Agricultural Genetics Syllabus
AGRI 305 - Spring 2017

Instructor: Dr. Kasey DeAtley  
Email: kdeatley@csuchico.edu
Office: Plumas 208

Class Schedule: MWF 8:00 – 8:50 am  
Lecture location: Glenn 112

Activity Instructor: Kate Moore  
Email: kamoore@csuchico.edu
Office: Plumas 210

Activities:  
Sec 02: Monday 12:00 - 1:50: Plumas 315  
Sec 03: Wednesday 12:00 – 1:50: Plumas 315  
Sec 04: Friday 11:00 – 12:50: Plumas 315

Office Hours: Dr. DeAtley: MWF 9 am – 10:00 am; or by appointment  
Mrs. Moore: M 2pm – 4pm, F 9am – 11am; or by appointment

Required Text: Genetics: Conceptual Approach: 5th edition  


Course Content:
Agricultural Genetics will introduce students to a broad range of topics in the exciting field of population and molecular genetics. Upon completion of this course, the student will be fluent in basics of Mendelian, Molecular, and Population Genetics. In addition, students will become familiar with the application of basic theory to both Plant and Animal Biotechnology. These important concepts will provide insight for all types of students involved in Agricultural Science, Biology and Environmental Science.

Student Learning Objectives:
• Technical Competency in transmission genetics, molecular genetics, and population genetics  
• Technical competency in plant and animal breeding  
• Technical competency in biotechnology and application to production agriculture  
• Demonstrate the application of genetic technology to agriculture  
• Demonstrate the ability to identify the appropriate methodologies to solve analytical problems

Course grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Reading quizzes</td>
<td>(10 pts each)</td>
<td>111 pts</td>
</tr>
<tr>
<td>Homework sets</td>
<td>(10pts each)</td>
<td>100 pts</td>
</tr>
<tr>
<td>Assignments</td>
<td>(varies by item)</td>
<td>210 pts</td>
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<tr>
<td>Exams</td>
<td>(50 points each)</td>
<td>250 pts</td>
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<tr>
<td>Final</td>
<td></td>
<td>150 pts</td>
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<tr>
<td>Total</td>
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<td>870 pts</td>
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Attendance: Making the choice to attend lectures and labs regularly will provide each student the opportunity to earn an additional 30 extra credit points! (That is the equivalent of 3 homework sets or 3 online quizzes)

Grading Scale:  
90% = A; 80% = B; 70% = C; 60% = D; <60% = F

***The instructor reserves the right to curve the class at her discretion.
Course Requirements

Reading Quizzes
Reading material and taking a quiz before beginning an in-class lecture has shown to mentally prepare students and is correlated to higher retention and greater academic success. Therefore, reading quizzes will be given at the beginning of class before starting lecture on each chapter. You will be required to read the assigned chapter prior to taking the in-class, 10 point quiz. Quiz and chapter schedules are shown below in the Course Schedule.

Homework
Students are expected to complete a homework set for each chapter of the textbook covered in lecture and activity throughout the semester. These homework sets will be turned into the activity instructor on the required due dates. Problem sets will be available on Blackboard Learn within each corresponding content module.

Assignments
Three required assignments will be given to the students throughout the semester:

- **“The WHY”:** Students will be required to write a one-page report (2-3 paragraphs) to address the following points: 1) Brief overview of the student’s background (i.e., where are you from? Major? Potential career interest?) and 2) either select an article on any genetics topic that interests you from current publication sources and give a summary of the article or choose and describe an area/condition of genetics that you are interested in. If you choose an article, it should be cited in APA format. Assignment due in lecture on **JANUARY 30th, 2017.** (10 pts.)
- **The Picture assignment:** During week 4 you will be asked to submit via Blackboard a picture that capture how you feel about AGR1 305 thus far. More details given in activity. (5 pts.)
- **The Synthesis Project:** Students will be required to work in groups of 3-4 people to develop a creative teaching tool/project that demonstrates their understanding of DNA Replication, Transcription, and Translation. This project will explained in more detail in lecture and will be due to Dr. DeAtley’s office, Ms. Moore’s office or PLMS 317 by **5pm on April 3rd, 2017.** Please see assignment description and rubric on Blackboard for details and grading expectations. (100 pts.)

