Department of Biological Sciences
College of Arts and Sciences
Grambling State University

Course Syllabus

Biology 302 - Genetics
Spring Semester, 2015

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Office: Carver Hall 170

Office Hours: MWF 10:00 - 10:50
TH 11:00 - 12:00

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I. Rationale

Genetics has begun to occupy a central position in the entire subject of biology. Understanding of genetics is essential to any serious study of animal, plant or microbial life. Additionally, genetics issues surface daily and touch our lives by way of their applications to medicine, agriculture, industry and law. The study of genetics is, therefore essential to the study of biology and, indeed , to becoming an informed citizen.

Biology 302 requires basic understanding of biology and chemistry and requires that students should have passed Biology 103, 104 or 113, 114 and Chemistry111 and 112.

This course consists of a series of lectures and laboratory investigators and provides a broad survey of the subject of genetics. The course introduces the student to principles of heredity; classical, molecular and quantitative genetics; chromosome structure; cell and population genetics; mutation and selection; microbial genetics; non-chromosomal inheritance and probability.

II. Competencies

Upon completion of this course, the student should have:

A. A better insight into the relationship between genetics and our society;

B. A fundamental knowledge of the genetics contributions to biological and psychological disorders;

C. A fundamental knowledge of the basic structures of chromosomes;

D. A fundamental knowledge of probability.

III. Behavioral Objectives

Upon completion of this course, the student, with at least 70 percent accuracy will be able to:

a. Identify and define the basic structures of the chromosome;
b. Compare and contrast mitosis and meiosis;
c. Describe Mendelian Genetics
d. Describe genetic disorders, their inheritance and their treatments
e. Describe genetic code and translation of genetic message
f. Describe genetic replication and translation
g. Describe gene function
h. Describe gene crossing over
i. calculate genetic probabilities
j. Calculate chi square

IV. Course Content

A. Monohybrid Crosses
B. Dihybrid Crosses
C. Gametogenesis in Plants and Animals
D. Sex determinination
E. Sex-linked traits
F. Interaction Between and Among Genes
G. Abnormal Chromosome Number and Its Medical Consequences
H. Gene Function
I. Genetic Material
J. DNA Replication and Transcription
K. Gene Recombination
L. Translation of Genetic Material
M. Gene Mutation
N. Genetics of Quanitative and Population Genetics
O. Behavior, Mental Illness and heredity
P. Recombinat DNA Technology/Genetic Engineering
Q. Chi Square
R. Pedigree Analysis

V. Learning Activities

The Following activities will be engaged in to enhance student learning:

A. Regular and prompt class attendance;
B. Participation in class discussions;
C. Viewing of audio-visual aids; and

D. Written report/paper on specific subjects.

VI. Special Course Requirements

Regular and prompt class attendance, reading and outlining of assigned chapters, successful completion of all examinations, and adequate preparation of individual written reports will be required.

VII. Evaluation

The final grade will be determined in the following manner:

	Possible Points
Three exams	300
Three written assignments	300
Three quizzes	90
Discretionary pts	50
Final Exam	100
Home Work	300
Family Pedigree	100

Total Points	1240

The three written assignments will be due on the last class period of each unit. In those extreme emergencies when an exam has to be missed a substitute **essay exam** can be arranged to be taken in its place. Each examination will consist of a combination of short answers, true-false, matching and multiple-choice questions. **The examination questions will draw upon all of the material covered in class as well as in the reading assignments; however, the primary focus of the exams will be on material covered in class.**

Grading Scale

100-90	A
89 - 80	B
79 - 70	C
69 - 60	D
Below 60	F

VIII. References

A. **Textbook**

Hartl, D. and Jones. E. Genetics, Principles and Analysis, 7th Edition. Jones and Bartlett Publishers, Boston,

B. **Laboratory Book**
Mertens, R. and hammersmith, R., Genetics, laboratory Investigations, Prentice Hall Publishers.

IX. Americans with Disabilities Act: If you are a student who is disabled as defined under the Americans with Disabilities Act (ADA) and require assistance or support services, please seek assistance through the Student Intervention Resource Center at (318) 274-3338. A counselor will coordinate services.

THE INSTRUCTOR RESERVES THE RIGHT TO MODIFY COURSE FORMAT AND CONTENT.

NOTE: Nothing will be accepted after the last day of class at 5:00 PM. (April 22, 2015)

Instructions for 3 Written Reports Due on the Last Day of Each Month

Each written report is to be a brief discussion of a ***"controversial"*** issue that is relevant to a topic covered in this course. Each report should be based on at least 3 sources. One of these sources may be from the general media (e.g. magazines, newspaper, TV). The remaining sources should be from a more substantive source such as a scientific book or scientific journal. Each report should be **6-8** double spaced typed pages in length. Please do original work. If I receive reports that are clearly copied from each other then those reports will be given no credit.

Each report should contain the following information:

1). Your sources of information
2). Description of the issue
3). How is the issue relevant to this course (remember the main focus of the course is the study of the relationship between the brain and behavior)?
4). What is your position on the issue?
5). How has the information that you gathered from your sources influenced your position on the issue?

15% will be deducted for every two days that the report is late. (The paper is due by the end of the hour.) 15% will be deducted for each of the five items above that are not in the paper.

Topics

- **Is Intelligence Inherited?**
- **Should humans be cloned?**
- **Should genetic counseling be allowed?**
- **Should fetal tissue be used for brain transplants in patients with Parkinson's Disease?**
- **What are some causes of Alzheimer's Disease?**
- **Is there evidence for a Biological basis for Psychopathic behavior?**
- **Is there a gene for high blood pressure?**
- **Designer babies: Should you be allowed to pick the genetics of your child?**
- **If animals have instincts imprinted in their DNA, do humans?**
- **Is homosexuality genetic?**
- **Are mixed raced people healthier and more attractive?**