

**BSC 304 – Genetics (CRN: 22380)**  
**Spring 2012**  
**(Co/Pre Requisite BSC 303, i.e. also requires BSC 1406, BSC-1407, CHEM-1412)**

**Instructor**                      **Dr. Venu Cheriya**  
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Mon, Wed, Thu, 9.00 AM – 9.50 AM  
**Lectures**                              **@ART Building - 111**  
  
Mon, Wed, Fri, 11.00 AM – 1.00 PM  
**Office Hours**                      Or by appointment, include BSC 303 in subject line.  
  
Wednesdays, one 3 hr lab, 1 PM, 4 PM or 7 PM  
**Lab**                                      **@STC – 324**  
**Course overview:**

The objectives of this course are to i) thoroughly understand the principles of Mendelian genetics and be able to use said principles to solve practical problems, ii) understand the structure and role of chromosomes that holds the genetic information, iii) learn the concepts of molecular genetics and how molecular approaches are furthering our understanding of the gene function, and iv) recognize the applications of molecular genetics techniques to genomics, genetic engineering and molecular medicine.

**Textbooks:**

GENETICS: Analysis and Principles, 4<sup>th</sup> edition, by Robert J. Brooker, ISBN-13: 978-0077474904 (with connectplus access); ISBN-10: 0073525286 or ISBN-13: 978—0073525280 (without connectplus access)

We will cover part of the subject matter presented in this book, but not necessarily in order. Chapter assignments are listed on the Course Schedule. Subject material of this course is built on facts and concepts of BSC 303 Cell Biology course, especially the molecular genetics part. If you do not remember that material you should review it from the book. Those who haven't finished BSC 303 Cell Biology may find this course difficult.

**Attendance:**

I expect your attendance in all classes and labs. You need to sign the attendance sheet at the beginning of class. **Because we will not strictly follow the text, it is important to come to class, if for no other reason than to determine what material we expect you to know and at what level we expect you to know it.** You are responsible for all material and assignments covered in class whether you are present or not.

**Lecture Materials:**

Power Point slides that I use for delivering lectures will be available at eCompanion site for this course at eCollege. Power Point slides are meant for me to deliver the lectures. You may use that as a guide to read the book not as a study material.

## Exams and Grades:

The lecture part of the course will weigh 75% and lab part will weigh 25% of the total. For the lecture part there will be three exams (200 points each) throughout the term and a cumulative final exam (200 points). Your lowest exam score will be dropped.

The exam will consist of three parts, multiple choice (50% of total score), essays (50% of total score) and bonus questions (for 10% of total score). Multiple choice questions will test critical thinking, analytical ability, and the understanding of subject matter. Essay questions will be chose from weekly essays, whereas bonus questions will be chose from problem sets.

## Grading Policy:

**3 term exams including the final** = 600 points (60%)  
(after dropping your lowest score)

### Assignments

Weekly Short Answers + Quizzes = 75 points (7.5%)

Problem Solving = 75 points (7.5%)

**Lab** = 250 points (25%)

**TOTAL** = 1000 points (100%)

## Grading Scale:

A = 900 to 1000 points (>90%)

B = 800 to 899 points (>80%)

C = 700 to 799 points (>70%)

D = 580 to 679 points (>58%)

F = 579 or fewer (<58%)

## Overview of Assignments:

### Weekly Assignments (75 points of total):

At the end of each week's class (Fridays), a set of short answer or essay questions will be assigned, which are due in next class (Mondays), which will be worth of 5 points. Based on the above questions and lectures there will be weekly quizzes (multiple choice) for 5 points. Therefore, it works for your advantage to answer these questions by yourself rather than copying from your friends, which will increase your success in quizzes. Some of these questions (multiple choice, short answer and essays) will also appear in the exam.

### Problem Solving (75 points of total):

You can earn 7 points for attempting the assigned problems. 3 points will be awarded for correct answers with detailed steps. Answering these questions will improve your ability to answer the

analytical and critical thinking questions of the exam. Problem sets are due on each Tuesdays in the lab.

**To calculate where you stand:**

Add your 3 exam scores and multiply by two. To this add your final score of lab and assignment plus any extra credit points that you have, which will be your total score in 1000. Calculate the percentage. This will be your grade.

