

AGR3303 Genetics, Fall 2014, 3 credits

Instructor: Dr. M A Babar

Office: Room 2081 McCarty Hall B

Phone: 352-273-2213

E-Mail: mababar@ufl.edu

Office Hours: Tuesday: 12 to 1:30 pm and Wednesday 12 to 1:30 pm.

TAs: Johnny Molestina

Office: Room 047, McCarty Hall D

E-Mail: jmolestina@ufl.edu

Office Hours: Monday- 10:40 to 12:35 pm; Wednesday-10:40 to 11:30 am; Thursday-10:40 to 11:30 am.

Students are welcomed to visit instructor's office at any other times than the above office hours. But it is wise to schedule an appointment (e-mail) to make sure a instructor is available.

Course Description

AGR3303 Genetics presents a comprehensive coverage of the principles, theory and applications of genetics. Topics include the chemical nature and structure of genetic material, gene expression and regulation, cell division, chromosome number and structure variation, principles of inheritance, molecular genetic techniques, and basic concepts in population and quantitative genetics.

Course objectives

Upon completion of AGR 3303 Genetics, students should able to:

1. Define basic genetic terms.
2. Describe what chemical nature and structure of genetic materials are, how genes are expressed, and how gene expression is regulated.
3. Understand the chromosome structure, variation, gene mutation, and their effects.
4. Determine genotype and phenotype of progeny based on the parents' genotypes or determine parental genotypes and phenotypes through analyzing their progeny's genotypes and phenotypes.
5. Name and explain the basic molecular genetic techniques and their applications.
6. Extend knowledge learned in Genetics to other related areas, such as molecular genetics, quantitative genetics, population genetics, genomics, breeding, evolution, biochemistry, and biotechnology.

Time and Location

Class meets in 0100 CAR (Carleton Auditorium); Tuesday 8:30—10:25 (Period 2 & 3); Thursday: 9:35-10 (Period 3)

Prerequisites

None. But some biology courses would be helpful including Biological Sciences (BSC 2009), Integrated Principles of Biology 1 (BSC 2010), and Integrated Principle s of Biology 2 (BSC 2011).

Class format

Three 50-minute lectures (except exam days) per week for whole semester are presented as PowerPoint slides.

Course website

E-Learning system, Sakai <http://lss.at.ufl.edu> is the online source for majority of the learning resources. All lecture handouts are uploaded under the "Lessons" section of Sakai. Practice questions and suggested reading materials are provided in the "Resources" section of Sakai. Course announcements regarding general course information will be posted in Sakai throughout the semester. Students need to login with GatorLink username and password for access. If you do not have a GatorLink ID go to <http://gatorlink.ufl.edu> or to the Help Desk: 392-HELP for assistance.

Text book

Text book "*Genetics, A Conceptual Approach*, 5th edition— Benjamin A. Pierce, Freeman and Company" is highly recommended. The text book provides more details and perspectives to the lecture notes. Suggested readings are assigned for each lecture. The book can be purchased at the book store or online.

Two hard copies of the 5th edition text book are on reserve.

Attendance and participation

Class attendance is highly expected. A number of questions are given during each lecture to review the material covered in the lecture. Students are expected to participate in the review.

Grading

The final grades are based on the total points of the best four out of five exams plus quizzes.

Exams: Four mid-term exams are required and are given in class during the regular class time. The one final comprehensive exam is optional and will be held December 17, 2014, 10-12 am. Students are not allowed to take the exam if they arrive late for the exam at the time when some students have turned in the exam and have stepped out of the classroom. A zero will be given for the missed exam.

Each exam will have 50 T/F or multiple choice questions worth 2 points each with a total of 100 points. All the exams will be given in class with closed notes and books. The four midterm exams are required. A zero will be given if you miss it. The comprehensive final exam is optional for either replacing your lowest mid-term exam grade or **acting as a make-up exam** for **only one** missing mid-term exam with a **legitimate excuse** (medical, family emergency, official university). Excuses for missed exams must be documented and approved by the instructor at least 24 hours before the exam. **No other additional make-up exam** is provided.

Programmable, TI-83, or TI-89 calculators and phones are not allowed during exams.

