INTEGRATED NATURAL RESOURCE MANAGEMENT

Lecture: Tuesdays 8:30 a.m. – 10:25 a.m. (222 Newins-Ziegler Hall, or via Zoom)
Lab: Wednesdays 10:40 a.m. - 4:55 p.m. (Austin Cary Forest)

Course Syllabus

Instructors: Tim Martin (tamartin@ufl.edu), Scott Sager (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.

It is a good idea to bring a calculator or laptop to class whether you will need it or not on any particular day. Please ask questions of the instructors whenever you feel you need to. If something is wrong, please let your instructor know as soon as possible.

Evaluation of Student Learning (Grades):

<table>
<thead>
<tr>
<th>Weight</th>
<th>Item</th>
<th>Due date and time</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>Weekly quizzes on lecture material (attendance required for quiz credit; extra credit on each quiz for lecture engagement as determined through zoom camera on, questions asked, and other measures)</td>
<td>Sundays at 11:59 p.m.</td>
</tr>
<tr>
<td>25%</td>
<td>Homework (3)</td>
<td>various</td>
</tr>
<tr>
<td>5%</td>
<td>Check point #1 - oral group presentation summarizing landowner objectives, property, context, conceptual management plan, inventory plan; submit powerpoint file on Canvas by due date</td>
<td>2/10, 10:00 a.m.</td>
</tr>
<tr>
<td>5%</td>
<td>Check point #2 - oral group presentation of inventory status and issues; adjustments to plan anticipated based on inventory; proposed data analysis; submit powerpoint file on Canvas by due date</td>
<td>2/19, 12:00 noon</td>
</tr>
<tr>
<td>5%</td>
<td>Check point #3 - First draft plan using the full report template</td>
<td>3/11, 11:59 p.m.</td>
</tr>
<tr>
<td>5%</td>
<td>Check point #4 Second draft plan using the full report template</td>
<td>4/1, 11:59 p.m.</td>
</tr>
<tr>
<td>20%</td>
<td>Final written project report</td>
<td>4/15, 11:59 p.m.</td>
</tr>
<tr>
<td>7%</td>
<td>Final project presentation; submit powerpoint file on Canvas before your scheduled presentation time</td>
<td>variable</td>
</tr>
<tr>
<td>3%</td>
<td>Individual reflection document</td>
<td>4/29, 11:59 p.m.</td>
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</table>

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, and close at 11:59 p.m. on Sundays. The two lowest quiz 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
• Consensus conceptual management plan. Include rationale for each major approach, and how biophysical, economic, and policy/social constraints were taken into account.
• 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. You will likely have limited field data collected/analyzed, limited financial analysis completed, limited management timeline, etc.; however, you will need to show clear evidence that all sections of the report are underway.

Check point #4
Second full report draft based on the final template. Must include full analysis of inventory data; rationale for each management decision.

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 72 hours, 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:** Unless otherwise noted, lab periods are to be used to collect and analyze data, prepare presentations, and produce reports. That time has been set aside and scheduled by students. 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, stay current with all assigned readings, and actively participate in class. 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. Students who attend all scheduled class meetings will receive a 2% increase in their overall course grade.

**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 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. 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 syllabus represents current plans and objectives for this course. As the semester progresses, changes may need to be made to accommodate timing, logistics, or to enhance learning. Such changes, communicated clearly, are not unusual and should be expected.

Grades and Grade Points
For information on current UF policies for assigning grade points, see https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/.

Attendance and Make-Up Work
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/UGRD/academic-regulations/attendance-policies/. Details for this course can be found above and on Canvas.

COVID Policies
We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

- You are required to wear approved face coverings at all times during class and within buildings. 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.
- This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Follow your instructor’s guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.
- 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.

Class Recordings
Our 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. I do give you permission to record audio in course meetings to use for your own reference, without sharing.

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. 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.aas.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.bluerca.com/ufl/. Summaries of course evaluation results are available to students at: https://gatorevals.aas.ufl.edu/public-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/scr/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, https://disability.ufl.edu/

Campus Helping Resources
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.
• University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, http://www.counseling.ufl.edu
• U Matter We Care, www.umatter.ufl.edu/

Student Complaints:
• Residential Course: https://secr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/.
• Online Course: http://www.distance.ufl.edu/student-complaint-process

UF/IFAS Field and Fork Food Pantry, http://pantry.fieldandfork.ufl.edu
• The Pantry is a resource on the University of Florida campus committed to eradicate food insecurity. Food insecurity is not having a reliable access to nutritious foods for yourself on a regular basis. If you, or anyone you know is experiencing food insecurity, the Pantry is a resource to visit. They offer non-perishable food, toiletries and fresh vegetables grown at the Field and Fork Gardens to provide a well-balanced diet. Protecting the privacy of its guests and providing food to those in need within our campus community is a priority. Guests do not need any proof of need to use this resource, all that is needed is a Gator 1 ID to prove you are a current Student, Faculty or Staff at the University of Florida.
## Course Schedule Tue