**Course Calendar/Exam Schedule**

<b>Date</b>	<b>Guide</b>	<b>Lecture Materials</b>
Unit 1	Chapters 1 & 2	Basic Mendelian Inheritance
Unit 2	Chapter 3	Reproduction and Cell Division
Unit 3	Chapter 4	Extensions of Mendelian Inheritance
Unit 4	Chapter 5	Gene Linkage and Gene Mapping
<b>EXAM 1 -- Mendelian Inheritance</b>		
Unit 5	Chapters 9 & 10	DNA Structure and Chromosome Organization
Unit 6	Chapter 8	Chromosomal Variation and Disease
Unit 7	Chapter 11	DNA Replication
Unit 8	Chapter 16	DNA Mutation and Repair
Unit 9	Chapter 17	DNA Recombination and Transposition
<b>EXAM 2 -- Chromosomes and Dynamic DNA</b>		
Unit 10	Chapter 18	Recombinant DNA Technology
Unit 11	Chapter 19	Biotechnology and Transgenic Organisms
Unit 12	Chapter 20	Genomic DNA Analysis
Unit 13	Chapter 21	Functional Genomics and Bioinformatics
<b>EXAM 3 -- Biotechnology and Genomics</b>		
Unit 14	Chapter 22	Genetic Basis of Cancer
<b>FINAL EXAM</b>		

**Academic Integrity:**

A Texas A&M Commerce student does not lie, cheat, steal, and does not tolerate those who do. A violation of the Texas A&M honor code and academic integrity involves any of the following offenses: cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity in any of these offenses. The first instance of cheating will result in **"ZERO"** on the exam and/or on the assignment. The second instance of cheating will result in **"ZERO"** on the course. Cheating involves copying information from another student, non-allowable materials or source and plagiarism. Once again, violations of academic integrity will not be tolerated. This class will be conducted in strict observance of the Honor Code. Refer to your Student Handbook for details.

**Conduct Policy:**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See Student's Guide Handbook, Policies and Procedures, Conduct).

**Cell Phones/Pagers/Laptop/Tablets:**

Please turn your cell phone and/or pager (and other electronic devices) off during class. If you are on-call for your work, please place the cell phone or page on silent mode.

If you utilize a laptop to take class notes, please be aware of potentially distracting others around you and seat yourself accordingly. Additionally, you may be asked to leave the class if it is determined you are utilizing a computer to do outside work, surf the web inappropriately or communicate personal conversations.

Texting is prohibited and devices will be collected and kept until the end of class.

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment (See Students' Guide Handbook, Policies and Procedures).

### **Tapes and Notes:**

While recordings of this class may be made for personal use recordings may not be sold or distributed to others. While you may make copies of these notes for your personal use, no copy of these notes may be distributed to anyone other than persons who are currently enrolled in the class; nor may any copies be sold.

### **Lab behavior:**

If handled improperly, some chemicals used in the lab become dangerous. Drinking and eating are **PROHIBITED** in the lab! Disruptive behavior in lab that could be considered a hazard to another student will result in immediate removal from the lab. Intentionally damaging lab equipment may result in a **ZERO** for the class and possibly severe financial penalties as many pieces of equipment we will be using are expensive. **SEEK HELP** If you do not know how to use some instruments (see laboratory syllabus for details)

**Students with Disabilities/Reasonable Accommodation:** *The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact: Office of Student Disability Resources and Services Texas A&M University-Commerce*

*Gee Library, Room 132*

*Phone (903) 886-5150 or (903) 886-5835*

*Fax (903) 468-8148*

*StudentDisabilityServices@tamu-commerce.edu*

**Behavior:** *All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment." (See Student's Guide Handbook, Policies and Procedures, Conduct).*

**Plagiarism:** *Plagiarism is a criminal activity. You must cite all sources of information. Unreferenced copying of material, whether parts of sentences, whole sentences, paragraphs, or entire articles can result in a score of zero for your assignment and may result in further disciplinary action.*

**Early Intervention for First Year Students:** *Early intervention for freshmen is designed to communicate the University's interest in their success and a willingness to participate fully to help students accomplish their academic objectives. The university through faculty advisors and mentors will assist students who may be experiencing difficulty to focus on improvement and course completion. This process will allow students to be knowledgeable about their academic progress early in the semester and will provide faculty and staff with useful data for assisting students and enhancing retention. Grade reports will be mailed by the end of the sixth week of the semester.*