The Art Institute of California™-Los Angeles

Course Syllabus

Course Number: MS130
Course Title: Biology
Class Meetings: Section A– Tuesday, 6:00-9:50p, Bldg. 2900, Room 310.
Session/Year: WI07
Instructor Name: Pete Markiewicz
Email Address: pindiespace@gmail.com
Phone: 310-450-6191
Instructor Availability Outside of Class: Office hours are in the Tutoring Center (2900, Rm. 312 tutoring center) Thursdays, 12:30 – 4:20p ***by appointment only*** unless otherwise noted, or by email (preferred). Students may leave messages for Instructor on MySpace at **http://www.myspace.com/pindiespace, username "Beef Tallowe"**. Students may also access "virtual office hours" by meeting the Instructor in the Second Life 3D virtual world (download client at **http://www.secondlife.com**) during Office Hours. Search for avatar "**pindiespace potato**" or go to the Second Life SURL: http**://slurl.com/secondlife/Chicagon/154/156/109/?title=Poppyland 1**

Biology

Course Description:

In this course, students will study life on our planet. In addition to discussing the origins of life, students will explore the biological processes of single-cell life forms, viruses and bacteria, plants, and animals. The theories of evolution will also be discussed.

Course Focus: *This course is designed to make students explore the connections between their lives and biological knowledge. Students will discover what it means to be alive – what is "living" versus "nonliving" in the natural word? Students will then explore the key concepts contributing to our understanding of the living world. These concepts include the diversity of life (classification of living things and their interrelationships in an ecosystem) and the ubiquity of life (how biology applies to everyone's health and daily lives). Students will research and perform critical thinking from a biological perspective on public issues which apply to their daily lives. The course also includes "hands on" experiences via easy-to-conduct experiments and field trips.*

COURSE RESOURCES AT: ***http://www.plyojump.com/courses/***

Course Length:	11 Weeks
Contact Hours:	44
Lecture:	44
Lab:	0
Credit Values:	4

Course Competencies:
Upon successful completion of this course, the student should be able to:

- Learn the basic structural features of life – the cell, the organism, the ecological network
- Learn how to analyze and judge "science stories" about biology in the media
- Learn how to apply biological knowledge to personal health and fitness

- Learn how the individual impacts the collective environment, and how collective responsibility is necessary to avoid "the tragedy of the commons"
- Understand how evolution selects for diversity in biological organisms and ecological networks.

Course Prerequisite(s): None.

Text(s): REQUIRED: Web-based e-book at http://www.plyojump.com/courses, plus 1 book from the following list:

1. **Michael Pollan, The *Omnivore's Dilemma: The Botany of Desire* (2006), Penguin Press, SIBN: 1-59420-082-3**

2. **Steven Mithen, *After The Ice: A Global Human History 20,000 – 5,000 BC* (2004), Harvard University Press, ISBN: 0-674-01570-3**

3. **Richard Dawkins, *The Ancestor's Tale: A Pilgrimage to the Dawn of Evolution* (2004), Mariner Books, ISBN: 0-618-61916-X.**

4. **Frans De Waal, *Our Inner Ape* (2005), Penguin Press, ISBN: 1-59448-196-2**

5. **Louann Brizendine, *The Female Brain*, (2006) Morgan Road Books, ISBN: 0-7679-2009-0**

You do NOT have to buy all these books, however you do have to buy AT LEAST ONE of these books. You will be assigned a mini-group which will report on the books during class.

Outlines for Team project labs and individual lab projects are also posted at http://www.plyojump.com/courses.

EXTRA CREDIT BOOK REPORTS*The Nature of Paleolithic Art*, R. Dale Gutherie (2005), University of Chicago Press. ISBN: 0-226-31126-0.

EXTRA CREDIT LABS: Individual lab projects are listed on the course website at http:///www.plyojump.com/courses/

EXTRA CREDIT VIDEOS: *Dragon's World: A Fantasy Made Real* (2005) Sony Pictures (DVD), **ASIN:** B0007MAO0W.

