



- Feb.13<sup>th</sup>      **Chapter 4: Sex Determination and Sex-Linked Characteristics:**  
**Activity: Quiz 3**, Review of worked questions, Dihybrid Crosses – Fruit Flies  
**Homework:** \_\_\_\_\_
- Feb. 20<sup>th</sup>      **Chapter 5: Extensions and Modifications of Basic Principles:**  
**Activity: Quiz 4**, Review of worked questions, Dihybrid Crosses – Fruit Flies  
**Homework:** \_\_\_\_\_
- Feb 27<sup>th</sup>      **Chapter 5: Extensions and Modifications of Basic Principles:** cont'd.  
**Activity: Quiz 5**, Review of worked questions, Dihybrid Crosses – Fruit Flies  
**Homework:** \_\_\_\_\_
- March 5<sup>th</sup>      **Chapter 9: Chromosome Variation:** Chromosome morphology; chromosome rearrangement including duplications, deletions, inversion and translocations; aneuploidy; polyploidy; chromosome mutations and cancer  
  
**Activity: Quiz 6** & review of worked questions  
**Homework:** \_\_\_\_\_
- Mar.12<sup>th</sup>      **Chapter 10: DNA: The Chemical Nature of the Gene:** molecular basis of heredity; structure of DNA; special structures of DNA and RNA.  
**Chapter 12: DNA Replication and Recombination:** Semi-conservative replication; mechanism of replication.  
**Activity: Quiz 7** & Introduction to Polymerase Chain Reaction. How PCR has revolutionized society. DNA extraction and preparing samples for PCR. The class will use PCR to identify GMO's in food products and feeds.  
**Homework:** \_\_\_\_\_
- Mar. 19<sup>th</sup>      **SPRING BREAK**
- Mar. 26<sup>th</sup>      **Chapter 13: Transcription**  
**Chapter 15: The Genetic Code and Translation**  
**Activity: Quiz 8**, Gel Electrophoresis  
**Homework:** \_\_\_\_\_
- Apr.2<sup>nd</sup>      **Chapter 16: Control of Gene Expression in Prokaryotes**  
**Chapter 17: Control of Gene Expression in Eukaryotes**  
**Activity: Quiz 9:** Gel analysis, discussion of lab reports.  
**Homework:** \_\_\_\_\_
- Apr.9<sup>th</sup>      **Chapter 19: Molecular Genetic Analysis and Biotechnology.**  
**Activity: Quiz 10** & Cellular Transformation: Part I: Introduction of a new or novel gene into bacteria. Heat Shock Cell Transformation Technique, Operon discussion.  
**Homework:** \_\_\_\_\_
- Apr.16<sup>th</sup>      **Chapter 24: Quantitative Genetics**  
**Activity: Quiz 11** & Cellular Transformation: Part II: Differential plating techniques to demonstrate inducible operons and gene expression, calculating transformation efficiency.

**Homework:** \_\_\_\_\_

Apr.23<sup>rd</sup>

**Chapter 24: Quantitative Genetics:** heritability; response to selection

**Activity: Quiz 12** & review of worked questions

**Homework:** \_\_\_\_\_

April 30<sup>th</sup>

**Chapter 25: Population and Evolutionary Genetics:**

**Activity: Quiz 13** & Cellular Transformation: Part III: Protein extraction and Quantification (a.k.a. here is where we find out how much protein was expressed in our transgenic bacteria)

**Homework:** \_\_\_\_\_

May 7<sup>th</sup>

**Chapter 25: Population and Evolutionary Genetics:** Molecular Evolution

**Activity: Quiz 14 (optional) & Problem Solving Session.**

**Homework:** \_\_\_\_\_

May 14<sup>th</sup>

**Final – Time: 10-11:50 am. Study your quizzes for the final.**

**Extra Credit: The following suggestions are provided for those students interested in extra-credit points. No more than 50 extra credit points total allowed.**

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1. Serve as a judge for the AGRI Science Fair on March 10<sup>th</sup>, 2012 – service is required between 7:00 am and 12:00 noon. (25 bonus pts). Signup list will be circulated in class. If you sign up for this opportunity you must fulfill your obligation.
2. Prepare a full lesson plan for genetics suitable for High School course in Agri-Science or Biology. (25 bonus pts). The project must include objectives, student learner outcomes, course material to cover, and describe in detail the student activity you would do to engage students with hands on learning.
3. Write a review paper on the interrelationships between sustainable agriculture and biotechnology, how can genetics be used to improve air, water and soil quality (25 points).
4. Write a review paper on a current genetic technology application in agriculture. You must use and cite scientific journal research regarding the application and/or development of the technology. For example, if you are interested in beef cattle genetics, you may want to discuss the current direction of EPDs and the incorporation of molecular genetic information (25 points).

**Guidelines for lab report:** Provide the following categories – clearly labeled, professionally presented, 12 pt font with 1” margins.

Title: Descriptive terms of the exercise.

Date/Author/other pertinent information

Introduction: (10 pts)

- Statement of goal and objectives (activities to achieve goal)
- Provide background information – explain the concept
- Discuss any previous work in the area with relation to agriculture – discuss other applications – provide references

Materials and Methods (10 pts)

- Provide overview of activities and accomplishments
- The “what and how” of the activity

Results (10 pts)

- Provide clear representation of results
- No discussion – just presentation of the results

Discussion (10 pts)

- Discuss your results at it relates to the goals and objectives above
- How does your work compare the rest of the class – explain
- What could you have done differently to improve your result

How does this exercise relate to production agriculture – cite specific examples of how this could be used or is used in the industry. Provide all references.

Conclusions (5 pts)

- Summarize the work
- Summarize the outcomes
- Rate the lab for learning objectives – did learn anything?

References (5 pts)

- List all sources of information in APA format