Biol 459 Aquatic Ecology
Fall 2011

Instructor Dr. Gray Stirling
SP 375.25 ,
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Office Hours: Best to see me after class, make an appointment, or drop by Thursday, Friday 10.00 - 14.00 and take your chances.

Lecture: Monday and Wednesday 11.45 - 13.00 CC 305.
Lab: Wednesday 13.30 - 15.30 (intermittent)

TA: Hubert Désilets SP-301.16/432
Office Hours: TBA

Required Text: ***Ecology of Aquatic Systems*** M. Dobson and Chris Frid

Required **I clicker remote**

Prerequisites: BIOL 322 & 353

Aquatic Ecology 2011 is an introduction to stream, lake and ocean ecology. We begin with the chemical and physical properties of water that fundamentally regulate the diverse nature of aquatic habitats. The unique physical-chemical properties of water structure their respective aquatic communities. Flow creates stream habitat. Specific heat and density of liquid water largely structure lake habitat and all three properties define ocean habitats. We will generally review the nature of these habitats, classify their organism assemblages, review what is thought about the ecology of these fairly well-defined communities. The course will progress from small-scale stream ecology to large-scale open ocean habitat, highlighting promising ecological theory developing in each field of aquatic ecology. This should prepare you to confidently engage issues in aquatic ecology and resource conservation. Finally, this course has a field component, an extended hands-on exercise in collecting, processing, interpreting and presenting field data.

Participation			10%
Labs	Biodome Report		5 %
	Stream Methods		5%
	Lab Study Report		20%
	Lab Study Presentation		10%
Multiple Choice Exams		10% each	20%
Final			30%

Graduate students will have to present a lecture (15%) and a literature review on a central idea in it (15%).

Late Penalty: After 5pm, 10% per day

Grading scheme: A+>90, A=85-89, A-=80-84, B+=76-79, B=73-75, B-=70-72, C+=66-69, C=63-65, C-=60-62, D+=56-59, D=53-55, D-=50-52, F<50

Books on Reserve.

M. Dobson and C. Frid. 2009. *Ecology of Aquatic Systems*. Oxford University Press. 3hr Reserve

W. Lampert and U. Sommer. 2007. *Limnoecology*. Oxford University Press. 3hr reserve

G. W. Prescott 1964. *How to Know the Algae, An Illustrated Key*. W. C. Brown ..... 3 day Reserve.

Sept. 7 Introduction: Organization, Field trips, Overview - the Water Cycle

Reading: Sect. 1.3

Sept. 12. Water chemistry and its properties

Sept. 14. Properties of the aquatic environment

Prepare the Biodome Lab
Reading Sect 3.1 & 3.2
Sept. 19. Water flow and habitat structure

Read Sect 3.31 - 3.34
Sept. 21. Adaptations to flow & functional groups
Biodome Lab 3

Read Sect 2.2.1 & 2.2.2, 3.4
Sept. 26. Stream Communities

Read Sect 3.34 - 3.3.7
Sept. 28. Invertebrate Drift in Streams
Lab Stream Prep
Biodome Lab Due

Oct. 3 . Guest Lecture - Dr. Jim Grant . Fish Ecomorphology

Oct 5. **Field Trip**

Oct 10. Thanksgiving

Oct. 12. Guest Lecture Chemical Communication - Chris Elvidge
Stream Lab

Read Box 3.2
Oct. 17 Flow, Sinking and Size - Reynolds number

Read 7.1 - 7.4.1
Oct. 19 Lake Physical-Chemical
Stream Multiple Choice Exam - location tba

Read 7.4.2-7.7.2
Oct. 24 Lake Ecology

Oct 26. Lake Communities
Lab - *Processing your samples*

Reading Fig. 6.5, pp 176 (ladder of migration), 6.8
Oct. 31 Diel Vertical Migration
Field Methods Due

Reading Sect 2.2.3, 7.4.3
Nov. 2 Microbial Loop

Nov. 7 Guest Lecture Microbial Diversity - Dr. David. Walsh
Lab -Processing your samples

Nov. 9 Size Structure

Read 4.1- 4.4.2
Nov. 14 Estuaries and soft sediments

Read 5.3, 5.4, 5.5
Nov 16 Coasts, Reefs and Hard Sediments
Multiple Choice Exam -Lakes to Size Structure

Read 1.2.2, 1.2.3,Box 6.3, 6.8.3, 6.7.5
Nov. 21 Ocean Currents, ENSO and NAO

Nov. 23 **Stream Presentations**

Read 6.1, 6.2, 6.3, 6.4
Nov. 28. 23 Ocean, Physical and Chemical

Read 6.5, 6.6, 6.7,6.8
Nov. 30 Open Ocean Community Structure

Read 6.8.4, 6.7.5
Dec. 5 Fishing Methods, Data, Impact

Dec 6 Summary and Final Exam

Please do not **plagiarize** , that is, "the presentation of the work of another person, in whatever form, as one's own or without proper acknowledgement" , or, " the contribution by one student to another student of work with or without the knowledge that the latter may submit the work in part or in whole as his or her own." (Student Code of Conduct)

If you share work, acknowledge it, but be advised, that your mark depends on your own work.