PROPOSAL TO LIST A COURSE, OR TO RENEW THE LISTING OF A COURSE, IN THE GENERAL EDUCATION NATURAL SCIENCE AREA AT LOUISIANA STATE UNIVERSITY

___ Renewal ___ New Listing

Course designation, number, and title: (e.g.: PHIL/1000/ Introduction to Philosophy)

WGS 1001 Evolution of Sex and Gender

Course designation  Course number  Course title

Semester credits: 3  Contact hours per week: Lecture: 3  Laboratory: __

Natural Sciences Category in which this course would be listed:

___ Natural Sciences (Life) ___ Natural Sciences (Physical)

Department (or other unit) offering the course and proposing its inclusion:

Women & Gender Studies

College or School: College of Humanities and Social Sciences

Please attach the information requested under Guidelines below. Submit a single electronic copy (pdf file) bearing unit and college/school signatures to the General Education Committee (gened@lsu.edu). This file will be forwarded to the University Committee on Assessment and Office of Academic Affairs.

Chair of the proposing unit, affirming approval by its faculty or appropriate faculty committee:

Signature: Michele A. Massi  Date: 9/17/10  Typed or printed

name: Michele A. Massi

Dean of College or School, affirming support of the proposal:

Signature:  Date: 9-17-10  Typed or printed

name: Scott McDonald

Chair, University Committee on Assessment, affirming approval by the Committee:

Signature:  Date:  Typed or printed

name: 

Chair, Faculty Senate Committee on General Education, affirming approval by the Committee:

Signature:  Date:  Typed or printed

name: 

Office of Academic Affairs:

Signature:  Date:  Typed or printed

name: 
Attach and include the following in your proposal submission:

1. A syllabus that includes:
   
a. The course description as it appears in the current catalog; or, in the case of a new course, as approved for the catalog.
   
b. Title of text, laboratory manual, or other course materials, including a list of principal reference readings.
   
c. A statement declaring that this course is a general education course in the Natural Sciences Area and that, as such, material in the course addresses students' achievement of this General Education Competency: *An LSU graduate will be able to employ scientific and mathematical methods and technology in the resolution of laboratory and real-world problems*
   
d. A description of assignments, exams, etc. used to assign student grades.
   
e. An outline of course subject matter

2. An explanation of why the course belongs in the General Education Program and why it should be listed in the Area of General Education proposed. This explanation should explicitly describe how this course meets the specific criteria established for this Area as stated in the guidance documents available on the LSU General Education Web Site (http://www.lsu.edu/aafs/areas.html).

3. The General Education Competency to be addressed in the proposed course: *An LSU graduate will be able to employ scientific and mathematical methods and technology in the resolution of laboratory and real-world problems*
   
a) Describe some of the major pedagogies through which the course will address the general education competency.
   
b) Also describe how the department will provide direct evidence for the extent that students are achieving the general education-learning competency associated with the course. Summary statements drawn from the assessment of students’ authentic work in the course probably offer the most accessible direct evidence of learning. Please be as specific as possible. This is not the same as the syllabus description of how grades will be assigned. This evidence will be presented as a part of the department’s annual reporting process associated with the University Assessment Matrix. For further clarification, contact Dr. Bobby Matthews (578-1145, isdblm@lsu.edu).

4. If this is an existing course not currently approved for General Education credit, describe the principal student population(s) in the course and how you expect that to change if the course becomes a General Education course. If the course is new, describe the size and composition of anticipated student enrollment.
1. Syllabus:

**DEPARTMENT OF WOMEN’S AND GENDER STUDIES**

**WGS 1001**

**EVOLUTION OF SEX AND GENDER**

**CATALOG COURSE DESCRIPTION:**
1001 Evolution of Sex and Gender (3) Interdisciplinary course, team-taught by faculty in the biological and social sciences. Covers evolution as differential reproduction; reproduction-related earth history highlights; genetics of sex; animal reproduction strategies; anatomy and physiology of human reproductive systems; evolutionary trajectories in primates; sex and gender in human prehistory and in culture.

