

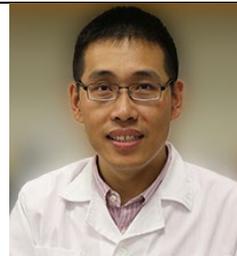
# Forest and Soil Ecosystem Services

## SWS 4932/6932

### Instructor:

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### Course credits: 3

### Teaching Format and Course Communications:

- Exclusively online.
- Pre-recorded lectures, supplementary readings, weekly chat sessions, discussion boards, assignments and exams.
- Canvas eLearning Login: <http://elearning.ufl.edu/>
- Contact instructor through Canvas messaging system or email.
  - Allow 24 hours for a response during the week.
  - Questions posted over the weekend will not receive a response until Monday.

**Pre-Requisites:** None

**Required Textbook:** None

- Required readings are available in Canvas.

### Course Description:

Ecosystem services are the conditions and processes through which forest ecosystems, including their component soils and species, sustain and fulfill human life. These services include carbon sequestration, biodiversity, stabilization of hydrologic cycles, removal of air pollutants, aesthetic beauty, moderation of weather extremes and mitigation of natural disasters. Academic interest in ecosystem services was first evident in the refereed literature in the early 1980s but has gained significant stature in the past two and a half

decades. Likewise, policy makers have increasingly focused on ecosystem services, developing new incentive schemes for production and payment of these services.

### Course Learning Objectives:

After successfully completing the course, students will be able to:

- describe the categories of forest and soil ecosystem services and how humans benefit from those services
- explain the science behind ecosystem services, the science behind the benefits when forests and soils are working together
- articulate how human activity may impact forest and soil ecosystem services
- examine monetary and non-monetary methods for valuing forest and soil systems
- learn the methods that integrates ecosystem services into decision-making
- appreciate the inter-disciplinary approaches that combine social and natural science methods in studying ecosystem services
- find reliable sources of information regarding soil, forests and ecosystem services.

### Topic Outline:

Week	Module	Topics
8/31-9/5	1 Welcome	<ul style="list-style-type: none"> <li>i. Course Introduction</li> <li>ii. Information Sources</li> <li>iii. Writing Guidelines</li> <li>iv. Vetting Online Sources</li> </ul>
9/6-9/12	2. Introduction	<ul style="list-style-type: none"> <li>i. Ecosystem Services</li> <li>ii. Forests</li> <li>iii. Soils</li> <li>iv. History of Ecosystem Services</li> </ul>
9/13-9/19	3. Supporting Services	<ul style="list-style-type: none"> <li>i. Primary Productivity</li> <li>ii. Soil Formation</li> <li>iii. Nutrient Cycling</li> </ul>
9/20-9/26	4. Regulating Services	<ul style="list-style-type: none"> <li>i. Water Regulation</li> <li>ii. Nutrient Regulation</li> <li>iii. Soil Salt Regulation</li> <li>iv. Climate and Carbon Sequestration</li> </ul>
9/27-10/3	5. Provisioning Services	<ul style="list-style-type: none"> <li>i. Lumber and pulp</li> <li>ii. Non-wood forest products</li> <li>iii. Soil provisioning services</li> </ul>
10/4-10/10	6. Cultural Services	<ul style="list-style-type: none"> <li>i. Indigenous people's concepts</li> <li>ii. Contemporary culture and imagery</li> </ul>