Exams
A total of four exams will be given throughout the semester.
1. Exam 1: Chapter 1 and 2
2. Exam 2: Chapter 8, 10, and 12
3. Exam 3: Chapter 13 and 15
4. Exam 4: Chapter 3 and 4
* Exams will be a combination of multiple choice, matching, definition, short answer, and comprehensive/essay questions.
* A scantron is required at each exam.

Final Exam
The final exam will be comprehensive and require a scantron. The format will follow previous exams from the duration of this course.

Extra Credit
There will be only three opportunities for extra credit this semester. It is the responsibility of the student to determine if they would like to complete EC opportunities. All EC opportunities will be offered in lecture, but no late EC will be accepted. Specifically, if you get to the end of the semester and are not satisfied with your grade, you cannot submit extra credit if the due date has passed. No exceptions.
1. **Attendance in lecture** – attendance will be collected in lecture sporadically throughout the semester and may be in the form of reading quizzes, attendance sheet, or pop quizzes. Up to (but not more than) 25 points may be available throughout the semester.
2. **Participation in FFA Field Day, March 11th, 2017** – you may receive between 5-10 EC points for helping out with the FFA Field Day.
3. **GMO Lab Report** – The last three weeks of the semester will be dedicated to completing a GMO product determination activity using the Real-time Polymerase Chain Reaction machine. Everyone’s participation is required; however, if you would like to obtain up to **50 additional EC points or replace a low exam score** you may write a GMO lab report. Details, requirements, and the rubric will be available on Blackboard. **GMO Lab Reports are due Friday of finals week (Friday, May 19th, 2017 by 5pm; submitted electronically through Backboard).**
**Course Specifics and how to be successful:**