**LECTURES:**
Tuesday-Thursday, 9:10-10:30 AM in E 137 Howe-Russell

**INSTRUCTORS (EACH INSTRUCTOR TEACHES ONE QUARTER OF THE COURSE):**
Judith A. Schiebout- 354B Howe-Russell, email: jschie@lsu.edu
John Larkin- 316 Life Sciences Building, email: jlarkin@lsu.edu
Kathy Thompson- 516 Life Sciences Building, email: zkath@lsu.edu
Jill Brody- email: gajill@lsu.edu

**TEACHING ASSISTANT:**
Natasha Bingham- email: nbingh1@lsu.edu

**OFFICE HOURS:**
To be announced by each instructor at the start of their portion of the course.

**TEXTBOOK:**
None. Each instructor provides a variety of materials, including lecture notes and slides, readings, a movie of an LSU-produced play, etc., distributed via Moodle.

**GRADES:**
There will be two exams: a **midterm** worth 40% of the grade after the second segment of the course including material from segments 1 & 2, and a **final** worth 40% of the grade including material from segments 3 & 4. Each of the four segments will also include 5% of the class grade in quizzes or exercises.

Grading will be guided by the following scale; any adjustments to this scale will be minor:

- A=90% and above.
- B=80% and above.
- C=70% and above.
- D=60% and above.
**COURSE DESCRIPTION:**
WGS 1001 is an interdisciplinary science course for a general student population, taught at the freshman level, using student interest in sex to introduce reproduction and its role in evolution along with a brief history of life, from its origin to humankind. The course includes fundamentals of cellular organization, genetics, evolutionary biology and human anatomy are included, and the course culminates in an anthropological view of sexual practice in human cultures.

**General Education:**
WGS 1001 is a course in the Natural Sciences Area of the General Education Component of Undergraduate Education (Life Sciences Category). Material in the course addresses students’ achievement of this General Education Competency: *An LSU graduate will be able to employ scientific and mathematical methods and technology in the resolution of laboratory and real-world problems.*

**Course topics (from the actual Fall 2009 Classroom Syllabus):**
Segment 1- Dr. Judith A. Schiebout jschie@lsu.edu  (578-2717).

Abbreviated notes for section 1 will be available on Moodle. Read these notes before the relevant class and bring your notes from Moodle to each class in this section. “Open notes” quizzes may or may not happen.

You are expected to attend and to make at least one friend in class, with whom you can exchange notes, so you are easily covered if you must miss class. Powerpoint lectures for this section will not be posted anywhere.

There will be four in-class small quizzes counting a total of 5%, with NO make-ups. These must be taken in class. Two quizzes are announced, two are not. More than one quiz can occur on a day. One will be dropped.

8/26 Introduction to class. Ancient life- What we can and can’t know from fossils and the fossil record, sexual dimorphism in fossils.


9/4 Origin of life, oldest fossils, and basic body plans.

9/9 The vertebrate story begins. Jaws and fins. Reproduction-related evolutionary breakthroughs--land plants, amniote egg

9/11 The Mesozoic-rise of dinosaurs, mammals, birds, and angiosperms, plant-animal interactions.

9/16 Diversification of the mammals. How human reproductive success and burgeoning human population mimics the big extinctions of the past. Quiz

**Optional Section 1 review for midterm**
There will be an optional review session for section 1 in room 360 Old Geology (Old Howe-Russell) on the evening of Monday October 13. Time will be determined on 9/16 from what is convenient to the most of the students who want to come.
Although Power Point slides will be posted, much material will only be presented in class. If you are not in class, you are not likely to do well! There will be a pop quiz during one of the classes. You MUST be in class to take the quiz and receive credit. There will also be a set of required homework problems to hand in. These will resemble problems that will be on the exam. These two assignments (quiz, homework) will contribute equally to the non-exam 5% for this section of the course.

9/18 DNA, genes, chromosomes, mitosis, meiosis, begin basic genetics

9/23 Finish basic genetics

9/25 Genetics of Sex: Sex chromosomes and sexual dimorphism

10/30 Genetics of Evolution

10/2 Finish Genetics of Evolution, begin Evolution of Sex

10/7 Evolution of Sex and Sexual Selection

10/14 Midterm Exam—covers segments 1 & 2. In regular class time and place.

Required: Turn in an article from the www of AT LEAST 3 pages dealing with a topic I am covering. Accompanying the article turn in a typed summary of the article and a paragraph as to why you chose this article This is worth 3 points. There will also be 2 in-class assignments worth 1 point each. You must attend class that day to do the assignment.

