

## Course Information and Syllabus

**Instructor:** Dr. Jon Scales

**Office:** BO 218

**Lect/Lab:** 5:30-8:20 PM R Rm: 209/329 **Office Hrs:** By Appt

**Email:** [jon.scales@mwsu.edu](mailto:jon.scales@mwsu.edu)

**Prerequisites:** Undergrad Genetics Course

**Texts:** Genetics: Genes to Genomes, Hartwell; Genes #, Lewin; Molecular Biology of the Gene, Watson; or any other suitable genetics text for reference.

### Course Philosophy:

This course will be a chance to further explore concepts you have probably been introduced to molecular/cellular based undergraduate courses.

One area largely missing from undergraduate treatment of genetics is the experimental approaches to study genes and use genetic tools to answer broader questions in biology. This course will expose you to experimental techniques and experimental designs used to identify genes, isolate genes, determine the function of genes and modify genomes.

### Assignments:

#### *Methodology literature searches*

Students will actively participate in learning about advanced genetic techniques by searching for and gathering research papers showcasing new techniques/approaches to answering genetic problems. We will discuss these papers in our course.

#### *Lab Projects*

In collaboration with the graduate Mycology course, students will work to isolate DNA from fungal samples, amplify barcode gene sequences and interpret sequence data.

### Exams and Quizzes:

We will have 2 major exams (midterm and final). Both exams will be take-home format exams.

### Grading:

The grading scale used for this course is as follows:

A ≥ 90    B+ ≥ 86    B ≥ 78    C+ ≥ 74    C ≥ 66    D+ ≥ 62    D ≥ 58    D- ≥ 54    F < 54

## Tentative Lecture Schedule

Week	Topic
1	Overview
2 -3	Molecular Tools: Manipulating DNA
4-5	DNA Sequencing
6-7	Libraries, Gene Identification & Isolation
8	Lab Project (MT Exam)
9-10	Methodology Paper Discussions
11-12	Trandgenesis & Gene Editing
13-14	Gene/Protein Function Determination
15	Final Exam