

BIOLOGY 446 (January – April 2016)

Advanced Aquatic Ecology (Mondays 2:30-5:20 PM; Lecture Room: ECS 130),

Professor: Dr. Asit Mazumder; **Office:** Cunn 034b, **E-mail:** <mazumder@uvic.ca>

| Lecture Topics | Student projects |
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| Monday Jan 4th <ul style="list-style-type: none"> • Course outline and organization • Course Overview – State of Aquatic ecosystems: need for integrated and inter-disciplinary knowledge | Selection and assignment of research topic for individual student |
| Monday Jan 11th Lecture-2a Aquatic Ecosystems: Functioning under interactions among physical, chemical and biological factors and processes | Lecture-2b Nutrients, Eutrophication, Water Quality and Harmful Algae |
| Monday Jan 18th Lecture-3 Aquatic Foodwebs, trophic interactions and fisheries | Project Presentation: 1, 2, 3 |
| Monday Jan 25th Lecture-4 Sockeye lake systems to illustrate nutrient-foodweb dynamics and sockeye productivity | Project Presentation: 5, 6, 7 |
| Monday Feb 1st Guest Speaker | |
| Monday Feb 15th Lecture-5 Aquaculture and Fisheries Exploitation | Project Presentation: 9, 10 12 |
| Monday Feb 22nd Mid-term Exam | |
| Monday Feb 29th Lecture-6 Isotope Ecology, application to foodweb structure, energy transfer, and contaminant transport along aquatic foodwebs | Project Presentation: 13, 14, 15 |
| Monday March 7th Lecture-7 Water Diversion, Water Quantity and implications for aquatic systems; MPAs | Project Presentation: 16, 19, 20 |
| Monday March 14th Lecture-8 Invasive species and biodiversity implications for aquatic ecosystems | Project Presentation: 21 22, 23 |
| Monday March 21st Lecture-9 Global challenges of sustaining clean and healthy water. | Project Presentation: 24 25, 26, |
| Monday March 28th (Easter Monday) | |
| Monday Apr 4th Lecture: Emerging Tools to detect sources of chemical and microbial contamination of water | Project Presentation: 27, 29, 30 |
| Final Examination (will be scheduled by UVic) | |

Course evaluation and distribution of marks:

A) Each student will pick a paper from the list of papers published in top journals like Science and Nature.

1. Each Student will make an oral presentation (critical synthesis) using a selected paper in terms of the *issue or concept addressed, hypothesis or objectives tested, methods used and robustness of results and interpretation*. The student will use this paper as a starting point to develop a critical synthesis presentation on the topic.

Total marks: 25%.

2. The other students will be required to read up on the topics of discussion and demonstrate their knowledge of the topic through questions and discussion.

B) Mid-term exam (**Feb. 22nd 2016**; will cover lecture materials, assigned reading materials if any covered until **Feb 1st, 2016**) – Mid-term exam will emphasize on the understanding of concepts as well as factual information presented in the lectures. **Total marks: 25%**

C) Final exam (To be scheduled by UVic; will cover lecture materials and assigned reading materials) – Final Exam will emphasize on understanding of concepts as well as factual information. **Total marks: 50%**

Structure of Project presentation:

1. Title Page

- Title Page: Make sure that your title reflects the context of the synthesis (not the title of the selected project paper). Title of your presentation can be provocative or creative as you want
- Author (student name)

2. Main body of the presentation. Present the structure of your presentation in bullet form.

- **Introduction of the topic:** describe the issue, or topic or concept addressed in the project paper and other related papers, its importance as an emerging ecological issue, identify the needs for further research or development in the area. See if there are contradictory views on the topic.
- **Objectives of your synthesis:** Tell us what you address in your synthesis of the topic, and how you plan to advance the topic
- **Discussion:** Critical evaluation of existing concepts, theories and models and your opinion on the current state of knowledge on the topic. Make an effort to synthesize results from the other published papers in the area of selected paper, and generate your own way of looking at the results from other papers. You need to use graphs and tables from published papers to support your views.
- **Conclusion:** Overall findings and ideas for new directions.

3. Bibliography: following standard journal format (use the format of the paper selected, but present the full title of the paper).