

Instructor- Dr. James Youngblom (Ph. D. - University of Minnesota- Dept. of Genetics and Cell Biology)

Contact Information:

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**Office Hours- Monday 12-1:30 pm; Thursday 10:00-11:30; or by appt.**

**Required text-** *DNA Science* by Micklos & Freyer, 2nd Edition

This is predominantly a hands-on laboratory class. To succeed, you must understand each lab exercise. Read each day's lab exercise before coming to class. Read the protocol and the supplementary material before and after each lab exercise. Understand why you are performing each step in a protocol. It is critical that you know and understand the expected result for each exercise. When performing the lab exercises, split the duties evenly. Do not let one person do all of the lab work. Rotate duties so that both of you know how to perform all of the laboratory tasks. Strive for excellent results. All of these labs will generate appropriate results, if the experimental procedures are done properly.

Pay attention and ask questions during the lectures and films. Take good notes during the lectures. All films, lectures, handouts, and lab exercises can be a source for an exam question.

**Attendance is expected for all labs.** If you know in advance that you cannot attend all labs, please see me about taking this class another time. **Attendance is required.** (-10 for unexcused absence).

**Dates to Remember-**

Wed. Feb. 22- Last day to drop a course

Fri. Mar. 31 – Campus closed, Cesar Chavez Day

Spring Break- No classes, Mar. 20- 24

Fri. May 12- Warrior Day

Wed. May 17- Last day of classes

Final Exam- Wed. May 24, 11:15 a.m.

**Grading:** > 90% = A-, > 80% = B-, > 70% = C-, > 60% = D-, < 60% = F

I will use +/- grading system.

## Schedule

All labs listed below with a # are from DNA Science; all other labs will be from class handouts.

#1-Feb. 1- Lab #1, #2	lecture- “Lab Safety”
#2-Feb. 8- Lab #3, Electroporation	lecture- “Agarose Gels; Electroporation” <b><u>Assignment #1 due at beginning of class</u></b>
#3-Feb, 15- Lab #3	lecture- “Use of Restriction Enzymes”
#4-Feb. 22- Lab #9	lecture- “Transforming E. coli” <b>Take Home Exam due/Quiz (25 pts.)</b>
#5-Mar. 1- Lab #10, Set up PCR	lecture- “PCR 1”
#6- Mar. 8- Lab #11, Analyze PCR	lecture- “PCR 2”
#7- Mar. 15- Lab #12A, Analyze PCR	<b>Take Home Exam due/Quiz (25 pts.)</b> lecture- “Making Solutions”
Mar. 22 No Classes, Spring Break	
#8- Mar. 29- Lab #12B	lecture- “CRISPR- Cas”,
#9-Apr. 5- CRISPR project	<b>MIDTERM EXAM (75 pts)</b>
#10- Apr. 12- CRISPR project	lecture- CRISPR, lab notebooks
#11- Apr. 19- CRISPR project	lecture- “Recombineering” <b>Lab Notebooks due</b>
#12- Apr. 26- CRISPR project	lecture- “DNA sequencing Technology”
#13-May 3- CRISPR project	<b>Take Home Exam due/Quiz (25 pts.)</b>
#14-May 10- CRISPR project	<b>Quiz #1 (20 pts.)</b> lecture- “Personal Genomics”
#15-May 17- CRISPR project	Lecture- “Current Events in Biotechnology” <b>Lab Notebooks due</b>

**Final Exam: Wednesday May 24 at 11:15, 100 pts**

**Total pts = 340 pts.:**

Assignments #1 = 5 pts.

Midterm exam = 75 pts.

Three Take Home Exams = 45 pts.

Quiz #1-3 = 30 pts.

Quiz #4 = 20 pts.

Concept Map = 20 pts.

Lab notebooks = 40 pts.

Movie Review = 5 pts.

Final Exam = 100 pts.

Assessment	Date	Points	Percent of Final Grade
Assignment 1	Due Feb. 8	5 pts.	1.5%
Take Home Exam #1 & quiz	Due Feb. 22	25 pts.	7.4%
Take Home Exam #2 & quiz	Due Mar. 15	25 pts.	7.4%
Exam 1	Apr. 5	75 pts.	22.1%
Project Notebook	Due Apr. 19	10 pts.	2.9%
Take Home Exam #3 & quiz	Due May 3	25 pts.	7.4%
Science Article quiz	May 10	20 pts.	5.9%
Concept Map	Due May 17	20 pts.	5.9%
Project notebook	Due May 17	30 pts.	8.8 %
Movie Review	Due May 17	5 pts.	1.5%
Final Exam	May 24	100 pts.	29.4 %
		340 pts.	100%

All **exams** and quizzes will be a mixture of different types of questions (including solving problems and short essay). **The final exam is comprehensive.** The exams cover readings, lectures, films, and lab exercises. No leaving the classroom during exams.

The **Take Home Exams** are designed to assist students in reviewing materials and getting the most of out of this class. These assessments are to be completed individually not as a team or a group.

**Assignments #1** - see the document titled rDNA debate on Blackboard. The assignment is clearly spelled out on the last page.

**Quiz #4**- The quiz is based on a journal article from a recent issue of Science. This is a test of your ability to read and understand a primary journal article related to molecular genetics. A PDF of the article is available on Blackboard. Also on Blackboard are the supplemental materials (extra figures and tables). You should look at the publication and the supplemental materials but are only quizzed on the article and the figures in the article.

**Lab Book**- The lab books are a documentation of all your work related to the *CRISPR* project. Documentation should begin on Apr. 5 and continue until the work is completed. Every week starting on Apr. 5 needs a clear entry. Each student submits one lab book. They will be graded twice. After 3 weeks (10 pts) and 7 weeks (30 pts) of work.

**Make-up**- If you know you can not be in class on the day of an exam, please see me beforehand so we can discuss your situation. In some circumstances, I will allow a make-up exam. If something comes up unexpectedly on the day of an exam, please call me. If you a leave a

message, leave a phone number and I will contact you to discuss your situation. Don't 'let it ride' and plan on discussing it with me later. If your situation warrants a make-up exam, then schedule your make-up exam ASAP. If I don't hear from you soon enough, you will get a 0.

**Cheating-** Students caught cheating are automatically awarded an F. They are no longer allowed in class and a report is filed with the Dean of Student Affairs. All electronic devices (including phones) & headphones must be kept in purses or backpacks during the exams and quizzes. No exceptions. You can use a real calculator and not the calculator function on a cell phone or PDA.

**Taping Policy-** Audiotaping of classes is permitted only with prior permission of the instructor; videotaping is not permitted under any circumstances. Authorized tapes are for the personal use of the student, and may not be distributed to others without the permission of the instructor.

**Guest Policy-** Guests are not permitted in this class due to the present of hazardous chemicals.

### **How to do well in this class-**

1. **COME TO CLASS-** take good notes, ask questions. Go over your notes, rewrite them, and think about them after each lecture.
2. If material is unclear, come and see me in my office.
3. Use YouTube and other sources to review important concepts.
4. Start early in the semester and stay on top of the material. Don't start studying the night before the exams.
5. Strive for good results. Plan each experiment carefully with your partner.
6. Strive to understand each week's exercise. Why are we doing it and what is the expected result? What is the biological basis of the technique?
7. Talk to others about each experiment- What was supposed to happen? Why did this happen? Why did we do this?