DEPARTMENT OF BIOLOGICAL SCIENCES
COURSE OUTLINE

1. **Course:** **ECOLOGY 417 – AQUATIC COMMUNITIES AND ECOSYSTEMS**

Lecture Section(s) L01 MWF 11:00 MS 527 Fall 2014

Instructor(s): Dr. Samba Kâ BI 442 Email: TBA

Lab Coordinator: Louise Hahn BI235 220-5280 lhahn@ucalgary.ca

Course website: Desire2Learn: ECOL 417 L01 - (Fall 2014) - Aquatic Communities & Ecosystems (https://d2l.ucalgary.ca/d2l/home/53713)

Biological Sciences Department BI 186 403-220-3140 biosci@ucalgary.ca

2. **Prerequisites:** **Biology 313, and one of Biology 315 or Environmental Sciences (ENSC) 401.**

See section 3.5.C in the Faculty of Science section of the online Calendar
wwww.ucalgary.ca/pubs/calendar/current/sc-3-5.html

3. **Grading:** The University policy on grading and related matters is described sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Midterm Examinations	**20 %**	**(Held In-Class)**
Laboratory Assignments	**40 %**	
Final Examination	**40 %**	

Each piece of work (assignment, laboratory report, midterm test or final examination) will be assigned a percentage score. The student's average percentage score for the various components listed above will be combined to produce an overall percentage for the course, which will be used to determine the course letter grade.

*****A PASSING GRADE IN BOTH THE LECTURE AND THE LAB COMPONENT IS REQUIRED TO PASS THIS COURSE**

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in Section 3.6. It is the student's responsibility to familiarize himself/herself with these regulations. See also Section E.6 of the University Calendar

5. **Scheduled out-of-class activities:** Dates and times of approved class activities held outside of class hours.

September 13 and 14 (Sat/Sun): Weekend field trip mandatory (see Laboratory Schedule)

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. **Course Materials:** Ecology 417 Course Notes (available at Bound & Copied)
Ecology 417 Laboratory Manual (available on Desire2Learn site)

Online Course Components: List online tools being used in the class outside of those provided by the University course Management system and Top Hat classroom response system. Note: Top Hat is allowed for all classes and may be used for grades. Instructors using Top Hat should plan to accommodate students who do not have access to a cell phone or portable computing device. Course components that are free to all students and that are not dependent on prior accesses are allowed. Those with APPROVED associated optional or mandatory course fees must be listed in section 8.

7. **Examination Policy**: No electronic or written aids (eg. cell phones, tablets, computers, PDAs, notes, textbooks) will be allowed during writing of any exams. Non-programmable calculators will be permitted to answer quantitative questions on exams, if applicable, and permission to do this will be clearly indicated on the examination paper. Students should also read the Calendar, Section G, on Examinations.

8. **Approved Mandatory and Optional Course Supplemental Fees**: A list and description of approved optional and mandatory course fees. **September 13 and 14: Weekend field trip mandatory (see Laboratory Schedule) $50.00**

9. **Writing across the curriculum statement:** e.g. "In this course, the quality of the student's writing in laboratory reports will a factor in the evaluation of those reports. See also Section E.2 of the University Calendar.

10. **Human studies statement:** indicating whether students in the course may be expected to participate as subjects or researchers. See also Section E.5 of the University Calendar.

ETHICS IN THE BIOLOGICAL SCIENCES

Studies in the Biological Sciences involve the use of living and dead organisms. Students taking laboratory- and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

11. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**

(a) **Academic Misconduct:** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K. Student Misconduct to inform yourself of definitions, processes and penalties

(b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.

(c) **Academic Accommodation Policy:** Students with documentable disabilities are referred to the following links: Calendar entry on students with disabilities and Student Accessibility Services.

(d) **Safewalk:** Campus Security will escort individuals day or night (http://www.ucalgary.ca/security/safewalk/). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

(e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also

(f) http://www.ucalgary.ca/secretariat/privacy.

