Syllabus: Principles of Genetics (BIOL 260, 4 credits) Spring 2020

Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X; MATH F151X or higher, LS F101X or successful completion of library skills competency test

Instructor: Diana Wolf, email: dewolf@alaska.edu
Office hours: TBA
Please feel free to contact me any time by phone, email, skype, zoom or in my office if you need help.

Teaching assistants (TAs):
Iris Cato, email: iacato@alaska.edu
Office: Murie
cell phone: (409) 771-3880 (emergencies only). Email is the best way to contact.
Office hours: Tue, Th 6-7pm Murie 202 and zoom

Course readings/materials: Sapling Plus for Genetics: A conceptual approach 6th ed
You can get this as an online textbook (I find this convenient) or a paper textbook. You do not need a Sapling access code, so a used book is fine.

Blackboard: http://classes.uaf.edu/
The Blackboard web site contains videos, handouts, homework assignments, practice tests and labs. Course materials will be updated weekly.

Course description: Principles of inheritance; physical and chemical properties of genetic systems. Course covers Mendelian genetics, molecular genetics, quantitative genetics, and population genetics.

Course goals and learning outcomes: Why do you look like your family? Why aren't you identical to your family? How do we find genes in the genome? How do we determine what those genes do? Students will learn the fundamentals of Mendelian and molecular genetics, as well as how these topics are important in everyday life; topics such as genetic diseases, stem cells, forensics and genetically-modified organisms (GMOs). Additionally, students will gain experience with critical thinking, problem solving, writing, and will gain hands on practice in modern laboratory skills.

Instructional methods: Students will learn through online videos, hands-on laboratory activities, homework, computer simulations, online discussion, and by writing research reports and giving a short video presentation.

Videos: Instructional materials will be provided as text and videos. Videos may contain playposit quiz questions.

Homework: There will be homework due every week on Blackboard. The goal of homework is to help you learn and assess your knowledge. You are encouraged to work with others on homework if you find that to be helpful.
Labs: All lab assignments and protocols will be provided online. You will learn from videos, text and lab homework assignments. You are encouraged to work with others on lab assignments if you find that to be helpful. After assignments are submitted, answers will be provided, and you will be given the opportunity to correct your answers.

DNA sequencing project:
We will sequence DNA from herbal supplements and write a lab report about your results. Many people use herbal supplements to enhance their health, or achieve other goals (such as body building, mood regulation, enhanced intelligence, etc.). Supplements are not regulated for safety or efficacy. However, they are required to accurately list their ingredients on the label in the order or abundance. You will choose an herbal supplement or tea and use DNA sequencing to see if it contains the plants listed on the label. You will then write a 5-10 page lab report describing your methods, results and conclusions. The lab report must be written on your own.

Hybrid lab sections (FXA, FXB): If you are in a lab section that includes a face to face component, you are required to attend the three face to face meetings. We will extract DNA from an herbal supplement, PCR amplify a DNA region used in barcoding, and prepare samples for DNA sequencing. It is crucially important that you read protocols and watch videos in advance so you are prepared for the workshop.

 Entirely online lab section (UX1): If you are in the entirely online lab section, we will loan you a lab kit so you can carry out labs at home. You will watch videos and read handouts to learn how to conduct each protocol. As you carry out each protocol, you will photograph yourself carrying out the protocol and submit a report describing what you did and your results.

 If you are in the Fairbanks area, please pick up your lab kit at UAF from Dr. Wolf (dewolf@alaska.edu) MWF between 9:30am and 5pm, or schedule another time with your TA, Iris Cato (iacato@alaska.edu). If you live outside of Fairbanks or cannot pick up your equipment for another reason, we will mail the kit to you.

The equipment in this kit (centrifuge, thermocycler, gel rig and pipettors) costs $1200/kit. You must return this equipment along with your DNA for sequencing. If you do not return the equipment, we won't be able to have a class next year, and a hold will be placed on your account by the registrar until you have either returned the equipment or paid for the cost of replacing it. A hold will prevent any access to registration, grades, transcripts, and graduation.

Genetic diseases project: We will have a group project on genetic diseases. You will work in groups of 2-3 students, and make a collaborative video about a genetic disease.

Collaboration: Collaboration is encouraged on lab activities, lab handouts, homework, and the Genetic Diseases project. Getting in touch with other students in an online course is difficult. In Blackboard, you can email other students, the teacher and TAs. You can do conferences using Blackboard Collaborate (similar to Skype). You can also use email, skype, phone calls, text messages, or get together in person.

Projects where collaboration is not allowed: Exams will be proctored, and must be completed on your own. The herbal supplement lab report must be written on your own.

Plagiarism includes copying text from the internet or a textbook, reading other students'
papers to paraphrase them, and allowing other students to read your paper.

**Cheating includes** using material outside your brain to complete exams and quizzes. You are in school to learn, and I hope that you want to learn. If you resort to cheating or plagiarism, you won't study as hard, and you won't learn as much, so you will be cheating yourself of an education. If you are involved in cheating or plagiarism, you will receive an F in the course, and will be referred to the Center for Student Rights and Responsibilities for disciplinary action.

If you are **re-taking this class**, please contact me so we can discuss how you can do better this time.

**Late assignments:** Please submit assignments on time. If you get behind, you’ll have even more work to do the next week, and it will be very difficult to catch up. Late assignments will be penalized at a rate of 5% per day. However, if you have an emergency, please let me know, and I can give you extra time without penalty.

**Disagreements about grading:** If you disagree with the way something has been graded, please submit your explanation in writing, along with the graded work. If a simple mistake was made in tallying points or scoring, this can be easily corrected. If you have been told that the correct answer is different from your answer, but you believe your answer to be correct, you must submit an explanation that includes references to the textbook, class handouts, the internet and/or the scientific literature.

**Support Services:** If you require more assistance than can be provided in class, lab and meetings with the course instructor/TAs, you may want to contact Student Support Services (http://www.uaf.edu/ssspp/). They provide free services to eligible students, including: tutoring, math help, academic advising, mentoring and personal support, and cultural and social engagement. You may be eligible if you have a limited income, a documented physical or learning disability, or are a first-generation college student (meaning that neither of your parents earned a Bachelor’s degree).

**Disabilities Services:** If you have a disability, or think you may have a disability, please contact the Office of Disabilities Services (203 WHIT, 474-7043). We will work with this office to provide reasonable and appropriate accommodation to students with disabilities.

**Student protections and services:** Every qualified student is welcome in my classroom. As needed, I am happy to work with you, disability services, veterans’ services, rural student services, etc to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. As required, if I notice or am informed of certain types of misconduct, then I am required to report it to the appropriate authorities. For more information on your rights as a student and the resources available to you to resolve problems, please go to the following site: www.uaf.edu/handbook/.

**Evaluation:** Student performance will be evaluated through exams, weekly homework assignments and quizzes, several papers, one short presentation, laboratory reports and lab participation. Grade cutoffs are A:90%, B:80%, C:70%, D:60%, F:<60%.

Exam 1 15%
Exam 2 15%
Exam 3 15%
Final Exam 15%
Homework/Discussions (in weekly modules) 20%
Lab (assignments, quizzes, participation, return of equipment and DNA sample, presentation, herbal supplement paper) 20%

Location of Dr. Wolf’s office WRRB 240
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<tr>
<th>Week</th>
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<th>Chapters</th>
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