Materials and Supplies: A digital camera, either supplied personally, or checked out from the video cage. Sudents will also need notebooks and paper to record observations from their individual and Team projects.

Estimated Homework Hours: 1 per week.

Technology Needed: Access to Internet/web to research homework questions, and find information necessary to complete and present the final Team project. Access to area around Bldg. 2950 to conduct taxonomic and ecological survey.

Method of Instruction:
At the beginning of class, the Instructor will lead a discussion of the assigned homework, and any "current events" relevant to the course material. Students will receive a participation grade based

on their quarter-long performance in these discussions of homework and current events. After homework is handed in, the Instructor will present a lecture addressing the week's topic in Biology. During the middle portion of the class, students will work on a project assigned by the instructor. This in-class project may be individual or done in small groups. At the end of class the Instructor will assign homework for turn-in the following week.

REQUIRED Mini-Group projects
Students will buy one of the textbooks listed above in the syllabus. In week 2, students will be assigned a mini-group consisting of other students who have purchased the same book. These mini-groups will collectively create a Powerpoint presentation which will be presented during Week 06 – 11 to the class. Students reporting on a particular book will also be considered "class experts" on the book topics during open discussion.

EXTRA CREDIT book reports/video reports
Students will read books or view videos designated by the Instructor as extra-credit. They will then create a Powerpoint presentation for the class describing the book, and answering questions about the book in general discussion.

Extra Credit Lab Projects
Students may complete a lab based on the experimental design (options listed below, detailed description at http://www.plyojump.com/courses) provided by the instructor. After completing their lab experiment, students will answer lab-related questions provided by the instructor. Students will hand in individual labs during the last two weeks of the course.

- **Individual lab project 1 – "Tinfoil leaf"**
  Students will select a common houseplant and cover 4 leaves with tinfoil, taking photographs of the original, unaltered plant. Each week, students will remove one of the leaves and photograph the changes in the uncovered leaves. Students will then present results in class and discuss results in relation to biological diversity.

- **Individual lab project 2 – "Fungi and bacteria are all around us"**
  Students will select 4 of the basic food types (fruit, bread, meat, vegetables) and place them in a glass container with a small amount of water, sealed on the top with plastic wrap. Students will then observe the changes in the food as micro-organisms begin to utilize it for their own metabolism.

- **Individual lab project 3 – "Effects of Acid Rain"**
  Students will select 5 small plants from a gardening store. Each plant will be watered daily with varying amounts of acetic acid (vinegar) added to the water to mimic the effects of acid rain. Students will photograph the plants on a weekly basis, and document the daily change in their plants in an electronic log.

Team Project
All students must participate in the "Team" project, with a quarter-long duration. This lab counts as the equivalent of a final exam in the class. Students will be divided into 2-4 teams by the Instructor during the first few weeks of the course. Each group will perform a research study on the local ecosystem surrounding the 2900 building where class is held.

Initially, students will make a large-format (poster-sized) map of the study area. Students will collect information about the plants, animals, fungi and microorganisms present in the study area. They will research the common/scientific names of these organisms in books and on the Internet, and record their findings in their observational logs. They will also plot the location of observed

organisms on their large-format map. Finally, students will select 1 species to monitor over a period of weeks. They will record any rise/fall in the frequency of sightings.

The resulting log of observations will be organized into a presentation (including a map of the study area) describing the state and health of the "2900 ecosystem". This may include posters, charts, or electronic (Powerpoint) presentations. The results will be presented during the final two weeks of class.

Students are responsible for (1) making sure they are part of a team, (2) organizing division of labor among team members, and (3) selecting a "team leader" (4) contributing to the final presentation. The team leader will make the final report, indicating which students did/did not participate in the project. Students which did not participate in a team project will receive a failing grade for their final project in class.

All team members will receive the same grade for their work, regardless of individual contributions. Making sure all team members participate is the responsibility of the team members themselves.