(g) **Student Union Information:** VP Academic Phone: 220-3911 Email: suvpaca@ucagary.ca.
SU Faculty Rep. Phone: 220-3913 Email: sciencerep@su.ucalgary.ca; Student Ombudsman

(h) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

(i) At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

Department Approval: **ORIGINAL SIGNED** Date_____

Associate Dean's Approval
for out of regular class-time activity: **ORIGINAL SIGNED** Date**:**_____

COURSE OUTCOMES

As a result of participating in *ECOL 417 – Aquatic Communities and Ecosystems*, students should understand physical, chemical and biological building blocks (elements of aquatic ecosystem structure) and integrate the building blocks through the interpretation of figures and writing essays to explain patterns and processes of aquatic populations (elements of aquatic ecosystem function). A successful student will be able to:

- Define, describe or identify major lake types and key physical and chemical drivers of biological processes
- Explain the constraints placed on organisms by key physical and chemical drivers
- Interpret figures to identify and explain key concepts
- Generate figures to illustrate relationships between physical, chemical and biological processes
- Integrate physics, chemistry and biology to generate hypotheses regarding processes that regulate aquatic populations
- Evaluate alternative hypotheses by confronting theory with data

CLASSROOM EXPECTATIONS:

What you should do:

1. Be Respectful – this means more than no talking once the lecture begins or doing something during the lecture that your fellow students find distracting. Respect your classmates in your words and actions. Listen to others' questions. Class time is for class activities.
2. Be Informed – being informed is more than having homework completed; it includes doing the "over a cup of coffee" mini homework assignments and classroom awareness (what are we doing, and where are we in the grand scheme of things).
3. Be Prepared – just like the Boy Scouts. Being prepared means regularly checking where we are in the topic list and where we are going. It also means giving a little thought to how the pieces are fitting together.
4. Participate – if you have a question, then please ask it. You can raise your hand, or if there is a pause you can simply ask it. We will answer clarification questions right away. Other question will either be answered on the spot, or placed in a "parking lot" for a later time depending on the question and where we are in the lecture. You also participate effectively by paying attention, and giving some thought to the questions I often ask the class during lecture. Finally, make an effort to integrate the laboratory material with the lecture material – they have been designed to reinforce one another.

What you should not do:

Your cell phone should be turned off during lecture and communication with other individuals via laptop computer or any other device connected to the internet is not allowed during class time. In addition, to provide a positive and distraction free learning environment for all students, conversations that do not directly involve the material that is being covered should not occur.

GRADING SCALE

Grade	Cut-Off
A	85
A-	80
B+	77
B	73
B-	70
C+	67
C	63
C-	60
D+	55
D	50
F	< 49

UNIVERSITY OF CALGARY

DEPARTMENT OF BIOLOGICAL SCIENCES

COURSE OUTLINE

ECOLOGY 417

AQUATIC COMMUNITIES AND ECOSYSTEMS

TERM: Fall 2014 SECTION NO.: 01

PREREQUISITE(S): Biology 313, and one of Biology 315 or Environmental Sciences (ENSC) 401

Students may not register in a course unless they have a grade of at least C- in each prerequisite course.

LECTURER(S): Dr. Samba Kâ

LAB SUPERVISOR: Ms. Louise Hahn BI 235 220-5280 lhahn@ucalgary.ca

LECTURES: MWF 11:00 AM ST 129

LABS:

01	R	09:00	BI 236
02	R	12:00	BI 236
03	R	15:00	BI 236
04	T	09:00	BI 236

All laboratory materials including the lab manual, schedule of labs and assignments, class data, assignments etc.) will be located on Blackboard (address available from L. Hahn).

TEXTS: Required:

Ecology 417 Laboratory Manual.
Ecology 417 Course Notes (available at Bound & Copied)

RESERVE READING Please publish to D2L

MARK DISTRIBUTION:

A. Composition of Final Grade

Midterm Exam I (Oct 10)	10%	In-Class
Midterm Exam II (Nov 12)	10%	In-Class
Laboratory Assignments	40%	
Final Written Exam	40%	

B. Final Exam

There will be a final exam scheduled by the Registrar's Office. This will contain questions on all components of the course.

Tentative Lecture Topics and Approximate Sequence - ECOL 417 - Aquatic Communities & Ecosystems

1 Course Introduction & Overview/Administrative dreck/Basic concepts

Physics

2 Origin, Morphometry & hydrology of lakes
3 Thermal properties of water & stratification
4 Light & Colour
5 Water Movement

Chemistry

6 Overview of Lake Chemistry
7 Oxygen
8 Inorganic Carbon
9 pH & acidification
10 Phosphorus
11 Nitrogen
12 Bacterial

Biology

13 Phytoplankton
14 Primary production: bottom-up controls
15 Zooplankton
16 Phytoplankton: Top-down controls
17 Community structure and food webs
18 Large-scale patterns in diversity and distribution
19 Community structure in aquatic vs terrestrial systems
20 Biodiversity and ecosystem function
21 Applied issues and food web management
22 General review (last lecture of term)

