

Course Code & No. - Section: BIOL 421 - Section 1
Course Title (Credits): Ecology of Aquatic Ecosystems
Term & Year: Fall 2017
Course Ref. No. (CRN): 80262

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Office Hours: MW 9:00-11:00 (Andy)
MW 9:00-10:00, 11:15-12:00 (Chuck)

Class Meeting Time: TR 1:00-2:15
Location: TCES 205

Corequisites (from Catalog): BIOL 425 (lab)
Prerequisite ENVS 200/205

Course Description

Aquatic Ecology is the study of the relationship between organisms and their physical, chemical and biological environment in and adjacent to aquatic habitats. This course will examine these characteristics and processes with an emphasis on sub alpine lakes and streams in the Sierra Nevada. Course work will include an array of readings, lectures, in and out of class work as well as significant attention devoted to learning the methods involved with sampling, data collection and data analysis.

Student Outcomes (from the Course Approval Form)

Upon successful completion of this course, a student will:

1. Develop a comprehensive understanding of aquatic ecosystems, particularly sub-alpine lakes and streams
2. Develop critical thinking skills related to complex issues in aquatic ecology
3. Gain quantitative and qualitative skills related to data collect and data analysis
4. Be able to identify some aquatic organisms and use a dichotomous key
5. Gain field experience and proficiency at some methods in aquatic ecology studies

Methods of Assessing Student Outcomes

Student outcomes will be assessed using the following:

1. Homework Assignments
2. Closed-book examinations
3. Class Projects
4. In class presentations
5. Quizzes
6. Written assignments related to readings

Instructional Strategies

This class will utilize lectures, movies, lab work, small groups, and individual work in class using laptop computers, inquiry learning, case studies, homework assignments, and a class project. The course makes use of the *Moodle* course management system.

Required Texts and Materials

1. Limnology 2nd ed, A.J. Horne and C.R. Goldman 1994 McGraw Hill ISBN 0-07-023673-9
2. Stream Ecology- Structure and function 1995. J.D. Allan. Kluwer Academic ISBN 0-412-29430-2
3. Freshwater Ecology 2nd , W. Dodds and M. Whiles, Academic Press ISBN 978-0-12-374724-2
4. Laptop computer (one that meets the published SNC Laptop Requirements) with MS excel

Prim Library Resources

Using the library's resources effectively (not just Internet resources) contributes to developing each of SNC's core themes by exposing students to high quality academic resources, diverse opinions, new ideas, and a future that includes building on a liberal arts education. In this course, you will be expected to utilize the library's resources (either on-site or remotely) as you complete your assignments.

Prim Library Resources for ESCI 301; Hydrologic Sciences and Water Resources includes but are not limited to:

1. 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.
2. Hardcopy periodicals: Prim Library has current subscriptions for Science, New Scientist, Science News, and National Geographic Magazine. Any of these are likely to have articles on your term paper topic. Full-text articles from many more periodicals are available through the electronic databases.
3. 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 and Class Participation

Due to the small size and dynamic nature of the class, students are required to attend every class and be active participants. Students are required to be in class promptly and ready to learn and participate at the scheduled meeting time. Tardiness will not be tolerated.

Class Requirements

- 1.) Students are required to arrive to class on time
- 2.) Assignments are due at the beginning of class, no exceptions. Assignments turned in after the beginning of class will automatically lose 10% of the value of the assignment. For each day after the due that an assignment is turned in 10% of the assignment will be deducted. Students are required to bring a hard copy of assignments to class, emailed copies are not acceptable unless specifically allowed by the instructor.
- 3.) Use of cell phones is not allowed in the classroom unless the instructor allows specific uses.
- 4.) It is the responsibility of the student to bring fully charged laptops and/or power cords.

Projects

Throughout the semester, students will be involved with multiple projects ranging in topics, difficulty, and style. Some, but not all projects, will be done in groups. More details will be discussed throughout the semester.

Exams

A Mid-term and a Final exam will be given during the semester. Add 1

Grading Policy

Grades will include in class and homework assignments, projects, presentations and exams to give the students multiple opportunities to succeed.

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. If writing is turned in by you, without citation or shared credit, it means you wrote it. Any shared work should be credited, paragraph by paragraph.

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.

- 1st 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.
- 2nd 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.
- 3rd Offense: Student is expelled.

Moodle Course Site: <http://moodle.sierranevada.edu/moodle/>

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 or go to the OASIS offices on the third floor of Prim Library within the first week of the semester.

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.

CLASS SCHEDULE ¹

WEEK	DAY	DATE	TOPICS	Reading	Professor
1	T	8/22	Introduction		Both
	TH	8/24	Origins of lakes, Transparency		Levitan
2	T	8/29	Physical Attributes, current, channel form	C1*	Rost
	TH	8/30	Properties of water, Density and temperature, Stratification		Levitan
	F	9/1	Lab 1		Both
3	T	9/5	Physical Processes, impacts to biota	C3*	Rost
	TH	9/7	Mixing, turnover, wind, fetch, waves		Levitan
4	T	9/12	Chemical Attributes, Temp., DO, Ions	C2*	Rost
	TH	9/14	BOD, Compensation Depth, Redox, atmo input, precip of PO₄, exploding lakes		Levitan
	Fri	9/15	Lab 2		Both
	Sat	9/16	Weekend Field Trip		Both
	Sun	9/17	Lassen National Park		Both
5	T	9/19	Chemical Processes, Nutrients	C13*	Rost
	TH	9/21	Exam 1		Levitan
6	T	9/26	1 Biological Attributes, Autotrophs	C4*	Rost
	TH	9/28	Cyanophyta and littoral vegetation, Phytoplankton, Light and nutrient effects		Levitan
7	T	10/3	Biological Attributes, Heterotrophs 1	C5*	Rost
	TH	10/5	light adaptation, abyssal & benthic community		Levitan
	F	10/6	Lab 3 Truckee River		
8	T	10/10	Biological Attributes Heterotrophs 2		Both
	TH	10/12	Zooplankton demographics and life cycles, grazing rates		Levitan
9	T	10/17	Exam 2		Rost
	TH	10/19			Levitan
	F	10/20	Lab 4 Lake Tahoe		Both
10	T	10/24	Processes 1-Productivity		Rost
	TH	10/26	Light and photosynthesis, loading and eutrophication, fatty acids		Levitan
11	T	10/31	Processes 2 - Food Webs		Rost
	TH	11/2	Bottom-up and top-down control, food web efficiency		Levitan
	Fri	11/3	Lab 5		Both
	Sat	11/4	Weekend Field Trip		Both
	Sun	11/5	CA Coast, Bodega Bay		Both
12	T	11/7	Processes 3 – Subsidies		Rost
	TH	11/9	Food web manipulation, toxins and EAA's, Allochthonous communities		Levitan
13	T	11/14	Processes 4 - Invasive Species		Rost
	TH	11/16	Food web reactions to vertebrate		Levitan

			introductions		
	F	11/17	Lab –Make up Lab		Both
14	T	11/21	Thanksgiving Break		
	TH	11/23			
	T	11/28	Processes 5 – Management		Rost
15	TH	11/30	Lake Ecosystem management, lakes and watersheds, harvests, ecosystem services		Levitan
	F	12/1	Lab 6 – Final Lab		Both
16	T	12/5	Review/Prep catch up		Rost
	TH	12/7	Lake Harvests, ecosystem services		Levitan
Exam					

¹ Schedule is subject to change, *Chapters in Stream Ecology Text