The Ohio State University
Freshman Seminar Program
Course Proposal

Course Information.

1. Attach a sample syllabus that includes the following. (Sample syllabi can be found at http://freshmanseminars.osu.edu).
   - the course goals
   - a brief description of the content
   - the distribution of meeting times
   - a weekly topical outline
   - a listing of assignments
   - grade assessment information (A-E or S / U)
   - required textbooks and / or reading list
   - the academic misconduct and disability services statements (sample statements can be found at http://artsandsciences.osu.edu/currofc/resources.cfm)

2. Attach a brief biographical paragraph that includes the current research interests, teaching awards and honors, and undergraduate courses taught by the participating instructor(s). The paragraph will be included in materials for first-year students.

Bryan Carstens: Evolution, Ecology anc Organismal Biology

Proposer's Name and Academic Unit

BCarstens 30 March, 2016

Proposer's Signature

carstens.12@osu.edu (614) 292-6587

Proposer's e-Mail Address Contact Phone Number

March 30, 2016

Submission Date

Signature Department Chair of Academic Unit

Please indicate the semester you would like to offer the seminar: AU'__X_____ SP'_____

This form and any attachments should be mailed to Freshman Seminar Program, 100 Denney Hall, 164 Annie & John Glenn Avenue, ATTN: Dawn Nolen or e-mailed to nolen.2@osu.edu. For additional information, please call 614/292-4680.

Rev. 3/10/16

The Ohio State University
Freshman Seminar Program – Arts & Sciences 1137. __ (Proposal)

Autumn 2016 Room *to be announced*

Title: The Biology of Sex, 1 cr., graded **Time** – *to be announced*

Description: The freshman seminar will introduce students to basic evolutionary and ecological theory by focusing on the biology of sex.

Professor: Bryan C. Carstens, Ph.D., Associate Professor, EEOB, College of Arts & Sciences, carstens.12@osu.edu, 292-6587, (office 482 Aronoff Lab)

Course goals: To explore sexual reproduction in an evolutionary, ecologically, and physiological context.

Meeting times: to be announced

Weekly topics outline:

Week of 8/23: *Why sex? The cost of sexual reproduction*. Students will be introduced to the seminal biological concept of natural selection. Asexually- and sexually-reproducing organisms will be contrasted

Week of 8/29: *No future*! Where do asexual lineages fall on the tree of life? Students will be introduced to the concept of phylogeny and descent with modification, and will observe that asexual lineages occupy the tips of evolutionary trees. Implication: they are evolutionary dead ends.

Week of 9/05: *Mixed genes*. The role of crossing over and recombination in Mendelian genetics. Students will review Mendelian transmission genetics.

Week of 9/12: *The problem with emulating the Lannisters*: Inbreeding depression, the feable European royal families, and deleterious recessive diseases. Students will be discouraged from mating with their cousins.

Week of 9/19: *How expensive are your gametes?* A cost benefit analysis of your energetic investment in reproduction. Sexual dimorphism: Secondary sex differences between males and females.

Week of 9/26: *The male perspective on sexual selection*. Students will be introduced to classic theory about sexual selection, which incidentally was developed by males who were fixated on male-male competition.

Week of 10/03: *The female perspective on sexual selection*. Students will be introduced to newer theory, largely developed by female researchers, who identified female choice as a major driver of sexual selection.

Week of 10/10: *Mating systems*: Students will explore the diversity of animal behavioral ecology and mating systems.

Week of 10/17: *Hormones and hermaphrodites*: Students will explore the role of hormones in development as well as the spectacular case of hyenas.

Week of 10/24: *Sperm competition*. Students will explore the evolved mechanisms that facilitate sperm competition, including copulatory plugs, mate guarding, sneaker males and bacula.

Week of 10/31: *Sexual reproduction in plants*: How angiosperms co-opt animals to facilitate their reproductive behavior.

Week of 11/07: *Sexual selection in humans*: Students will explore human secondary sex characteristics, and the diversity of human social systems.

Week of 11/14: *The evolution of homosexuality?* Students will survey homosexual behavior in animals, and explore theories that attempt to explain the evolution of homosexual behavior.

Week of 11/21: Thanksgiving week (no class)

Week of 11/28: *Sexually Transmitted Disease* - Parasitism and sexually transmitted disease. Students will be introduced to parasite biology and explore the evolution of STDs in humans.

Week of 12/05: *Snap talks* – students will submit five – minute Snap talks on a topic of their choosing.

Required Materials (Posted on Carmen):

(1) **Readings: (will aim for one peer-reviewed and one media/blog post on a related topic during each week, potentially supplemented by textual sources): For example, for the Sperm Competition week:** Yong, Ed. Horrific beetle sex – why the most successful males have the spikiest penises. Science Blogs: Not exactly Rocket Science. Hotzy C, Arnqvist G (2009) Sperm competition favors harmful males in Seed beetles. Current Biology 19, 404-407.
(2) **Lectures:** A short (~10 minute) lecture will be made available as a video on demand related to the topic of each class section; students will be asked to view lecture prior to reading the assigned materials so that they have the necessary background information to comprehend the topic.

Assignments:

Reviews - students will critique required readings in a 1 page document to be submitted prior to class. (40% of grade)

Blog posts - Using the u.osu.edu framework, students will be asked to produce two 'blog posts' on papers that are related to the content discussed in the seminar. (20% of grade each)

Snap talk - students will present one five-minute lecture one a preassigned topic. (20% of grade)

About the Professor
Dr Bryan Carstens is an evolutionary biologist who studies the history and formation of species. To date, he has published ~70 papers in the peer reviewed literature that have been cited ~4000 times. Before accepting a position at The Ohio State University, Dr. Carstens taught Evolutionary Biology in Louisiana, and provided testimony to the Louisiana Senate and House of Representatives related to several challenges to teaching the theory of evolution in the Louisiana public school system. As a result of these efforts, he was labeled an "agent of darwinist intolerance" by a

Discovery Institute press release. His intolerance is limited to the belief that only scientific theories should be taught in science classes.

Accessibility Any student who has special needs because of a disability should make an appointment with Dr. Carstens as soon as possible in order to make arrangements for assistance. The Office for Disability Services will be asked to verify the need for special accommodations.

Statement on Diversity The instructors of this course are committed to promoting a welcoming climate for all students. We expect that all exchanges of ideas will be conducted with respect and collegiality. For more information, see www.biosci.ohio-state.edu/~eeob/diversity .