Description:

This course explores genetics as both a science and toolbox of experimental approaches to study diverse biological processes. **This is an advanced level course and students are expected to know the basic concepts of genetics and molecular biology at this point.** The goals of the course are to familiarize students with 1) genetics as the science of heredity, gene expression, developmental programs and other phenomena, 2) the rationale and methodologies used in modern genetic analyses, 3) the history of major discoveries in genetics, 4) relationships of genetics to other areas of the biological sciences (e.g. biochemistry, genomics, physiology, developmental biology), 5) and how scientific research articles and databases serve the scientific community.

Course structure: Each week, the lecture on Wednesday introduces an area of genetics and typically at least one genetic approach. The lecture on Friday explores original research articles in that area through class discussions. One will be an article that revealed the problem using relatively simple approaches. At least one recent article will cover our current understanding of that problem and research approaches used at the forefront of the field. We will discuss research using eukaryotic model organisms: the fruitfly - *Drosophila melanogaster*, the nematode - *Caenorhabditis elegans*, the yeast - *Saccharomyces cerevisiae*, the mouse - *Musca domestica*, the plant - *Arabidopsis thaliana* and the humans - *homo sapiens*. We will also see how modern techniques are allowing genetic analyses in human cell lines and the potential for curing of hereditary disease by genetic modification.

Course material: We will be using the TopHat (www.tophat.com) classroom response system in class for lectures, quizzes and attendance. You will be able to submit answers to in-class questions and I will take attendance via Apple or Android smartphones and tablets, laptops, or via text message (SMS). You can register for Top Hat here (https://app.tophat.com/register/). Top Hat will require single course price or a subscription. There are multiple options and it costs ~$26 CAD for 1 term subscription (4 months) + another $10 for TopHat tests. The course code for BIOL461 is: **682186**. TopHat registration needs to be done no sooner than 1st Jan 2019.

The course material will also be provided via my lab website here (http://www.kachroolab.org/classes/BIOL461_winter_2019.html). The course website will provide links to review and research articles in the scientific literature. **No textbook is assigned.** Reading assignments will be announced in lectures, on the Moodle site and on the course website. All the files shared with the class will be password protected. The password is "**461_winter**".

Office hours: Students may request to meet with Dr. Aashiq Kachroo (aashiq.kachroo@concordia.ca) by appointment at GE 330.11. There are no TA sessions in this course, therefore, all appointments are group appointments.

Grading: Your course grade will be based on exams, quizzes, research article review, fellowship proposals and participation throughout the duration of the course. Grades will be calculated based on the following scores.

EXAM TYPE	Grade %	DATE
Midterm exams (1 of 2)	**25%**	*To be announced soon*
Final Exam (Compulsory)	**30%**	*Announced by the Exams Office.*
Quizzes (2 of 2)	**15%**	*To be announced soon*
Seminar on a research article	**10%**	*To be announced soon*
Fellowship Proposal	**15%**	*To be announced soon*
In class quizzes and attendance	**5%**	*Via TopHat*
OVERALL GRADE	**100%**	

Grades will be assigned as follows: A^+ = 90-100%, A = 85-89%, A^- = 80-84%, B^+ = 77-79%, B = 73-76%, B^- = 70-72%, C^+ = 67-69%, C = 63-66%, C^- = 60-62%, D^+ = 57-59%, D = 53-56%, D^- = 50-52%, F= < 50.

1. **Only 1 of 2 midterm exams contributes to your grade. The lowest score will be dropped.** If you need to miss a mid-semester exam (due to sickness, athletic commitments, or other personal reasons) your missed exam automatically becomes the dropped score, and no excuse is needed.
2. **All 2 of 2 quizzes will count towards the final grade.**
3. Students who arrive late to an exam will not be given additional time, and anyone arriving after another student has already finished the exam will not be permitted to take the exam and will be assigned a grade 0.
4. **Final exam is an absolute requirement.**
5. **Re-grade policy:** You are responsible for ensuring that your grades reflect the scores that you have secured on your exam paper, and that the points on your exam have been added correctly. If you find a mistake, please see me immediately. If you take issue with how a short answer question was graded, please submit your exam paper with an attached sheet explaining why your answer deserves more points by comparing your answer with the exam key and/or lecture material. You must have written your exam in ink (non-erasable) and submit your exam for re-grade within **ONE WEEK** after it has been returned to you.
6. Seminars will be group based. Each group will be given a paper to read and present on a particular day. Each person from each group would be chosen at random to present a particular section of the paper and will be graded accordingly.
7. Submissions of the Fellowship Proposal should be done as e-files directly to my email or as hard copies, at the latest, on the day following the deadline. **Penalty for late submission: 10% of the assignment score/day.**
8. The final exam will cover concepts presented in lectures and readings after the midterm and, in other words, will not be cumulative. As the final exam is worth less than 50% of the final grade, deferred exams will not be possible.

Exams and quiz policy: All exams will be open book. Avoid any unethical behavior during the entire course particularly during exams.

Class Attendance: Attendance at lecture and discussion sections is strongly encouraged, particularly if you would like to do well in the course. I will use TopHat to check your attendance. Please remember attendance along with several in class quizzes correspond to ~5% of your grade.

Class Conduct: Be considerate of others! Any distracting behavior (unnecessary talking, texting, web surfing) is not acceptable in the class. You are free to leave the class and do so outside!

Academic Integrity: Ethical conduct is expected at all times. Unethical conduct (cheating on exams, quizzes, etc.) may result in an automatic failing grade in the course and/or academic probation. Please see the Concordia U policy here (https://www.concordia.ca/students/academic-integrity/offences.html).

Students with Disabilities: All procedures outlined here (http://www.concordia.ca/students/accessibility.html) and here (http://www.concordia.ca/content/dam/common/docs/policies/official-policies/PRVPAA-14.pdf) will be followed in this course. Please provide proper documentation at the beginning of the semester.