10/16 WHY SEX?
Asexual reproduction or "I can do it myself"
Pros & Cons
Sexual Reproduction or "Let's get together sometime"
Pros & Cons
Mama's baby; Papa's ....maybe
Balancing the Sexes...Inactivation of the X Chromosome

REPRODUCTIVE STRATEGIES
Mate Selection
Courtship
Does Size really matter?????
The Active Ovum
Fertilization
Aquatic
Terrestrial

10/21 What are little boys made of?
Embryonic development -->adulthood
Errors in Sexual Development
Testicular Feminization
Indeterminate gonads
10/23 What are little girls made of?
   Embryonic development-->adulthood
   Menstrual cycle
   PREGNANCY and BIRTH
   Embryonic development and the environment

10/28 SEXUAL ATTRACTANTS  Hormones & Pheromones
   Aphrodisiacs...do they really work?
   Viagra
   Foods

10/30 CONTRACEPTION
   Infertility and options
   ****Web articles & summaries due****

11/4 GENDER RELATED CONCERNS
   Male
      Circumcision
      Prostate cancer
      Impotence

11/6 Female
   Endometriosis
   Menopause
   Breast Cancer
   Ovarian Cancer
   Menopause
   Breast Cancer
   Ovarian Cancer

Final Exam counting 20% of the grade on Thompson segment only. Regular classroom and time.

Segment 4- Jill Brody gajill@lsu.edu

11/11 Anthropological perspectives: physical, cultural, archaeology, linguistics

11/13 Eve, Lucy, and evolutionary trajectories

11/18 We R Primates: What we can learn from our non-human primate relatives

11/20 The Pelvis and the Brain, the Hand and the Eye, Language and Culture

11/25 Community, Foragers, Division of Labor, and the Disaster of Agriculture

11/27 Thanksgiving Holiday

12/02 Gender is the Cultural Interpretation of Sex
2. Justification for Inclusion of WGS 1001 (The Evolution of Sex) as a Natural Sciences General Education Program Course:

The Natural Science (Life Science) General Education Course Criteria are:

1) The cellular organization of life.
2) The molecular basis of heredity and genetics.
3) Biological evolution; the interdependence of organisms.
4) The matter, energy, and organization in living systems.
5) The behavior of organisms.

This course belongs in the General Education program due to the devotion of the course to aspects of all of these points, especially the Criteria 2), 3), and 5), which make up the majority of the course content. Indeed, the overall learning objective of the course could be summarized as a demonstration of the links between heredity, evolution, and behavior in organisms, particularly but not limited to humans.

The course covers principles of reproduction and evolution from both a history of life (geology and paleontology), a genetics and physiology (biology) approach, and an anthropological approach. Geological topics include the origin of life, plate tectonics and its relation to climate and environment in the history of life, reproduction-related milestones in life history such as the amniote egg and the rise of reptiles, angiosperm plants and their relation to the spread of large dinosaur herds, and the rise of mammals. Biological topics include basic cell biology and genetics, genetic sexual determination, sexual selection, sexual development through embryology, errors in sexual development, human reproductive anatomy and physiology, and sexual health issues. Anthropological topics include the evolution of primates and human communities, gender issues (cultural), and kinship.

Conceptually, the course addresses scientific analytical and problem solving skills, the interaction of organisms and the environment, and aspects of human culture in ways intended to give students the tools to make their own decisions about topics ranging from climate change to stem cells.

3. General Education Natural Sciences Competency Addressed by WGS 1001 and Assessment of Success in Meeting:

WGS 1001 is an interdisciplinary science class that covers evolution and reproduction from a variety of viewpoints, from the geological/historical through genetic and physiological, through to the anthropological. This unique course satisfies General Education Learning Competency Four, which is appropriate for Natural Science courses, as indicated below:

An LSU graduate will be able to employ scientific and mathematical methods and technology in the resolution of laboratory and real-world problems.

3.A. Major Pedagogies

The course requires students to use inductive and deductive reasoning to understand issues related to population growth, evolution, inheritance and the reasons underlying different
types of human kin groups. The course also requires problem-solving approaches to understand some concepts, particularly in the genetics section. Although the course is a fairly large lecture course, which limits pedagogical options somewhat, active teaching using classroom discussion and group problem solving are employed wherever possible.

In addition, each of us in this team-taught course has developed our own pedagogical classroom strategies and out-of-class assignments to break the educational restrictions of the lecture format. A few examples include:

1. **An in-class demonstration of DNA extraction from strawberries.**
   This is a simple demonstration using mashed strawberries, shampoo (a detergent), salt and chilled alcohol, to extract visible strings of DNA from the strawberries. This demonstration serves to bring the idea of DNA from the realm of the distant and esoteric to the commonplace and understandable, and is an ideal starting point for a discussion of the chemical and biological properties of DNA.

