2013 Fall Biology 3610: Environmental Biology Course Outline

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Lecture
Location: UC 0050
Time: Monday & Wednesday: 10: 00 am-11: 30 am
Duration: 2012/09/09 - 2012/12/02
Credits: 0.50

Office Hours: CB4016, Monday, 11:30 am to 12:30 pm, or by appointment

Textbook: Environmental Science, 5th Edition, Bill Freedman (**Required for 5th edition, not 4th edition**）

Schedule

September 9: Introduction & Chapter 1: Ecosystems and Humans

September 11: Chapter 4: Energy and Ecosystems

September 16: Chapter 5: Flows and Cycles of Nutrients

September 18: Chapter 7: Biodiversity

September 23: Chapter 8: Biomes and Ecozones

September 25: Chapter 9: Ecology: From Individuals to the Biosphere

September 30: Chapter 12: Resources and Sustainable Development

October 2: Chapter 13: Non-renewable Resources

October 7: Chapter 14: Renewable Resources

October 9: Mid-term exam (Chapters 1, 4, 5, 7, 8, 9, 12, 13; eight chapters). Short answer and /or long answer questions + multiple choices questions. TA will help administer the exam.

October 14: **Happy Thanksgiving! No class.**

October 16: Chapter 15: Pollution and Disturbance as Environmental Stressors

October 21: Chapter 16: Gaseous Air Pollution

October 23: Chapter 17: Atmospheric Gases and Climate Change

October 28: Chapter 18: Toxic Elements

October 30: Chapter 19: Acidification

November 4: Chapter 20: Additional Problems of Surface Waters

November 6: Chapter 21: Oil Spills

November 11: [Remembrance Day] Chapter 22: Pesticides

November 13: Chapter 23: Environmental Effects of Forestry

November 18: Chapter 24: Agriculture and the Environment

November 20: Chapter 27: Ecologically Sustainable Development

November 25: Group Poster Competition

November 27: Group Poster Competition

December 2: [Last Class] Group Poster Competition, or General Review & Questions or Guest Speaker Lectures.

Additional Requirements:

(1). Preview the textbook and think about the questions in the chapter(s) before the applicable class. 2). Review the textbook and try to answer the questions in the chapter(s) after the class. (3). Read the entire lectured chapters for exams.

Grading Scheme:

1. Participation [10%]: Participation marks will be calculated based on class attendance form signatures and/or attendance of class pop quizzes or assignments. In the case of absences, attendance marks will be given if the student provides a doctor's note dated before the missed class or with a solid reason. The pop quizzes and/or assignments points (10 points) will be used as bonus points to adjust the class average as necessary. Point value is variable. Each point may be worth more or less than 1%, depending on the average class marks in terms of participation, poster competition, pop quizzes or assignments, and exams.

2. Mid-term exam [30%]: Chapters 1, 4, 5, 7, 8, 9, 12, 13; eight chapters. Short answer and/or long answer questions (10%) + multiple choices questions (20%, 80 questions, 0.25% each). TA will help administer and mark the exam. Duration is 75 minutes.

3. Final exam [45%]: Will consist of short answer and/or long answer questions (10%) and multiple choices questions (35%, 140 questions, 0.25% each). Duration is 3 hours. Cover chapters 14-24 and 27 (twelve chapters).

4. Group Poster competition [15%]: Each group consists of three students (two students groups are also acceptable). Graduate students will judge the posters. The groups will have to present to the judges for getting marks. During the poster sessions, each student has to go around and have a sheet to fill out information about 2 other posters to prove that you went around talking to other groups. The 3 best posters will be awarded. The following topics are suggested for making posters, but you also can make your own topics. (1) Treatment of pulp/paper mill wastewater and sludge, (2) Organic fertilizers made of barks, mill sludge and municipal wastes, (3) Production of wood-derived rayon carbon fibers, (4) Products from renewable forestry biomass, (5) Nanomaterials from renewable forestry biomass, (6) Lignin-degraded products for pharmaceutical industry, (7) Production of vanilla (vanillin) from lignin or biomass, (8) Valuable compounds can be produced from lignin, (9) Microbial conversion of wood wastes to value-added bioproducts and biofuels, (10) Global impact of climate changes, (11) Problems with landfills, (12) Mercury contamination in northern Ontario, (13) Oil spill bioremediation, (14) Rooftop agriculture, (15) Antibiotics from paper mill black liquor, (16) Utilization of malting industry wastewater, (17) Utilization of malting industry solid wastes, (18) Hydogen production and sulphur removal by growing algae in sulphur rich gold mining waste water, (19) Removal of arsenic in waste water by a symbiosis of bacteria and algae, (20) Methanogenic bacteria, (21) Transgenic pitcher plant and pharmaceutical protein production, (21) Anaerobic conversion of paper and pulp mill residuals to bioproducts and biofuels, (22) Novel bacterial enzymes for lignin modification, (23) Grow bacteria in waste water for biofuels and bioproducts production, (24) Grow algae in waste water for biofuels and bioproducts production.

N.B. Up to 10% of the exam questions will be on information covered only in class lectures (i.e. not covered in the textbook and/or Powerpoint slides). This may include new environmental biology knowledge from new literature or governmental policy reports presented in class.

Marking Scheme for Poster Presentation

Judge name or number: _____

Poster Name (Write all the authors names):_____

Criterion	Maximum mark	Mark given
Clarity of the context, research question(s), hypotheses. Appropriate amount of material presented.	4	
Organization of the material, logical flow of the poster sections.	3	
Attractiveness of the poster: amount of text, font size, illustrations.	3	
Ability to explain the poster content with enthusiasm and to answer questions.	3	
Overall scientific merit.	2	
Total	15	

Please provide up to 3 comments of constructive criticism :