SCI 100

Introduction to Integrated Sciences

Theme: The Past and Future of the planet

Instructor: Dr. Pat Mosto

Office hours: Tuesday 9-11 or by appointment e-mail at pmosto@rider.edu

Syllabus

COURSE DESCRIPTION:

In this freshman-level lecture and lab-based natural science course, students will be study how science can contribute to solutions to contemporary issues and experience how the scientific process unfolds to make such contributions. Students will study themes related to the use and future of natural resources through readings, classroom activities, lectures, laboratories, and student mini-research projects. Field trips will be required.

The course will specifically analyze the integration of science via the GAIA theory, and then concentrate in the Biosphere, Hydrosphere, Lithosphere and Atmosphere. In each area we will be looking primarily at challenges the earth face, how to solve them from a scientific view point, but including the historical, social, economic, ethical and political challenges those areas face.

LEARNING OBJECTIVES:

The course will benefit students by providing deep learning experiences through the use of an inquiry-based approach to science, best delivered in a laboratory-based natural science course.

Specific learning objectives include the following: students will...

- understand essential scientific principles and concepts
- understand the fundamentals of the scientific process
- communicate about the natural world, the scientific process and issues about natural resources in a meaningful way
- begin to make informed and responsible conclusions and decisions through the critical study of data/evidence
- develop an appreciation for the complexities of the broader context around contemporary issues
- apply scientific and technical knowledge to specific tasks and

problems

□□□develop increased capacity in the skills of independent learning, critical thinking, problem definition, and problem solving

□□□communicate effectively through oral, written, and graphical means, and participate effectively in individual and team-related activities

□□□understand the importance of history, ethics and social context in the practice of science

READINGS:

Tillery, B et. Al. Integrated Science. McGraw Hill.

Vigil, K. Clean Water. Oregon State University Press

Grebner, D. et a. Introduction to Forestry and Natural Resources. Academic Press

Archer, D and S. Rahmstorf. The Climate Crisis. Cambridge University Press

EVALUATION:

Students will be engaged in numerous learning activities, including lab/field research. Students will be graded in three areas:

- Class participation in discussions and weekly current events - 20%
- Labs, field trips and movie reports- 20%
- Four exams addressing prior weeks readings and lab/field activities - 60%

Letter Grade Distribution:

A: 100-93; A-: 92-90; B+: 89-86; B: 85-83; B-: 82-80; C+: 79-76; C: 75-73; C-: 73-70; D: 69-60; F: 0-59

GRADED WORK

Class participation: During class meetings, students will engage in one or more activities. While students work in groups for some of the discussions, each individual student will be expected to compose their own responses to questions. Students should listen critically and read the entire assigned material prior to come to class. Students should prepare a set of questions from the readings on areas that were difficult or need further explanation. Students should bring a “clip” form a magazine, newspaper, blog, etc. on a current topic related to each class discussion. Grades for this component of the class will count for 20% of the grade.

Lab/field/film work: Students are required to participate in all lab/field/film work. Students should produce a lab/field/film report following the provided instructions for each assignment. Grades for this component of the class will count for 20% of the grade.

Exams: Students will be expected to come to the exams with the knowledge needed to complete the exam during the class period. Exams will focus on comprehension of the main ideas of the readings, labs and class discussions. Exams will include open questions and problems. Class time will not be used for exams reviews. To provide additional support for exam preparation, I will be asking students to generate questions related to the topics discussed in class. The week before the dates of each exam, I will compile those questions and provided as a study guide for the exam. Some of those questions may appear on the exams. Grades for this component of the class will count for 60% of the grade.

COURSE POLICIES:

Communication: The course Canvas site and email messages will be used for communications with students, provide new documents, and post grades. Please pay attention to your Rider email account and visit the Canvas site regularly.

Attendance policy: attendance to class is mandatory. If a student must miss a class, arrive late or leave early, the students should do their best to speak with me beforehand. If a student misses class for legitimate reasons, the student should contact me to work out a plan to make up work missed (students should be aware that in some instances, there may be a limit to how much I can help if the work was intended for groups, not individuals, or there was part of field trip). It is the student responsibility to contact me to work out a plan for any class miss.

Participation: Participation in class will be expected. Students should come to every class ready to work hard. Typically all students have very challenging schedules that at times are tiring and distracting. But focus on this course work during class is essential in every class. Students should listen critically and read the entire assigned material prior to come to class. Students should bring a set of questions and a "clip" form a magazine, newspaper, blog, etc. on a current topic related to the class discussion.

Withdrawal: The withdrawal policy of the School of Liberal Arts and Sciences will be followed: after the 11^{th} week of the semester, dropping the course will not be approved except for medical reasons certified by the College.