Midterm Exam I (10% of final grade) – Monday, October 10, 2014
Midterm Exam II (10% of final grade) –Wednesday, November 12, 2014

SCHEDULE OF LABORATORIES Fall 2014 (Tentative)

Week 1: Introduction to aquatic systems, aquatic sampling devices and sampling design	Sept 8-12
WEEKEND FIELD TRIP: Compulsory WEEKEND field trip to Kananaskis Country. This is a required two-day field trip to Kananaskis Country where students will collect samples and data which are necessary for the completion of the laboratory component of the course. Students are advised that they should come prepared for all types of weather; warm clothing that may be worn in layers, adequate rain (or snow) gear. Rubber boots are suggested if available. It is also suggested that students bring a spare change of clothing in case of rain.	Sept 13+14
Week 2: Physical Limnology I, Physical Properties of Water	Sept 15-19
Week 3: Physical Limnology II, Lake Morphometry /Scientific Writing	Sept 22-26
Week 4: Chemical Limnology I, Nitrogen, Phospohorus, Bacteria and Biological Oxygen Demand (BOD)	Sept 29-Oct 3
Week 5: Chemical Limnology II, Major Anions, Cations and Oxygen	Oct 6-10
Week 6: Introduction to Data Analysis	Oct 13-17
Week 7: Primary Productivity	Oct 20-24
Week 8: Aquatic Communities I	Oct 27-31
Week 9: Aquatic Communities II	Nov 3-7
Week 10: READING BREAK NO LABS ☺	Nov 10-14
Week 11: Secondary Production	Nov 17-21
Week 12: OPEN LAB (term paper)	Nov 25-29
Week 13: OPEN LAB (term paper)	Dec 3-7

DISTRIBUTION OF LABORATORY MARKS

Assignment 1: Assigned Monday Sept 8 (Week 1). **Due** Friday Sept 12 (Week 1). Value = 2%
Students will read a journal article and answer a set of questions. This assignment is intended to help students prepare for the field trip. **Email your assignment to your TA.**

Assignment 2: Assigned Sept 23, 25 (Week 3). **Due** Oct 7, 9 (Week 5). Value = 5%
Preliminary methods and materials section of term paper.

Assignment 3: Assigned Oct 14, 16 (Week 6). **Due** Oct. 28, 30 (Week 8). Value = 6%
Data analysis methods and preliminary results section of term paper. This will include figures and tables, statistical comparisons and a text section.

Assignment 4: Assigned Oct. 28, 30 (Week 8). **Due** Nov 18, 20 (Week 10). Value = 8%
Preliminary introduction and topic proposal for term paper. Students will be required to have their term project topic approved before handing this assignment in. This will be an opportunity to research the literature.

Assignment 5: **Due** Friday Dec. 5 by 4 pm (Week 13). Value = 14%
Final draft of term paper. The format and content of the paper will be discussed numerous times throughout the semester. Students are to choose their own topic as the focus of their paper. Students are given several assignments associated with the term paper in order to provide instruction and feedback from their TA. The final draft will be a collection and revision of these assignments, with the addition of a discussion and abstract.

Participation: Value = 5%
Students are expected to be prepared for labs, and to participate fully in all labs. This means having read the lab manual before coming to lab, being on time, being able to answer pre-lab questions, completing pre-lab assignments, and attending all labs. Labs that are missed for invalid reasons will result in lost participation marks.

NOTE

Laboratory reports must be handed in at the **start** of laboratory sessions on the due dates. Late laboratory reports will **not** be accepted unless for reasons outlined under Deferral of Term Work, 2014 - 2015 Calendar.

GRADING SCALE

DEPARTMENT OF BIOLOGICAL SCIENCES

Policy on the Use of World Wide Web Material
in Term Papers, Lab Reports and Assignments

It is becoming increasingly feasible and popular to search the World Wide Web for information pertinent to term papers and assignments. As with other, more traditional, sources of material, this must be fully and accurately cited. As with all other sources, students must take responsibility for the quality, accuracy and verifiability of material that they cite. Because web sites may be transient, the following must be done if web sites are cited:

(i) A full web site address must be provided.

(ii) A print out of the home page of the web site, and the page on which the particular information begins, must be included as appendix material for the term paper, lab report or assignment.