

**Course Code & No. - Section:** BIOL 352  
**Course Title (Credits):** Special Topics: Forest Ecology – Carbon Dynamics and Forest Health in the Lake Tahoe Basin  
**Term & Year:** Fall / 2015  
**Course Ref. No. (CRN):** 80362

**Instructor:** Dr. Patricia Maloney  
**Phone(s):** 775 881 7560 ext. 7467  
**Email:** [pemaloney@ucdavis.edu](mailto:pemaloney@ucdavis.edu)  
**Office:** TCES, third floor  
**Office Hours:** T 10:00-11:30 a.m. or by appointment

**Class Meeting Time:** Intro lecture/meeting- 10/02/2015 (Fri: 4:00-5:15); Field day 1- 10/03/2015 (Sat: 9:00-5:00); Lab day 2- 10/04/2015 (Sun: 10:00-3:00); Closing meeting- 10/23/2015 (Fri: 4:00-5:15)

**Location:** TCES 205 EPLAB

**Prerequisites:** ENVS 205/200  
**Corequisites:** None

### **Course Descriptions:**

**BIOL 352.** A two-day course (1 field day and 1 lab day) exploring and studying carbon dynamics and forest health in the Lake Tahoe Basin. Field studies will include community and population ecology, forest health, structure and composition, coarse woody debris surveys, and analysis of environmental factors (e.g., climate, soil, geology). Current concerns regarding carbon stocks and sequestration in forest ecosystems will be discussed.

**Student Outcomes for BIOL 352:** Students will demonstrate:

1. a basic understanding of the biology, ecology, and natural history of diverse forest ecosystems in the Sierra Nevada.
2. basic field ecological techniques (e.g., forest mensuration) and observational skills.
3. competence in data collection, basic analysis, written summary, and reporting.
4. an ability to work well in a team to accomplish a given set of tasks.

### **Methods of Assessing Student Outcomes**

Student outcomes will be assessed using the following:

1. Instructor observation of student participation and ability to begin to develop critical thinking in the field and develop observational skills
2. Observed ability to work in a team
3. Ability to present information to peers
4. Summaries of information in a written report (**two-page written report due Nov 6, 2015**)

### **Instructional Strategies**

Students will prepare for class and the field by **reading through *Writing for Science* and taking notes on material** covered in the introductory and closing meeting and lecture. The field day will be designed to learn how to collect field data and make observations to better understand and describe forest communities and dynamics. Three groups working in the field will work together in the lab to enter and calculate data. The instructor will take all field collected data and run through the Forest Vegetation Simulator (FVS) to estimate future growth yields and stand-level carbon sequestration. Small groups will work together to summarize and present field data and data from FVS at final meeting on **Oct 23, 2015**. Students will take notes summarizing field data and presentations to write summary report due **Nov 6, 2015**.

## Recommended Texts and Reading Materials

1. Goldbort, R. (2006) *Writing for Science*. New Haven: Yale University Press. LCC number: T11.G626 2006. A detailed resource for writing about science that includes a discussion of what kinds of information is presented in sections of research articles, as well as style elements like voice, tense, and other nuances appropriate to scientific writing.
2. Gonzalez, P., Battles, J.J., Collins, B.M., Robards, T., and Saah, D.S. 2015. Aboveground live carbon stock changes of California wildland ecosystems, 2001-2010. **Forest Ecology and Management 348: 68-77.**
3. Stephenson, N. L., A. J. Das, R. Condit, S. E. Russo, P. J. Baker, N. G. Beckman, D. A. Coomes, E. R. Lines, W. K. Morris, N. Rüger, E. Álvarez, C. Blundo, S. Bunyavejchewin, G. Chuyong, S. J. Davies, Á. Duque, C. N. Ewango, O. Flores, J. F. Franklin, H. R. Grau, Z. Hao, M. E. Harmon, S. P. Hubbell, D. Kenfack, Y. Lin, J.-R. Makana, A. Malizia, L. R. Malizia, R. J. Pabst, N. Pongpattananurak, S.-H. Su, I.-F. Sun, S. Tan, D. Thomas, P. J. van Mantgem, X. Wang, S. K. Wisser, and M. A. Zavala. 2014. Rate of tree carbon accumulation increases continuously with tree size. **Nature 507: 90-93.**
4. Hicke, J. A., C. D. Allen, A. R. Desai, M. C. Dietze, R. J. Hall, E. H. Hogg, D. M. Kashian, D. Moore, K. F. Raffa, R. N. Sturrock, and J. Vogelmann. 2012. Effects of biotic disturbances on forest carbon cycling in the United States and Canada. **Global Change Biology 18: 7-34.**
5. Hurteau, M., and North, M. 2009. Fuel treatment effects on tree-based forest carbon storage and emissions under modeled wildfire scenarios. **Frontiers in Ecology and the Environment 7: 409-414.**

### Prim Library Resources for BIOL 352:

1. Reference materials (for use inside Prim Library).
2. Books (can be checked out): Goldbort, R. (2006) *Writing for Science*. New Haven: Yale University Press. LCC number: T11.G626 2006.
3. Electronic databases (for peer-reviewed research articles, reviews, newspaper and magazine articles): Electronic databases most likely to include articles related to your term paper topics are EBSCO: Academic Search Premier, Environment Complete, General Science Collection, GreenFILE, Health Source, Newspaper Source, and TOPICsearch; BioOne; and GREENR.
4. Lib Guides: <http://Libguides.sierranevada.edu> These web pages contain instructions about how to use resources available at Prim Library, how to evaluation the appropriateness of information from the Internet for a research paper, how to cite sources, and other topics related to finding and using information.

