This course is intended for seniors and graduate students in Biology, Environmental Science, Geography, and Geology. A previous ecology course is a prerequisite [or consent of instructor]. It carries 5 credit hours since it has 3 hours of lecture, 3 hours of lab, and 4 field trips (The 4 field trips are required, rain or shine, although a good excuse for missing one will be accepted). The number of students is limited to 16. It will require about $35 as a field trip fee.

**Lecture:** MW 8:30-9:50 Room 111 Huestis (this is a change in time)
**Lab:** Tues. 2:00-4:30 Room 111 Huestis (for Saturday field trips also)

The required text is: *Limnology by Jacob Kalff, 2002*, used copies will be available through the bookstore or from Amazon.com

This course is not recommended for students who have taken Bi 308, Freshwater Biology. The labs will be used primarily to examine and identify the various organisms collected on previous or other collection trips. A rudimentary knowledge of freshwater algae and invertebrates would be of great help, but a basic coverage will be given in the labs. Information on the methods for analysis of some important chemicals will be given.

However, one of the features of the course will be to discuss a variety of important (or interesting) papers (recent or otherwise) in the field of limnology and aquatic ecology. Each student will pick a paper from a list provided by the instructor (or picked by the student with permission), and present this paper during part of a lab period. These papers (mostly from the primary literature) will be read ahead of time by all the students and a list of questions from the students will be compiled before and during the presentation, and these will then be answered or discussed by the presenter and the remainder of the class (*and instructor).

***Grades will be based on 2- Hour exams, 1 lab. Practical, the reports (presentations), and attendance.***

**Tentative Schedule:**

**Week 1**
Mon March 31: **Intro**—Chapt. 1:40 1-12; **Water**—Chapt. 3: 35-40; **Water resources**—Chapt. 4 & 5: 41-71.

* Tues. April 1 Lab. Introduction to phytoplankton and zooplankton
* Wed April 2: **Origins of lakes & morphometry**—Chapt. 6 & 7: 72-93; **Aquatic systems**—Chapt. 9: 122-135

**Week 2**

* Tues. April 8 Lab—preparation for field trip and presentation of one paper

* Wed. April 9: **Light and its effects** (continued) (also pp.322-340)

* Sat. April 12: Field trip to coastal lakes and Knowles Creek

**Week 3**
Mon. April 14: **Temperature and stratification**—Chapt. 11: 154-178. [**water movements**—Chapt. 12: 179-201]

* Tues. April 15 Lab—examination of organisms from coastal lakes

* Wed. April 17: **Dissolved O₂**—Chapt. 15: 226-238; [**redox potential**—Chpt. 16: 239-246]
Week 4
Mon. April 21: **Phosphorus cycling**—Chapt. 17: 247-257
   *Tues. April 22 Lab—examination or organisms from Triangle Lake & presentation of one paper*

Wed. April 23: **Nitrogen cycling**—Chapt. 18: 270-283.

Week 5
Mon. April 28: **Salinity and major ion composition of lakes and rivers**—Chapt. 13: 202-217
   *Tues. April 29 Lab—presentation of 1-2 papers and preparation for overnight field trip*

Wed. April 30: **FIRST HOUR EXAM.**
   *Sat/Sun (May 3/4): Overnight field trip to cold water springs, Klamath Lake, Hunter’s Hot Springs, and Lake Abert (camping at Summer Lake hot springs)*

Week 6
Mon. May 5: **Cycling of other nutrients and minerals**—Chapt. 19: 284-291.
   *Tues. May 6: examination of organisms from weekend field trip to E. Oregon.*

Wed. May 7: **Cycling—continue. The sulfur cycle** pp.368-373.

Week 7
Mon. May 12: **Flowing waters, etc.**—Chapt. 8: 94-121
   *Tues. May 13: chemical protocols and presentation of papers*

Wed. May 14: **Eutrophic waters and eutrophication**—pp. 341-348 (+additional reading) [**Catchments, retention times and eutrophic relationships** —Chapt 9: 122-135].
   *Sat. May 17: semi-alpine oligotrophic lake in Cascades (snow conditions allowing)*

Week 8
Mon. May 19: **Eutrophication and restoration (case histories)**
   *Tues. May 20: examination of organisms from Cascade lakes*

Wed. May 21: **Waste water treatment (outside reading) + pp.257-261**

Week 9
Mon May 26: **MEMORIAL DAY (NO CLASS)**
   *Tues. May 27: field trip to Eugene sewage treatment plant*

Wed. May 28: **Seasonal cycles, natural controls of phytoplankton and zooplankton etc.** pp.386-399.
   *Sat. May 31: (optional) Picnic at instructor’s house on Fern Ridge Lake using sailboat for sampling* [last day of classes is Fri. June 6]

Week 10
Mon. June 2: **Acidification of waterways and CO₂** — Chapt. 27: 478-499.
   *Tues June 3: examination of sewage organisms, Fern Ridge plankton, and review for lab practical exam*


Week 11 (final exam week)
Tues. June 10: 10:15 – 12:15-- lab practical and second hour exam