

**INTEGRATED NATURAL RESOURCE MANAGEMENT**  
*Lecture:* Tuesdays 8:30 a.m. – 10:25 a.m. (222 Newins-Ziegler Hall)  
*Lab:* Wednesdays 10:40 a.m. - 4:55 p.m. (Austin Cary Forest)

**Course Syllabus**

**Instructors:** Tamara Cushing ([tcushing@ufl.edu](mailto:tcushing@ufl.edu)), Tim Martin ([tamartin@ufl.edu](mailto:tamartin@ufl.edu)), Scott Sager ([sasager@ufl.edu](mailto:sasager@ufl.edu))

**Office hours:** TBA

**Course Website:** <http://lss.at.ufl.edu>. We will use the UF e-Learning in Canvas website, through which you can send e-mails to classmates or to the instructors, check your grades, check class announcements, access the syllabus, etc. *Check the Canvas website regularly for due dates and assignment descriptions.*

**Course Communications:** The Canvas email system is the best way to get in touch with us about any class-related questions, concerns, etc. during the semester.

**Required Text and Additional Readings:**

There is no required textbook. Readings and resources will be distributed in class and on Canvas.

**Course Description and Objectives:** Integrated natural resource management deals with providing the right mix of natural resource commodities, functions, and services in the most desirable and sustainable way possible over time, incorporating biological, social, and economic principles and constraints.

This “capstone” course is most likely unlike any other you have taken. This course is project focused. The principle aim of the course is to give you the opportunity to apply the knowledge gained during your curriculum to design an integrated natural resource management plan (or “multiple-use” management plan) for a landowner (private and/or public). Besides providing the basic framework, the instructors will help steer you towards the data and tools you need to complete the task. The course also incorporates subject matter relevant to land management planning that may not be widely known or available in the standard curriculum.

**Instructor Expectations:** In this class, your group will be expected to rely on your efforts to bring together the information requested for the management plan, which is the ultimate focus of the class. Instructors will give you their best advice and help you as much as they can, but *this is not a “canned” course where you will be given everything in class to complete your plan.* Substantial independent research on your part is expected, but you will be provided with clear guidance on requirements for presentations, reports, etc.

You should rely on other faculty, outside experts, internet, etc. if you have data or other information needs. PowerPoint presentations will be used in class as an enhancement to the lecture, but are not a substitute for good note taking. PowerPoint presentations may be provided via Canvas *at the discretion of the instructors.* Take notes and DO NOT rely on the PowerPoint presentations in their entirety.

### Evaluation of Student Learning (Grades):

Weight	Item	Due date and time
25%	Weekly quizzes on lecture material (attendance required for quiz credit)	Tuesdays at 11:59 p.m.
15%	Homework (3)	2/13, 3/5, 4/9 at 11:59 p.m.
5%	Weekly entries into “Billable Hours” log on Google Sheets	by 11:59 p.m. each Tuesday
5%	Check point #1 - oral group presentation summarizing landowner objectives, property, context, conceptual management plan; submit PowerPoint file on Canvas by due date	1/17, 11:59 a.m.
5%	Check point #2 - inventory status and issues; adjustments to plan anticipated based on inventory; proposed data analysis; submit PowerPoint file on Canvas by due date	2/6, 11:59 a.m.
9%	Check point #3 - First draft plan using the full report template	2/27, 11:59 p.m.
9%	Check point #4 Second draft plan using the full report template	4/2, 11:59 p.m.
20%	Final written project report	4/23, 11:59 p.m.
5%	Final project presentation; submit PowerPoint file on Canvas before your scheduled presentation time	variable
2%	Individual reflection document	5/2, 11:59 p.m.

Details of each assignment can be found on the Canvas website under the Assignments tab.

*Grading Scale (%):* 89.5-100 A, 86.7-89.4 B+, 83.4-86.6 B, 79.5-83.3% B-, 76.7-79.4 C+, 73.4-76.6 C, 69.5-73.3 C-, 66.7-69.4 D+, 63.4-66.6 D, 59.5-63.3 D-, < 59.5 E

**Brief Description of Assignments:**

Detailed descriptions and rubrics available on Canvas under "Assignments"

**Weekly quizzes**

One quiz per week will be given based on the Tuesday lecture material. Students who have an unexcused absence for a lecture will not be given credit for the associated quiz. Quizzes are offered on Canvas, and open at 12:01 a.m. on Fridays (if not before), and close at 11:59 p.m. on Tuesdays. The two lowest quiz scores will be dropped.