2. **"The DNA Play" video.** (see web link to view play: http://studio151server.lsu.edu/~psuchy/Streaming/DNA%20Play.mov).
   This play, written by LSU biochemist Vince Licata and directed by Trish Suchy of LSU’s Department of Communication Studies, explores the events surrounding the discovery of DNA using the words of the actual participants in this discovery to show how scientists make discoveries, as well as to teach some of the facts about DNA. The video was filmed during a performance in Spring 2009. This play is particularly appropriate for our class, because it is associated with a gender-related controversy regarding the degree to which the historical participants, particularly Rosalind Franklin, received due credit for their contributions. This play provides an excellent launching pad for class discussions on DNA, scientific discovery, and gender. A post-play audience survey by Drs. Licata and Suchy demonstrated a significant quantitative gain in understanding of the biology of DNA and the process of scientific discovery for audience members with no scientific background, in comparison to control groups. The first example question below in the section on assessment (3b.) is an example of how students are assessed for information and ideas resulting from seeing this play.

3. **The video "Evolution: Constant Change and Common Threads," produced by the Howard Hughes Medical Institute.**
   Portions of this video are shown in class to illustrate key points about evolution. Two parts of the video are used. In the first segment, a population of black-coated mice has evolved on a recent lava flow in a southwestern desert. Beige mice inhabit the nearby beige-colored desert floor. The genetics of coat color of the mice, the age of the fresh lava flow, the frequency of mutation producing a gene for the black coat, are all known, so the students can see how rapidly the population can evolve to adapt to the environmental change. Another part of the video uses stickleback fish to demonstrate how genes that control individual development can produce major morphological changes relatively rapidly. Pelvic spines are an advantage in marine environments, making the fish hard to swallow for bigger fish, but a disadvantage in fresh water, making it easy for invertebrate predators to catch the sticklebacks. Rapid switching of morphology as environments switch from fresh to salt water, gives the students insight as to how limb loss in whales and snakes might have proceeded rapidly with changes in genes controlling embryonic development.

4. **Kinship Assignment.**
Students are asked to draw their own family tree for three generations, using anthropological symbols and conventions presented in class, giving kin terms and kin-types as defined in class. This exercise allows the student to apply the scientific metrics of biology and anthropology to the familiar real world of their family. In order to complete this assignment correctly, they must distinguish between the biological relationships identified by kin type from the cultural interpretation of those relationships, which include kin terms (e.g., “uncle” which does not distinguish between mother’s brother and father’s brother), and metaphorical kin (e.g., step-parents). It also provides a mechanism to bring home the ways in which real families differ from the stylized kinship diagrams.

3.b. Criteria for Assessment of the Success of WGS 1001 in Achieving the General Education Competency Goal for Natural Sciences Courses.

Natural Science General Education Competency Addressed:

An LSU graduate will be able to employ scientific and mathematical methods and technology in the resolution of laboratory and real-world problems.

Assessment Goals:

We will assess the success of WGS 1001 with regard to meeting the above Natural Science Learning Objective as follows:
Selected multiple choice questions or questions with discrete answers from all exams will used to assess the effectiveness of WGS 1001 with respect to our desired learning objective. We will sample ten to twelve questions drawn from the two exams (see example questions below).
Student performance on these selected questions will be collated and presented as part of the Department of Women’s and Gender Studies reporting process associated with the University Assessment Matrix. After the end of the course, the faculty members teaching the course will meet and discuss student performance on the questions used for assessment, and will use these results to consider ways in which the course can be improved.


The enrollment of WGS 1001 has ranged from approximately 50 to 100 students over the past several years. Much of the student population appears to be non-science majors attracted by the interesting “Evolution of Sex” course title, although about 10% of the students appear to be biology majors. We are particularly interested in reaching the non-science majors, because this group would most benefit by being exposed to the cross-disciplinary view of geology, biology and anthropology presented in the course.

It is also likely that if the course becomes a general education course, it will fill to capacity on a regular basis. If the course becomes a General Education course, we anticipate that we will attract more incoming freshmen. Freshmen typically pick electives from the list of General Education courses. Incoming freshmen who have not yet formed definite educational and career goals are an important audience for the cross-disciplinary nature of this course. Women are overrepresented in the student population in WGS1001, and it is reasonable to assume that exposure of women to this science course may attract more women to STEM disciplines. These changes to the student population thus are expected to result in benefits to student education, the university and to society as a whole.