10/11-10/17	Exam 1	Covers Materials in Modules 1-6
10/18-10/24	7. Measuring Ecosystem Services	<ul style="list-style-type: none"> <li>i. Ecological production functions (EPFs)</li> <li>ii. Quantifying EPFs</li> <li>iii. Case study: forest carbon storage</li> </ul>
10/25-10/31	8. Values of Ecosystem Services	<ul style="list-style-type: none"> <li>i. Rationale for economic valuation of ES</li> <li>ii. Fundamentals of economic value</li> <li>iii. Opportunity costs</li> </ul>
11/1-11/7	9. Monetary Valuation of Ecosystem Services	<ul style="list-style-type: none"> <li>i. Direct market valuation</li> <li>ii. Revealed preference methods</li> <li>iii. Stated preference methods</li> <li>iv. Value transfer</li> </ul>
11/8-11/14	10. Non-Monetary Valuation of Ecosystem Services	<ul style="list-style-type: none"> <li>i. Pitfalls of monetary valuation</li> <li>ii. Shared and social values</li> <li>iii. Non-monetary indicators</li> <li>iv. Case study: forest land use</li> </ul>
11/15-11/21	11. Decision-making analysis (DMA)	<ul style="list-style-type: none"> <li>i. Trade-offs</li> <li>ii. Cost benefit analysis</li> <li>iii. Multi-criteria analysis</li> </ul>
11/22-12/5	11. Payments of Ecosystem Services (PES)	<ul style="list-style-type: none"> <li>i. Concept of PES</li> <li>ii. Conditions for PES effectiveness</li> <li>iii. Design payment contract</li> <li>iv. Case study: mangrove forests</li> </ul>
12/6-12/12	12. Challenges to Ecosystem Services	<ul style="list-style-type: none"> <li>i. Invasive plant species</li> <li>ii. Sea level rise</li> </ul>
12/13-12/18	Exam 2 (during finals week)	Covers Materials in Modules 7-12 and the last week of the semester

### Disclaimer:

As we go through the semester, specific topics and activities on the syllabus may change to enhance the class learning opportunity. Such changes will be communicated clearly and in advance.

### Grading Structure:

#### Graduate Students\*

Assessment Type	Percent of Final Grade
Exams (2 total)	40
Assignments & On-line Discussions	30
Project Paper	20
Chat Participation	10

\*Graduate students have additional exam questions and responsibilities during assignments to receive graduate level credits for this class.

### **Undergraduate Students**

Assessment Type	Percent of Final Grade
Exams (2 total)	40
Assignments & On-line Discussions	30
Project Paper	20
Chat Participation	10

Rubrics will be provided with graded activities. See Canvas assignments for individual rubrics.

### **Grading Scale:**

- A 90 – 100%
- B+ 87 – 89%
- B 80 – 86%
- C+ 77 – 79%
- C 70 – 76%
- D+ 67 – 69%
- D 60 – 66%
- E < 60%

Current UF grading policy for assigning grade point averages can be found here:

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

### **Chat Sessions**

Chat sessions will be scheduled weekly and all students are expected to participate. Chat sessions will be held outside of the Canvas course framework using Zoom. Students will need access to a computer with audio and a web camera (optional) to take this course. Chat sessions will be scheduled after course registration to best accommodate everyone's schedule. At least one section of chat will occur each week. Additional sessions per week may be added to accommodate conflicting schedules based on instructor discretion. Students are required to attend one chat per week. If you are unable to attend a chat session, chat sessions may be replaced with chat make-up assignments in Canvas at the instructors' discretion.

### **Attendance and Late Policy:**

Requirements for class attendance (module participation) and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Late submission of assignments and assessments must be approved by instructors in advance and may be subject to a grade penalty.

**Online Course Evaluation:** Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semesters, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

**Privacy Disclaimer:** Our discussion or 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.

## UF Policies

**University Policy on Accommodating Students with Disabilities:** Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc](http://www.dso.ufl.edu/drc)) by providing appropriate documentation. Once registered, students will receive an accommodation letter, which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

**University Policy on Academic Conduct:** UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code. On all work submitted for credit by students 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." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are

obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the class instructor.

**Class Demeanor or Netiquette:** All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats.

**Getting Help, Technical difficulties:** For issues with technical difficulties for Canvas, please contact the UF Help Desk.

<http://helpdesk.ufl.edu>  
(352) 392-HELP (4357)  
Walk-in: HUB 132

Note, any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from the Help Desk 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.

**Getting Help, Other Concerns: 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.