Students WILL NOT be given significant time to complete the Team Project in class. Students are expected to self-organize their teams and plan data collection/analysis according to the Team Project handout posted on the class e-book website (http://www.plyojump.com/courses) OUTSIDE OF CLASS.

Grading Scale:
All assignments must have clear criteria and objectives to meet. All students shall be treated equitably. It will be that student's right to know his/her grade at any reasonable point that information is requested by that student. The criteria for determining a student's grade shall be as follows (on a percentage of total points basis):

A	100-93
A-	92-90
B+	89-87
B	86-83
B-	82-80
C+	79-77
C	76-73
C-	72-70
D+	69-67
D	66-65
F	64 or below

Process for Evaluation:

Attendance and Participation	10%
Assignments and Exercises	50%
Mid-Term Project/Examination	15%
Final Project/Examination	25%

Student Evaluation/Grading Policies:

- Class time will be spent in a productive manner.
- Grading will be done on a point system.
- Points for individual activities will be announced.
- All work must be received by the set deadlines.

- Late work receives a grade of zero.
- On-time projects may be redone with instructor approval.
- ABSOLUTELY NO WORK WILL BE ACCEPTED AFTER THE FINAL CLASS MEETS WEEK 11.

Classroom Policy:

- No food allowed in class or lab at any time. Drinks in recloseable bottles allowed in classroom.
- Edible items brought to class or lab must be thrown out.
- If student elects to eat/drink outside class or lab door, missed time is recorded as absent.
- Attendance is taken hourly. Tardiness or absence is recorded in 15-minute increments.
- Break times are scheduled by the instructor at appropriate intervals.
- No private software is to be brought to lab or loaded onto school computers.
- No software games are allowed in lab (unless in course curriculum).
- Headphones are required if listening to music during lab. No headphones are allowed in lecture.
- Any student who has special needs that may affect his or her performance in this class is asked to identify his/her needs to the instructor in private by the end of the first day of class. Any resulting class performance problems that may arise for those who do not identify their needs will not receive any special grading considerations.

Plagiarism & Cheating:
student handbook—p.154-55

Dishonesty, including but not limited to cheating, plagiarism, or knowingly supplying false information or deceiving the school and its officials is a violation of the student conduct policy. Any student who is found to have violated this policy is subject to disciplinary sanctions up to and including suspension or permanent dismissal. Please be aware that plagiarism is presenting another's ideas as one's own and includes paraphrasing as well as copying without proper citations or quotation marks.

***Please note: Showing up to class and doing all assignments, without progress, does not constitute a passing grade.**

Disability Policy Statement:
"It is our policy not to discriminate against qualified students with documented disabilities in our educational programs, activities, or services. If you have a disability-related need for adjustments or other accommodations in this class, contact Kimberly Clapp, Disabilities Coordinator at (310) 314-6181, kclapp@aii.edu, or visit her office located on the 2nd floor of the 2950 building, room 230."

Art Institute Attendance Policy: **Students absent for 14 consecutive days, without notifying their Academic Department Director/Advisor, will be withdrawn from the program.** In addition, the student may be involuntarily withdrawn at the discretion of the Academic Director, and with the approval of the Dean of Academic Affairs, at any time.

Weekly Course Outline

Week 1: **Lecture:** Critical thinking about science and biology. Deep space and deep time. The nature of the scientific method. Life versus non-living states.

Lab: Students complete a questionnaire evaluating their current understanding of biology. Students review individual lab projects and participate in the in-class assignment.
Homework: Week 01 discussion questions (cell components).

Week 2: **Lecture:** The origin of life. Biomolecules. How biomolecules create the living state. The cell-computer analogy of the living state. Energy processing in living things.
Lab: Energy use by the human body and machines. "Deep time" exercise.
Homework: Week 02 discussion questions (rare earth hypothesis, animal body plans).

