of seed development in broader contexts
- Distinguish various types of seed traits and connect traits to seed functions
- Classify different types of seed fates and defend classification system
- Demonstrate "Seed Nerd" status by articulating core seed biology concepts, applying scientific reasoning to real-world seed related challenges, and curating a professional ePortfolio that documents your learning journey, critical thinking gains, skills development, and transformation throughout the course

Course Overview and Purpose – Seeds are the cornerstone of ecological and agricultural systems. Without seeds the world would be a very different place. Yet, seeds and seed biology usually get very little attention in college curricula. It is concerning that students are graduating from our ag/natural resources/plant science/plant biology programs with seed biology blind spots.

Therefore, we begin by exploring the origins of seeds set against a geologic timescale. Subsequently, we examine the developmental physiology of modern seeds linking this to downstream seed traits, functions, and fates. We will use an eco-physiological framework to consider how seeds make it into and respond to the environment as they transition to seedlings. We finish the course by evaluating advances in seed technology then connecting our new knowledge to broader contexts.

General Course Expectations – We expect students participating in this professional learning society to:

- Arrive to class on time
- Be engaged by sharing their questions, perspectives, and ideas during and outside of class
- Convey superior work ethic and perform to high standards
- Practice their thinking within the framework of seed science
- Keep an open mind

Instructional Philosophy - My role as an instructor is to act as a catalyst for new knowledge and understanding. I work cooperatively with students to guide their thinking when necessary and create an open learning atmosphere where: 1) calls for clarification of ideas and concepts are expected; 2) free expression of divergent viewpoints are necessary; and 3) robust interchange occurs between all members of the class. In short, I expect students to take full responsibility for their education. I will work hard to enhance your education by using a variety of teaching methods designed for actively engaging students in course concepts.

Attendance and Make-up Policy – Attendance is the student's responsibility. Your instructor uses various teaching methods during class. As a result, students obtain information and understanding of concepts beyond that provided in course readings. It is in your best interest to participate during every class period. If you miss class, then it is your responsibility to talk with other students to discuss what you missed in class.

- All deadlines outlined in the syllabus are firm and may only be changed at the discretion of the instructor
    - Talk to Dr. Pérez ahead of time if issues arise
- Your instructor will consider cases of emergency, serious illness, bereavement, or activities that fall under the Twelve-Day Rule for make-up work. You must provide official documentation for all cases.

Requirements for class attendance and make-up exams, assignments and other work are consistent with UF policies.

Course Schedule (**Subject to change**)

Week	Date	Topic	Assessment	Due Date
1	Jan 13	What is a seed and why are seeds important? Pre-module Seed Habit Timeline Worksheet; Pre-module video	Pre-module Quiz (Canvas)	Jan 15
1	Jan 15	Evolutionary Innovations Leading to the Seed Habit		
2	Jan 20	Field trip: UF Florida Museum of Natural History Paleobotany Collection		
2	Jan 22	In class workshop: Digital Scrapbook; ePortofolio; Seedpod Podcast (grad students)	[1]Digital Scrapbook [2]ePortfolio, [3]SeedPod	[1]Jan 29 [2,3]Apr 28-30
3	Jan 27	Seed Development as a Foundational Process	Pre-module Quiz (Canvas)	Jan 27
3	Jan 29	Seed Development as a Foundational Process		
4	Feb 3	Seed Development as a Foundational Process		
4	Feb 5	Seed Development as a Foundational Process		
5	Feb 10	Seed Development as a Foundational Process		
5	Feb 12	In class workshop: Gymnosperm Seed Development Artefact; ePortfolio; Seedpod Podcast (grad students)	[1]Gymnosperm Artefact [2]ePortfolio, [3]SeedPod	[1]Feb 19 [2,3]Apr 28-30
6	Feb 17	Seed Traits and Their Functions	Perusall: Saaatkamp et al., 2019	Feb 17
6	Feb 19	Seed Traits and Their Functions		
7	Feb 24	Seed Traits and Their Functions		
7	Feb 26	Seed Traits and Their Functions		
8	Mar 3	Seed Traits and Their Functions		
8	Mar 5	Field Trip: UF Seed Biology Lab use X-ray machine and other seed testing equipment		
9	Mar 10	In class workshop: SeedSmart - A Model of Survival; ePortfolio; Seedpod Podcast (grad students)	[1]SeedSmart [2]ePortfolio, [3]SeedPod	[1]Mar 24 [2,3]Apr 28-30
9	Mar 12	Seed Fates: Pathways to Seedlings…Or, not	Perusall: Long et al., 2015	Mar 12
10	Mar 17	**Spring Break – No Class**		