- Students who encounter scheduling conflicts regarding their activity session must communicate with the Professor **two weeks** prior to attending an alternative lab section. This is vital for, not only your success, but your lab partners! Availability of lab materials is organized a semester in advance.
- There will be no makeup exams unless prior arrangements have been made with the Professor **two weeks** in advance of the scheduled absence.
- Exams provide the necessary immediate feedback to assess your performance in the class. If you are not meeting your expectations, then change your strategy. It is the responsibility of the student to find the necessary help. Opportunities for help include active participation in a study group, optional tutoring, and attending office hours on a regular basis.
- Homework assignments need to be completed prior the due date which will be announced in activity and lecture.
- Each lab activity will culminate with a quiz on the lecture material, and assigned homework problems.
- **Attendance is absolutely necessary and is required. (Extra credit will be based on attendance- Do not ask for additional extra credit).**
- Plan to study more for this class than most of your other classes unless you have an exceptionally strong background in biology and chemistry. Begin by reading and outlining the chapter (multiple times if needed) **prior (this means before)** to coming to class so that you are prepared for the reading exam. It is okay if you do not completely understand all of the material after reading the chapter. Lecture, activities and homework will make more sense if you have seen the material at least once before. Some students will need to re-read the material, then do the homework problems.
- Efficient students will require at least 8 hrs of study/week (8 hours in addition to the time spent in class).
- Use office hours.
- A review session will be held prior to each exam. Students are not required to attend but encouraged. Please come prepared with questions. These sessions will not be lead by the instructor (i.e., I will not go back through each individual lecture).
- Wet labs will be held during activity sessions at the end of the semester. Wets labs are designed to expose students to techniques used in current genetic fields. Students will be at a serious disadvantage if they miss one of these crucial activity sessions. The information collected during this portion of your activity will be used to inform lab reports, end-of-class activities/questions, and prepare students for the final exam.
<table>
<thead>
<tr>
<th>Week</th>
<th>Day/Date</th>
<th>Topic/Activity</th>
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| 1    | M: 1/23/17   | Lecture: Introduction to course and schedule  
Activity: Pre-assessment corrections, introduction activities, and chapter 1 homework review |
| 1    | W: 1/25/17   | Lecture: Chapter 1 reading & syllabus quiz, Introduction to Genetics – Chapter 1  
Activity: Pre-assessment corrections, introduction activities, and chapter 1 homework review |
| 1    | F: 1/27/17   | Lecture: Introduction to Genetics – Chapter 1, The “Why” assignment given  
Activity: Pre-assessment corrections, introduction activities, and chapter 1 homework review |
| 2    | M: 1/30/17   | Lecture: Chapter 2 reading quiz, Chapter 2: Chromosomes and Cellular Reproduction (online lecture), DUE: The “Why” assignment  
Activity: Chapter 2 review, Chapter 1 HW due at end of activity |
| 2    | W: 2/1/17    | Lecture: No in-class lecture – online lecture – Chapter 2  
Activity: Chapter 2 review, Chapter 1 HW due at end of activity |
| 2    | F: 2/3/17    | Lecture: Chapter 2: Chromosomes and Cellular Reproduction  
Activity: Chapter 2 review, Chapter 1 HW due at end of activity |
| 3    | M: 2/6/17    | Lecture: Chapter 2: Chromosomes and Cellular Reproduction  
Activity: Review activity Ch. 1 & 2, CH 2 HW due during activity  
***Friday activity students are welcome to attend this activity – Let Kate know in advance. |
| 3    | W: 2/8/17    | Lecture: Review session for Exam 1 (Chapters 1 & 2)  
Activity: Review activity Ch. 1 & 2, CH 2 HW due during activity  
***Friday activity students are welcome to attend this activity – Let Kate know in advance. |
| 3    | F: 2/10/17   | Lecture: Exam #1 (Chapter 1 & 2; Bring Scantron)  
Activity: Review activity Ch. 1 & 2, CH 2 HW due during activity  
***Friday activity students: you’re welcome to M or W activities instead – Let Kate know in advance. |
| 4    | M: 2/13/17   | Lecture: Chapter 8 reading quiz, Chapter 8: Chromosome Variation  
Activity: Kinesthetic review activity for Chapter 8, picture assignment given |
| 4    | W: 2/15/17   | Lecture: Chapter 8: Chromosome Variation  
Activity: Kinesthetic review activity for Chapter 8, picture assignment given |
| 4    | F: 2/17/17   | Lecture: Chapter 8: Chromosome Variation  
Activity: Kinesthetic review activity for Chapter 8, picture assignment given |
| 5    | M: 2/20/17   | Lecture: Chapter 10 reading quiz, Chapter 10: DNA: The Chemical Nature of the Gene  
Activity: Kinesthetic review activity for Chapter 10, CH 8 HW due |
Activity: Kinesthetic review activity for Chapter 10, CH 8 HW due |
| 5    | F: 2/24/17   | Lecture: Chapter 10: DNA: The Chemical Nature of the Gene, Picture assignment due by 5pm!  
Activity: Kinesthetic review activity for Chapter 10, CH 8 HW due |
| 6    | M: 2/27/17   | Lecture: Chapter 12 reading quiz, Chapter 12: DNA Replication and Recombination, Introduce creativity/synthesis assignment  
Activity: Kinesthetic review activity for Chapter 12, CH 10 HW Due |
| 6    | W: 3/1/17    | Lecture: Chapter 12: DNA Replication and Recombination  
Activity: Kinesthetic review activity for Chapter 12, CH 10 HW Due |
| 6    | F: 3/3/17    | Lecture: Chapter 12: DNA Replication and Recombination  
Activity: Kinesthetic review activity for Chapter 12, CH 10 HW Due |
| 7    | M: 3/6/17    | Lecture: Review session for EXAM #2  
Activity: TBA |
| 7    | W: 3/8/17    | Lecture: EXAM #2 (Bring Scantron)  
Activity: TBA |
| 7    | F: 3/10/17   | Lecture: TBA  
Activity: TBA |