Grading scale for the course:

A	90% (\geq 360)
B+	85% to 89.99% (340 – 359 points)
B	80% to 84.99% (320 – 339 points)
C+	75% to 79.99% (300 – 319 points)
C	70% to 74.99% (280 – 299 points)
D+	65% to 69.99% (260 – 279 points)
D	60% to 64.99% (240 – 259 points)
E	< 60% (\leq 239 points)

Note: no minus grades are given

Grades and Grade Points Effective May 11, 2009 - Summer A

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Passing Grade	A	B+	B	C+	C	D+	D	S
Grade Points	4.0	3.5	3.0	2.5	2.0	1.5	1	0

Bonus Points: Bonus quizzes worth 3 points each are given randomly during classes. These quizzes are unannounced and are presented on the screen at any moment during class. **Each quiz consists of 3 questions, students will be given 5 minutes to answer the question and turn in the answers on a piece of paper with their name and UFID. Half of a point is awarded for attendance purposes and is counted towards any quiz turned in within the allotted time.** Half of a point is given for quizzes. Students must attend class to take the bonus quizzes. There is no make-up quiz. It is your responsibility to make sure your answer sheet is handed in for grading. **Bonus discussion** topics will be given in the last 3-4 weeks of the class. Students can participate in the discussion by either providing discussion topics or participating in the discussion of two selected topics posted. Students who want to provide discussion topics should send a description of the topic in 3-10 sentences to instructor for uploading. You will earn **one bonus point** if 5-10 students (yourself is not counted) participate in the discussion of your topic, or **two bonus points** if more than 10 students participate in the discussion. Students, who do not provide the topics or who provide the topics having less than five students participated, can choose two posted topics to participate the discussion. One point is counted as bonus towards relevant, non- redundant (not contributed by a previous participant), and complete ideas and information under each chosen discussion topic. The discussion participation is worth 2 bonus points in total.

COURSE OUTLINE

Date/Week	Day	Topics	Text book (5 th edition)
Week 1			
Aug 26, 2014	Tuesday	Course introduction & the genetic materials	Ch. 1, 2
Aug 28, 2014	Thursday	The genetic materials, DNA structures	Ch. 10, 12
Sep 2, 2014	Tuesday	RNA structures, DNA replication	Ch. 10 & 12
Sep 4, 2014	Thursday	Transcription (Prokaryotes)	Ch. 13
Sep 9, 2014	Tuesday	Transcription and RNA processing (Eukaryotes)	Ch. 13, 14
Sep 11, 2014	Thursday	Genetics code and translation	Ch. 15
Sep 16, 2014	Tuesday	Gene expression regulation in bacteria	Ch. 16
Sep 18, 2014	Thursday	Chromosome structure and eukaryotic gene expression	Ch. 11, 14, 17
Sep 23, 2014	Tuesday	Exam 1	
Sep 25, 2014	Thursday	Chromosome structure and eukaryotic gene expression	Ch. 11, 14, 17
Sep 30, 2014	Tuesday	Gene mutations and DNA repair	Ch. 18
Oct 2, 2014	Thursday	Molecular genetic analysis and biotechnology	Ch. 19
Oct 7, 2014	Tuesday	DNA Sequencing technologies, Genomics	Ch. 19, 20
Oct 9, 2014	Thursday	Genomics & Proteomics	Ch. 20
Oct 14, 2014	Tuesday	Exam 2	
Oct 16, 2014	Thursday	Mitosis and meiosis	Ch. 2
Oct 21, 2014	Tuesday	Principles of heredity - segregation	Ch. 3
Oct 23, 2014	Thursday	Principles of heredity - independent assortment	Ch. 3
Oct 28, 2014	Tuesday	Extensions and modifications of basic principles	Ch. 5
Oct 30, 2014	Thursday	Linkage & recombination	Ch. 7
Nov 4, 2014	Tuesday	Linkage & recombination	Ch. 7
Nov 6, 2014	Thursday	Sex Determination & Sex Linked Characteristics	Ch. 4
Nov 13, 2014	Thursday	Chromosome variation	Ch. 8
Nov 18, 2014	Tuesday	Exam 3	
Nov 20, 2014	Thursday	Pedigree Analysis	Ch. 6
Nov 25, 2014	Tuesday	Quantitative genetics	Ch. 24
Dec 2, 2014	Tuesday	Population genetics	Ch. 25
Dec 4, 2014	Thursday	Cancer genetics	Ch. 23
Dec 9, 2014	Tuesday	EXAM 4	
Dec 17, 2014	Wednesday	FINAL EXAM	

*We will attempt to maintain the exam schedule; however, material may be altered for any given exam depending on time and coverage of lectures.

General Class Demeanor

- 1) Students arrive to class on time
- 2) Students convey superior work ethic and perform to high standards
- 3) Students share questions and ideas in and out of the class
- 4) Students keep an open mind
- 5) Students respect one another
- 6) Students turn off all electronic devices
- 7) Computers are allowed only for note taking purposes and to access class activities. Abuse of this policy will result in revoking the in-class computer privileges for that particular student

Academic Honesty

In 1995 the UF student body enacted an [honor code](#) and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: **"On my honor, I have neither given nor received unauthorized aid in doing this assignment."**

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office.

(Source: 2012-2013 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a [group project](#), in writing by the instructor.

This policy will be vigorously upheld at all times in this course.

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/*
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Training Programs
 - Community Provider Database
- Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/*

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

NOTE: The instructors reserve the right to change any information contained in this and other handouts in this course.