<table>
<thead>
<tr>
<th>Week</th>
<th>Tuesday Lecture per 2-3</th>
<th>Wednesday Lab per 4-9</th>
<th>Assignment Due *</th>
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</thead>
<tbody>
<tr>
<td>1... 12-13 Jan</td>
<td>Course overview, group assignments (TM, SS) Management planning, purpose and intent, structure of a good plan, (TM)</td>
<td>Using the map given to your group, travel to ACF and survey the property on your own at the beginning of lab period. Then meet the instructors at the scheduled time and location to ask questions.</td>
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</tr>
<tr>
<td>2... 19-20 Jan</td>
<td>Group dynamics: teamwork, collaboration, addressing conflict, how to disagree without being disagreeable (TM) Introduction to ACF GIS (SS)</td>
<td>Groups in field</td>
<td></td>
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<tr>
<td>3... 26-27 Jan</td>
<td>Continued orientation, catch-up, etc. (TM) Inventory primer: plot arrangement, plot type, basics of variability and sampling intensity (SS)</td>
<td>Groups in field</td>
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<tr>
<td>4... 2-3 Feb</td>
<td>Period 2 catch up if needed Period 3 Guest Speaker: How to Speak Landowner: questions to ask, interpreting answers, and translating them into actions (Russ Weber, F&amp;W)</td>
<td>Inventory workshop with Dr. Johnson and Dr. Vogel (by group, 40 minute slots, times to be assigned). Workshop on Zoom, you can pause your field work at ACF to log in at your assigned time using wi-fi near the learning center or shop building. Brief focus on timber inventory, detailed discussion on other measurements like habitat, game cams, etc.</td>
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<tr>
<td>5... 9-10 Feb</td>
<td>Groups work on presentations; SS and TM online for questions and feedback</td>
<td>Check Point #1 based at ACF... Group conceptual management plan. Summary of landowner objectives, overview of parcel, consensus conceptual management plan, general inventory plan (20 minute time slots to be assigned)</td>
<td></td>
</tr>
<tr>
<td>6... 16-17 Feb</td>
<td>Analysis of basic tree inventory data (TPA vs. BAA, mean DBH, mean height), calculating biological rotation age (TM) Statistical analysis: measures of central tendency, variability, confidence intervals (SS) HW1</td>
<td>Groups in field</td>
<td></td>
</tr>
<tr>
<td>7... 23-24 Feb</td>
<td>SPEAKER: Recreation (Taylor Stein - SFRC)</td>
<td>Check Point #2 at ACF... oral presentation of inventory status and issues, adjustment of plan based on data collected, proposed data analysis</td>
<td>HW1 due</td>
</tr>
<tr>
<td>8... 2-3 Mar</td>
<td>Wildlife management - Framework/nuts and bolts and context (SS) Guest Speakers: Wildlife Management focused on single species management (John Dooner and Austin Carroll, Southern Forestry Consultants)</td>
<td>Groups in field or analyzing data</td>
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<tr>
<td>Week</td>
<td>Tuesday Lecture</td>
<td>Wednesday Lab</td>
<td>Assignment due</td>
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<tr>
<td>9... 9-10 Mar</td>
<td><strong>Guest Speaker</strong>: Determining the market value of timber with a focus on conceptual drivers of price stumpage vs gatewood (Chris Demers, SFRC) Predicting biological growth using growth-and-yield models (TM)</td>
<td>Groups in field or analyzing data</td>
<td>Check Point #3 Plan Draft #1</td>
</tr>
<tr>
<td>10... 16-17 Mar</td>
<td>Economic analysis: calculating net present value, internal rate of return, and land expectation value Economic analysis: calculating economic rotation age, iterating with growth and yield models, other topics (SS, TM)</td>
<td>Groups analyzing data or preparing documents</td>
<td>HW2 due</td>
</tr>
<tr>
<td>11... 23-24 Mar</td>
<td>Developing Ecosystem Service Markets... Carbon, Wildlife, Water (SS) <strong>Guest Speaker</strong>: Wetland Mitigation (Sarah Nelson)</td>
<td>Groups analyzing data or preparing documents</td>
<td>HW3 due</td>
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<tr>
<td>12... 30-31 Mar</td>
<td><strong>Guest Speaker</strong>: Conservation Easements (Charlie Houder, Alachua County) <strong>Guest Speaker</strong>: Forest Certification (Laura Bosworth, Florida Forestry Association)</td>
<td>Groups analyzing data or preparing documents</td>
<td>Check Point #4... Plan Draft #2</td>
</tr>
<tr>
<td>13... 6-7 Apr</td>
<td>Analysis of and planning for risk: identifying risks, quantifying risks, risk tolerance, accounting for risk tolerance in planning (TM) Ethics (TM)</td>
<td>Groups analyzing data or preparing documents</td>
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<tr>
<td>14... 13-14 Apr</td>
<td>Licensing/Registration, Forest Practices Acts (SS)</td>
<td>Groups preparing documents</td>
<td>Final Plan</td>
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<td>15... 20-21 Apr</td>
<td>Final Plan presentations</td>
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<td>Finals week Week of 26 Apr</td>
<td>Monday-Wed Final Plan presentations on Zoom</td>
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<td>Individual Reflection Document</td>
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TM=Tim Martin, SS=Scott Sager

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