10	Mar 19	**Spring Break – No Class**		
11	Mar 24	Seed Fates: Pathways to Seedlings…Or, not		
11	Mar 26	Seed Fates: Pathways to Seedlings…Or, not		
12	Mar 31	Seed Fates: Pathways to Seedlings…Or, not		
12	Apr 2	In class workshop: Seed Dispersal Method video; ePortfolio; Seedpod Podcast (grad students)	[1]Seed Dispersal [2]ePortfolio, [3]SeedPod	[1]Apr 9 [2,3]Apr 28-30
13	Apr 7	Advances in Seed Technology and Biology		
13	Apr 9	Advances in Seed Technology and Biology		
14	Apr 14	Advances in Seed Technology and Biology		
14	Apr 16	Advances in Seed Technology and Biology	Off-Earth Seeds	Apr 23
15	Apr 21	In class workshop: Off-Earth Seed Biology Research; ePortfolio; Seedpod Podcast (grad students)	[2]ePortfolio; [3]Seedpod	[2,3]Apr 28-30
15	Apr 23	**Reading Day – No Class**		
16	Apr 28	**Exam week – No Class**	ePortfolio; SeedPod	Apr28-30
16	Apr 30	**Exam week – No Class**	ePortfolio; SeedPod	Apr28-30

***See course website for specific reading objectives**

Grading Policy – Course grading is consistent with UF grading policies.

Course Grading Structure (ORH 4932)

Assessment Type	Point Value	% of Final Grade
Pre-module quiz 1	10	5
Pre-module quiz 2	10	5
Digital Scrapbook	20	10
Gymnosperm Artefact	20	10
Perusall Article 1	20	10
Perusall Article 2	20	10
SeedSmart Model	20	10
Seed Dispersal Video	20	10
Off-Earth Seeds Research Program	20	10
ePortfolio	40	20
TOTAL	**200**	**100**

Course Grading Structure (HOS 6991)

Assessment Type	Point Value	% of Final Grade
Pre-module quiz 1	10	5
Pre-module quiz 2	10	5
Digital Scrapbook	20	10
Gymnosperm Artefact	20	10
Perusall Article 1	20	10
Perusall Article 2	20	10
SeedSmart Model	20	10
Seed Dispersal Video	20	10
Off-Earth Seeds Research Program	20	10
Seedpod Podcast	40	20
TOTAL	**200**	**100**

Grading Scale

Grade	Points	Percentage
A	≥186.00	100-93
A-	185.99-180.00	92.99-90.00
B+	179.99-174.00	89.99-87.00
B	173.99-166.00	86.99-83.00
B-	165.99-160.00	82.99-80.00
C+	159.99-154.00	79.99-77.00
C	153.99-146.00	76.99-73.00
C-	145.99-140.00	72.99-70.00
D+	139.99-134.00	69.99-67.00
D	133.99-126.00	66.99-63.00
D-	125.99-120.00	62.99-60.00
E	<120.00	<60.00

Academic Policies and Resources – Academic policies for this course are consistent with university policies.

Campus Health and Wellness Resources – Visit https://one.uf.edu/whole-gator/topics for resources that are designed to help you thrive physically, mentally, and emotionally at UF.

Please contact UMatterWeCare for additional and immediate support.

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.

Artificial Intelligence (AI)/Large Language Model (LLM) Guidance – In this course you will have the option to use AI/LLM for two specific assignments, denoted as AI authorized. If you elect to use AI/LLM for the authorized assignment, then make sure to: 1) provide a list of all prompts used in your queries; 2) properly cite the AI/LLM; and 3) verify the authenticity of any scientific literature or other sources provided by the technology. You will receive more guidance on allowable AI/LLM use for those assignments. Otherwise, every element of all work submitted by students in this course must be fully prepared by the students themselves, working individually or in groups as directed by class assignment instructions.