**Billable Hours entries**

Each week, each student will enter the number of hours they worked on "Office" and "Field" tasks, and provide brief notes on the nature of the work done that week. The entries will be on an Excel spreadsheet template provided to all students. This provides an opportunity for students to practice time accounting, which is required by many employers. Keep a copy of your billable hours spreadsheet on your computer, and add hours to it weekly, so that EACH WEEK YOU TURN IN A CUMULATIVE VERSION of the spreadsheet. The two lowest billable hours scores will be dropped.

**Homework (3 assignments)**

Each student will receive a forest inventory data set, and should work INDEPENDENTLY to carry out each homework assignment based on that dataset.

- 1: Report averages and 95% confidence intervals for specified tree-level and stand-level attributes.
- 2: Report current mean and 95% confidence interval for merchantable wood weight using provided weight equations or a properly sourced and justified equation that you specify. Use a growth and yield model to grow your stand to age 30, and report weight and value by product class.
- 3: Economic analysis, calculate NPV of simulation in #2 using management inputs, timing, and costs specified in the assignment.

**Check point #1**

A ten-minute group PowerPoint presentation presenting:

- Summary of landowner objectives
- Overview of parcel, including a map, description of stand types, local context of the parcel
- Discuss the different stand types or compartments of your property relative to your landowner objectives. What compartments are obviously in a condition not compatible with landowner objectives? What type of management might they need?
- General inventory plan. What will you need to measure to get the information you need to make recommendations? What type of sampling plan may be appropriate for the different parts of your property?

**Check point #2**

Oral presentation of inventory status and issues; adjustments to plan anticipated based on inventory; proposed data analysis

**Check point #3**

First full report draft based on the final template. Field inventory data should be fully collected at this point. You should present tables and/or figures with at least partially analyzed inventory data for each of your compartments, including at a minimum stand density, average dbh, average height. Property description, landowner objectives sections should be nearly final. You will likely have limited financial analysis completed, limited management timeline, etc.; however, you will need to show clear evidence that all sections of the report are underway. All draft and final work on the written report must take place on the assigned Google Docs template.

**Check point #4**

Second to last draft of report. Must include full analysis of inventory data; full draft cash flow analysis for each compartment; rationale for each management decision. All sections should be essentially complete and ready for feedback from instructors for final revisions for the final version.

**Final written project report**

Final report fully incorporating previous feedback.

**Final presentation**

Presentation based on PowerPoint template presenting overview of property, landowner objectives, prescriptions, and rationale.

**Individual reflection document**

A short (2-3 pages) reflection essay covering:

- A summary of your project
- What skills and/or knowledge were most important for you in this course
- A constructive description of group dynamics, both positive and negative
- Topics that you wish you had known more about

**Course Policies:**

**Late assignments and quizzes:** Due dates for all assignments and quizzes are listed in the syllabus and on Canvas at the start of the semester. Quizzes are left open for several days, and the two lowest quiz grades are dropped. For this reason, no late assignments or quizzes will be accepted. Accordingly, make sure to leave room in your schedule for unexpected issues that inevitably arise.

**Lab Periods:** Lab periods are a part of the course schedule and run from 10:40 a.m. – 4:55 p.m. every Wednesday. Unless otherwise noted, lab periods are to be used to have group meetings, collect and analyze data, prepare presentations, and produce reports. Students should plan to be available for group work and project work during this time each week. **DO NOT SCHEDULE OTHER ACTIVITIES DURING WEDNESDAY CLASS LAB TIME.** No one should use the excuse that they cannot meet during lab periods.