## Attendance

**Responsible for attending introductory, closing meeting and both field and lab days.** Failure to attend one day will result in a reduced grade (i.e., A to B, etc.).

## Sanctions for Cheating and/or Plagiarism

### The Honor Code

The faculty of SNC believes students must be held to high standards of integrity in all aspects of college life in order to promote the educational mission of the College and to encourage respect for the rights of others. Each student brings to the SNC community unique skills, talents, values and experiences which, when expressed within the community, contribute to the quality of the educational environment and the growth and development of the individual. Students share with members of the faculty, administration and staff the responsibility for creating and maintaining an environment conducive to learning and personal development, where actions are guided by mutual respect, integrity, responsibility and trust. The faculty and students alike must make diligent efforts to ensure high standards are upheld by their colleagues and peers as well as themselves. Therefore faculty and students accept responsibility for maintaining these standards at Sierra Nevada College and are obligated to comply with its regulations and procedures, which they are expected to read and understand.

## **Consequences of Violating the Student Honor Code**

SNC students and faculty share the responsibility for maintaining an environment of academic honesty. Thus, all are responsible for knowing and abiding by the SNC Faculty/Student Honor Code published in the current SNC Catalog. Faculty are responsible for presenting the Honor Code and the consequences of violating it to students at the start of their classes AND for reporting all incidences of academic dishonesty to the Provost. Students are responsible for knowing what constitutes CHEATING, PLAGIARISM and FABRICATION and for refraining from these and other forms of academic dishonesty. Violations of the Honor Code become part of a student's academic record.

1<sup>st</sup> Offense: Student receives a zero for assignment/exam and counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

2<sup>nd</sup> Offense: Student fails course and receives counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

3<sup>rd</sup> Offense: Student is expelled.

## **Grading Policy**

A grade: student participates and engages in all aspects of course, prepared for field and lab days and working in a team.

B grade: student participates and engages in all aspects of course, semi-prepared for field and lab days and working in a team, and/or misses one day of course.

C grade: very little participation and engagement by the student in the course, semi-prepared for field and lab days and working in a team, and/or misses one day of course, and does not submit final two-page report.

D grade: no participation and engagement by the student in the course, not-prepared for field and lab days and not working in a team, and/or misses two days of course.

F grade: no participation and engagement by the student in the course, not-prepared for field and lab days and not working in a team, and/or misses two days of course, and does not submit final two-page report.

## **ADA Accommodations**

In accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, students with a documented disability are eligible for support services and accommodations. If a student wishes to request an accommodation, please contact the Director of Academic Support Services, Henry Conover, at (775) 831-1314 x7534, [hconover@sierranevada.edu](mailto:hconover@sierranevada.edu), office in Prim Library: PL-304.

## **The SNC Email System**

The SNC email system is the official communication vehicle among students, faculty members and administrative staff and is designed to protect the confidentiality of student information as required by the Family Educational Rights and Privacy Act of 1974 Act (FERPA). Students should check their college email accounts daily during the school year.

Students have a right to forward their SNC e-mail to another e-mail account (for example, @hotmail or @gmail). However, confidentiality of student information protected by FERPA cannot be guaranteed for SNC e-mail forwarded to an outside vendor. Having email redirected does not absolve a student from the responsibilities associated with official communication sent to his or her SNC email account.

## **The Sierra Nevada College Mission Statement:**

Sierra Nevada College graduates will be educated to be scholars of and contributors to a sustainable world. Sierra Nevada College combines the liberal arts and professional preparedness through an interdisciplinary curriculum that emphasizes entrepreneurial thinking and environmental, social, economic and educational sustainability.

**Special Topics – Forest Ecology Schedule – Fall 2015**

<b>Dates</b>	<b>Class, field, &amp; lab preparation</b>	<b>Class, field, &amp; lab topics</b>	<b>Assignments Due</b>
Fri 10/2	Read syllabus	<p>Syllabus, reading material, brief introductory presentation and student questions.</p> <p>Assign teams for field studies (e.g., structure &amp; composition, forest health, coarse woody debris, environmental data)</p>	
Sat 10/3	<p>Field site: Blackwood Canyon – upper montane forests</p> <p>Be prepared for being in the field all day. <b>Pack a lunch and water.</b> Have on appropriate clothing for the field (e.g., hat, gloves, jacket, sweater, sunscreen) and <b>wear sneakers or hiking shoes.</b> Pants are preferred over shorts.</p> <p>Field gear will be passed out before heading into the field</p>	<p>Forest community composition and structure (e.g., species, abundance, diameter, mortality, etc.)</p> <p>Forest health (disease and insect surveys)</p> <p>Coarse woody debris surveys (Brown’s fuels transects)</p> <p>Environmental data acquisition (e.g., GPS coordinates, elevation, slope, aspect, soil type, rock cover, soil moisture, climate, topographic features, etc.)</p>	
Sun 10/4	Lab day	Students will work in teams to enter data from field day, calculate density, basal area, coarse woody debris, fuels, environmental conditions, etc.	<p>Brief students on further data entry, analysis, graphical representation, and reporting for follow-up meeting and powerpoint presentations to be made on 10/23</p> <p>Be sure to read through <i>Writing for Science</i> as you prepare to write summary report</p>
Fri 10/23	Closing meeting	Summary of field data and findings as well as growth yields and carbon estimates from FVS. Discussion of forest health and carbon issues.	Two-page written report – <b>Due Nov 6, 2015</b>