Academic Integrity: For any work a student produce in this class (individual or group work), students are expected to acknowledge the sources of information. The course policy is the same as that of the university:

"Academic dishonesty includes any unauthorized collaboration or misrepresentation in the submission of academic work. In all written work, whether in class or out of class, the student's name on the work is considered to be a statement that the work is his or hers alone, except as otherwise indicated. Students are expected to provide proper citations for the statements and ideas of others whether submitted word for word or paraphrased. Failure to provide proper citations will be considered plagiarism and offenders will be subject to the charge of plagiarism specified in the statement of regulations. Similarly, students are expected to adhere to all regulations pertaining to exams conduct. These regulations are designed to insure that the work submitted by the student on exams is an honest representation of that student's effort and that it does not involve unauthorized collaboration, unauthorized use of notes during the exam, or unauthorized access to prior information about the exam." (The Source, Rider University)

Student "cheating" is indeed an uncommon occurrence but it important that all students understand expectations in this course. Any form of cheating in this class is completely unacceptable, will not be tolerated, and will be dealt with appropriately according to the policy cited above and the significance of the work and infraction committed. The university urges all faculty to report any instances of cheating/plagiarism or other dishonorable behavior so that it is recorded in a student's file.

Acquiring work from an online source &/or another person and submitting it as student own work is a form of plagiarism and a serious offense. Students must cite all sources appropriately.

Phone use: students should refrain from texting or placing or receiving phone calls. If students need to respond to something urgent, the student should leave the room to handle a call. During exams use of a phone in any way is absolutely forbidden.

ADA: If a student has a disability and believe it will need academic accommodations in this course, the student should make an appointment for an Intake Interview with Services for Students with Disabilities in the Vona Academic Annex, Room 8, (609) 895-5492, serv4dstu@rider.edu. Students should bring documentation on their disability to support accommodation requests and to recommend services as appropriate to individual situations.

Adjustments to topics and/or work required: As the semester progresses, adjustments may be made to the specifics provided in the weekly plan in this document, if unforseable situations so demand.

Class Calendar (could be subject to change based on unexpected conflicts)

Date	**Topic**	**Readings**	**Work due**
9/10	Introduction – What is science?	Tillery – Chapter 1	
9/15	History of life on earth - Gaia	Tillary – Chapter 22 http://en.wikipedia.org/wiki/Gaia_hypothesis	Set of questions and clip reading on today's class topic
9/17	Daphnia lab		

9/22	Ecology and the environment	Tillary – Chapter 23	Set of questions and clip reading on today's class topic
9/24	Termite lab		Daphnia lab due
9/29	Exam		
10/1	Water environments	Vigil – Chapter 1	Termite Lab due Set of questions and clip reading on today's class topic
10/6	Water chemistry and microbiology	Vigil – Chapter 2	Set of questions and clip reading on today's class topic
10/8	Water lab		
10/13	Trip to WWTP		
10/15	Film - Flow	Watch on canvas	Water lab due
10/20	Water policies and regulations – Dr. Brogan	Vigil – Chapter 5	WWTP report due Set of questions and clip reading on today's class topic
10/22	Water pollution	Vigil – Chapter 3	Flow film report due Set of questions and clip reading on today's class topic
10/27	Exam		
10/29	Forest history	Grebner- Chapter 1	Set of questions and clip reading on today's class topic
11/3	Forest lab		
11/5	Films: Seasonal Forest episode10 from Blue Planet: Film: Rainforest, episode 8 from Blue Planet: Forests of the world	https://www.youtube.com/watch?v=VrYAOPZs7QI www.youtube.com/watch?v=vOkLp4YWW2s Grebner – Chapter 2	
11/10	Forest disturbance and health	Grebner – Chapter 14	Set of questions and clip reading on today's class topic
11/12	Forest lab		Forests of the world report and movie report due
11/17	Forest ethics	Grebner – Chapter 17	Set of questions and clip reading on today's class topic Presentation of Forest of the world report

11/19	Exam		Forest lab report due
11/24	The earth climate – Dr. Duckenbrot	Archers – Chapter 1 and 2	Set of questions and clip reading on today's class topic
11/26	Thanksgiving		
12/1	Climate change	Archer – Chapter 3 and 7	Set of questions and clip reading on today's class topic
12/3	Ice melting/sea level lab		
12/8	Impact of climate change	Archer – Chapter 8 and 9	Set of questions and clip reading on today's class topic
12/10	Climate change lab		Ice melting/sea level lab due
12/15	Exam		Impact of climate change in your forest area due Climate change lab report due