**Field Visits:** If you are prone to irritations or allergies by mosquitoes, fire ants, wasps, chiggers, ticks and poisonous plants, it is strongly recommended that you always use repellents (not supplied by instructor) and take precautions during and after each laboratory session. If you are allergic to insect bites, or if you have other medical conditions for which emergency treatment may be required, it is your responsibility to: (1) inform the instructors about the condition during the first day of class, (2) tell them where you keep your medicine; and (3) how to administer emergency treatment should the situation arise. Lyme disease, which may be contracted through tick bites, is a condition that all natural resource professionals should be knowledgeable of. While not fatal, it can be very painful and even debilitating. Therefore, it is your personal responsibility to wear protective clothing and repellents that will minimize your chances of contracting this disease -- even with these precautions, you should conduct a self- examination for ticks after each field session.

**Attendance:** Attendance is required. You are expected to fully engage all class meetings and group meetings, stay current with all assigned readings, and actively participate in class and lab. Participation helps synthesize material, improves critical social skills (important regardless of career path), and allows you to draw from other people's diverse experiences, backgrounds, and insights. Active participation includes sharing thoughts, asking relevant questions, summarizing information in a way that informs discussion, and engaging in a professional manner. Students who are absent from a particular lecture will be assigned a zero for the quiz associated with that lecture.

***Individual contributions to the group and professionalism***

Because the final project is a group project, and a large portion of the final grade is dependent upon the successful completion of this task, each individual's contribution to the final product will be taken into account with respect to the final course grade, with adjustments up to and including a full letter grade. Students will be asked to assess each other's contribution towards the final project at several points during the semester. All students are expected to behave professionally: to fully engage with their group, communicate in a timely manner and always with civility, and carry their weight at every stage of the project.

## UNIVERSITY OF FLORIDA POLICIES YOU NEED TO KNOW:

This course plan and syllabus are subject to change in response to student and instructor needs. Any changes will be clearly communicated in advance.

### Late Submissions & Make-up Requests

It is the responsibility of the student to participate in all course activities and to maintain satisfactory progress in the course. 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> Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352- 392-4357 (option 2).

### Communication Courtesy and Professionalism

Just as in any professional environment, meaningful and constructive dialogue is expected in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view. **Respect for individual differences and alternative viewpoints will be maintained in this class at all times.** All members of the class are expected to follow rules of common courtesy, decency, and civility in all interactions. Failure to do so will not be tolerated and may result in loss of participation points and/or referral to the Dean of Students' Office.

### Semester Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning.

**At approximately the mid-point of the semester**, the School of Forest, Fisheries, & Geomatics Sciences will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required but encouraged. This is not the UF Faculty Evaluation!

**At the end of the semester**, 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/>.

### Academic Honesty Policy

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 or 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>.

### Inclusive Learning Environment

This course embraces the University of Florida's Non-Discrimination Policy, which reads,

*The University shall actively promote equal opportunity policies and practices conforming to laws against*

*discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act.*

If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: <http://multicultural.ufl.edu>.

### 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, [disability.ufl.edu](http://disability.ufl.edu)

### 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.

### Campus Helping Resources

For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu) | (352) 392-HELP - select option 2 | <http://elearning.ufl.edu>
- Library Help Desk support <http://cms.uflib.ufl.edu/ask>
- SFFGS Academic Hub <https://ufl.instructure.com/courses/303721>

### Student Life, Wellness, and Counseling Help

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.

- Counseling and Wellness resources <http://www.counseling.ufl.edu/cwc/>
- U Matter, We Care <http://www.umatter.ufl.edu/>
- Career Connections Center <http://career.ufl.edu/>
- Other resources are available at <http://www.distance.ufl.edu/getting-help> for online students.

### Student Complaint Process

The School of Forest, Fisheries, & Geomatics Sciences cares about your experience and we will make every effort to address course concerns. We request that our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered. You can also [submit feedback anytime](#).

If you have a more urgent concern, your first point of contact should be the Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- <https://distance.ufl.edu/getting-help/>  
<https://registrar.ufl.edu/complaint.html>