Week 3: **Lecture:** The cell: the smallest complete unit of life. Viruses. Prokaryotic and eukaryotic cells. Fungi and bacteria at work. Plant and animal cells. Tissues and organs. Evolution of multi-cellularity. Animal body plans.
Lab: Animal body plans (description and diagrams).
Homework: Week 03 discussion questions (evolution of plants and animals).

Week 4: **Lecture:** Evolution, definition. History of evolutionary theories. Mechanism of Darwin-style evolution via natural selection. Evidence for evolution, and Darwin's theory of evolution. Speciation. Sexual selection in evolution. Other evolutionary theories. Trends in evolution. Mass extinctions. Future evolution.
Lab: Natural selection of animal bodies – forest to grassland.
Homework: Week 04 discussion questions (human evolution and "sexy pictures" of celebrities).

Week 5: **Lecture:** Human evolution. What are people? Primate evolution. Prescursors to humanity. Human evolution. Sequence of human evolution. Out of Africa. Eras of human evolution. The origin of art. Origin of civilization (the "long hot summer" of the Holocene). How humans are unique. Neoteny and human evolution. Sexual systems in apes and humans. Gender differences in humans shaped by evolution. Sexual selection (human males and females). Sexual displays (human males and females). Sexual selection expressed in art. Children. Old age. Evolution of human social behavior. Dominance and leadership. Biology and "universal myths".
Lab: Discussion of "sexy pictures" of celebrities – relation of sexual selection in human evolution and impact on art and design. How fantasy characters mimic human biology**.**
Homework: Week 05 discussion questions (*Homo erectus* "hobbit" questions).

Week 6: **Lecture:** Future evolution of humanity. Genetics. Ideas of heredity – ancient to present. The discovery of the gene. The "cell-computer" analogy in genetics. What genes do. Diploid-haploid. Mitosis. Meiosis. The origin of sex. The purpose of sex and the body. The origin of gender. How genes pass through generations. Inbreeding and its effects. Sex-linked genetic traits. Additional sources of genetic variability. Genetic counseling. Genetic engineering.
Lab: FIRST MINI-GROUP REPORT. STATUS REPORT ON GROUPS.
"Live action chromosme" exercise
Homework: Week 06 discussion questions (genetics and gender differences).

Week 7: **Lecture:** Ecology as a science. Ecology versus environmentalism. Population biology. Malthusian growth model of populations. Carrying capacity and

population cycles. Laws for population change. Ecological communities. Biomes. Ecosystems. How ecosystems change over time. Energy and matter flows in ecosystems. Food webs, chains, and pyramids.
Lab: SECOND MINI-GROUP REPORT. "Red queen hypothesis". Niches. Design evolutionary pattern for landlife from cephalopod body plan.
Homework: None.

Week 8: **Lecture:** Human and cultural ecology. Malthusian cycles in human history. Effects of humanity on ecosystems. The potential for overshoot (population, resource depletion, energy depletion, reduction in biodiversity, release of polluting materials into the environment, global warming). Consequences of "overshoot".
Lab: THIRD MINI-GROUP REPORT. Put your environmental money where your mouth is! – laws and the environment.
Homework: Personal ecology statement.

Week 9: **Lecture:** Rise and fall of alien civilizations based on ecological and environmental constraints. Environmentalism. Two visions of humanity and the environment. Natural capitalism. Environmental movements. Your personal responsibility for the environment. Eco-engineering and terraforming.
Lab: FOURTH MINI-GROUP REPORT. Presentation/discussion of personal ecology statements.
Homework: Personal ecology statement.

Week 10: **Lecture:** Health topics (selected by instructor, e.g., cancer, stem cells, AIDs, obesity and nutrition).
Lab: FIFTH MINI-GROUP REPORT. Students hand in individual projects. Instructor discusses features of individual project results. Graduating students present proof of participation in a Team project.
Homework: None.

Week 11: **Lecture:** None**.**
Lab: Students present Team projects for final grade.
Homework: None.