**********SPRING BREAK – MARCH 13-17, 2017**********

| 8    | M: 3/20/17   | Lecture: Chapter 13 reading quiz, Chapter 13: Transcription  
Activity: Transcription |
<p>| 8    | W: 3/22/17   | Lecture: Chapter 13: Transcription |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Activity</th>
<th>Lecture</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>F: 3/24/17</td>
<td>Transcription</td>
<td>Chapter 13: Transcription</td>
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<tr>
<td>9</td>
<td>M: 3/27/17</td>
<td>Chapter 15 reading quiz, Chapter 15: Translation, Online CH 15 activity</td>
<td>None</td>
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<tr>
<td>9</td>
<td>W: 3/29/17</td>
<td>Chapter 15: Translation, Online CH 15 activity</td>
<td>None</td>
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<tr>
<td>9</td>
<td>F: 3/31/17</td>
<td><strong><strong><strong><strong><strong>No Class or Activity: Cesar Chavez Day</strong></strong></strong></strong></strong></td>
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<tr>
<td>10</td>
<td>M: 4/3/17</td>
<td>THE SYNTHESIS PROJECT- Due – By 5pm to Dr. DeAtley or Ms. Moore’s office or PLMS 317</td>
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<tr>
<td>10</td>
<td>W: 4/5/17</td>
<td>Review – EXAM #3</td>
<td>Optional office hours – help with projects or exams</td>
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<tr>
<td>10</td>
<td>F: 4/7/17</td>
<td>EXAM #3 (Bring Scantron), Chapter 15 HW due before Exam</td>
<td>Optional office hours – help with projects or exams</td>
<td></td>
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<tr>
<td>11</td>
<td>M: 4/10/17</td>
<td>Chapter 3 reading quiz, Chapter 3: Basic Principles of Heredity</td>
<td>Chapter 3 review activity</td>
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<tr>
<td>11</td>
<td>W: 4/12/17</td>
<td>Chapter 3: Basic Principles of Heredity</td>
<td>Chapter 3 review activity</td>
<td></td>
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<tr>
<td>11</td>
<td>F: 4/14/17</td>
<td>Chapter 3: Basic Principles of Heredity</td>
<td>Chapter 3 review activity</td>
<td></td>
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<tr>
<td>12</td>
<td>M: 4/17/17</td>
<td>Chapter 4 reading quiz, Chapter 4: Sex Determination and Sex-Linked Characteristics</td>
<td>Chapter 4 review activity, PCR video, CH 3 HW DUE</td>
<td></td>
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<tr>
<td>12</td>
<td>W: 4/19/17</td>
<td>Chapter 4: Sex Determination and Sex-Linked Characteristics</td>
<td>Chapter 4 review activity, PCR video, CH 3 HW DUE</td>
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<tr>
<td>12</td>
<td>F: 4/21/17</td>
<td>Chapter 4: Sex Determination and Sex-Linked Characteristics</td>
<td>Chapter 4 review activity, PCR video, CH 3 HW DUE</td>
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<tr>
<td>13</td>
<td>M: 4/24/17</td>
<td>No in-class lecture</td>
<td>GMO lab – week 1</td>
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<tr>
<td>13</td>
<td>W: 4/26/17</td>
<td>Review for EXAM #4</td>
<td>GMO lab – week 1</td>
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<tr>
<td>13</td>
<td>F: 4/28/17</td>
<td>EXAM #4 (Bring Scantron), CH 4 HW due before EXAM</td>
<td>GMO lab – week 1</td>
<td></td>
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<tr>
<td>14</td>
<td>M: 5/1/17</td>
<td>Chapter 5 reading quiz, Chapter 5: Extensions and Modifications of Basic Principles</td>
<td>GMO lab week #1 worksheet due</td>
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<tr>
<td>14</td>
<td>W: 5/3/17</td>
<td>Chapter 5: Extensions and Modifications of Basic Principles</td>
<td>GMO lab week #1 worksheet due</td>
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<tr>
<td>14</td>
<td>F: 5/5/17</td>
<td>Chapter 5: Extensions and Modifications of Basic Principles</td>
<td>GMO lab week #1 worksheet due</td>
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<tr>
<td>15</td>
<td>M: 5/8/17</td>
<td>Chapter 25 reading quiz, Chapter 25: Population Genetics</td>
<td>GMO lab worksheet #2 &amp; #3 due</td>
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<tr>
<td>15</td>
<td>W: 5/10/17</td>
<td>Chapter 25: Population Genetics, CH 25 activity in-class</td>
<td>GMO lab worksheet #2 &amp; #3 due</td>
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<tr>
<td>15</td>
<td>F: 5/12/17</td>
<td>Review for Final Exam</td>
<td>GMO lab worksheet #2 &amp; #3 due</td>
<td></td>
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<tr>
<td>16</td>
<td>F: 5/19/17</td>
<td>Final Exam – Time and location TBA</td>
<td>GMO Lab report (Extra Credit) due by 5pm via Blackboard</td>
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