**Course Schedule**

Week	Tuesday Lecture period 2-3, 8:30-10:25	Wednesday Lab period 4-9, 10:40-4:55	Assignment Due *
1... 9-10 Jan	Course overview, group assignments (TM, SS, TC) Management planning, purpose and intent, structure of a good plan (TM)	Using the map given to your group, travel to ACF and survey the property on your own at the beginning of lab period. Based on your observations on the property, use a pen to mark compartment or stand type boundaries on your map. Instructors will meet you at your property at a scheduled time to discuss your property and for you to turn in the compartment map you created.	<b>Quizzes: Tuesday 11:59 p.m.</b> <b>Enter billable hours each week: Tuesday 11:59 p.m.</b>
2... 16-17 Jan	Inventory primer: plot arrangement, plot type, basics of variability and sampling intensity (SS) Group dynamics: teamwork, collaboration, addressing conflict, how to disagree without being disagreeable (TM) Introduction to ACF GIS (SS)	<b>Groups in field</b> <b>Checkpoint 1 at ACF</b>	<b>Checkpoint 1</b> <b>PPT file due 11:59 a.m. 1/17</b>
3... 23-24 Jan	Inventory workshop Inventory instrument pickup	<b>Groups in field – inventory</b>	
4... 30-31 Jan	How to Speak Landowner: questions to ask, interpreting answers, and translating them into actions (SS) Analysis of basic tree inventory data (TPA vs. BAA, mean DBH, mean height) (TM)	<b>Groups in field - inventory</b>	
5... 6-7 Feb	<b>Checkpoint 2 in classroom</b> oral presentation of inventory status and issues, adjustment of plan based on data collected, proposed data analysis	<b>Groups in field – inventory</b>	<b>Checkpoint 2</b> <b>PPT file due 11:59 a.m. 2/6</b>
6... 13-14 Feb	<b>Guest Speaker:</b> Managing for recreation (Taylor Stein, SFFGS)	<b>Groups in field - inventory</b>	<b>Homework 1 – due 2/13 11:59 p.m.</b>
7... 20-21 Feb	<b>Guest Speaker:</b> Wildlife Management (Ginger Feagle, Florida Fish and Wildlife Conservation Commission)  Statistical analysis: measures of central tendency, variability, confidence intervals (SS)	<b>Groups in field or analyzing data</b> <b>Inventory should be finished by today</b>	
8... 27-28 Feb	Wildlife management practices (SS)  Predicting biological growth using growth-and-yield models (TM)	<b>Groups analyzing data</b>	<b>Checkpoint 3:</b> <b>due 2/27 11:59 p.m.</b>



## Course Schedule (cont.)

Week	Tuesday Lecture	Wednesday Lab	Assignment due
9... 5-6 Mar	Economic analyses (TC)	<b>Starting this week, Zoom room open 10:40-11:30 on Wednesday for questions or discussion of your project with instructors</b>  <b>Groups analyzing data or preparing documents</b>	<b>Homework 2: due 3/5 11:59 p.m.</b>
10 12-13 Mar	<b>SPRING BREAK</b>		
11... 19-20 Mar	Developing Ecosystem Service Markets... Carbon, Wildlife, Water (SS) <b>Guest Speaker:</b> Wetland Mitigation (Sarah Nelson, Environmental Consulting and Design)	<b>Groups analyzing data or preparing documents</b>	
12... 26-27 Mar	<b>Guest Speaker:</b> Public lands acquisition and policy (Charlie Houser, Alachua County) <b>Guest Speaker:</b> Gopher tortoise mitigation processes	<b>Groups analyzing data or preparing documents</b>	
13... 2-3 Apr	<b>Flex Day</b>	<b>Groups analyzing data or preparing documents</b>	<b>Checkpoint 4: due 4/2 11:59 p.m.</b>
14... 9-10 Apr	Analysis of and planning for risk: identifying risks, quantifying risks, risk tolerance, accounting for risk tolerance in planning (TC) Ethics (TC)	<b>Groups preparing documents</b>	<b>Homework 3, due 4/9 11:59 p.m.</b>
15... 16-17 Apr	Professional Certification, Licensing, and Registration (SS) Presentation Guidance	<b>Groups preparing documents</b>	
16... 23-24 Apr	Groups preparing documents	<b>Groups preparing presentations</b>	<b>Final report: due 4/23 11:59 p.m.</b>
Finals week... 29 Apr - 3 May	Final Plan presentations on campus		<b>Individual Reflection Document: due 5/2 11:59 p.m.</b>

TC=Tamara Cushing, TM=Tim Martin, SS=Scott Sager

\*For exact due dates and times for assignments, confirm on Canvas