

# Principles of Genetics – 20354 – BIOL 230 – A01

## Course Outline, Spring 2021

### Welcome to BIOL230

We are a team of dedicated science teachers who love genetics. Our goal is to teach you complex cellular processes involving discoveries from over one hundred years ago (Mendelian genetics) or just last decade (Next gen sequencing). We will show you how genetics plays an important role in all our daily lives (genetically modified crops, forensic investigations, medical diagnostics)! We hope you enjoy “Principles of Genetics”, and we wish to provide you with a detailed and foundational understanding of genetics.

### Lecturers:

- Dr. Barbara Ehling (Course-coordinator and lecturer), email: [behling@uvic.ca](mailto:behling@uvic.ca)
- Dr. Ryan Gawryluk, email: [ryangawryluk@uvic.ca](mailto:ryangawryluk@uvic.ca)
- Dr. John Taylor, email: [taylorjs@uvic.ca](mailto:taylorjs@uvic.ca)

### Senior Laboratory Instructor:

- Kim Curry, email: [cellbiol@uvic.ca](mailto:cellbiol@uvic.ca)

### Online Teaching

I know that it can be hard to motivate yourself at home to engage in online learning. Please contact us if you struggle and need help.

### Lectures

Tuesday, Wednesday and Friday 10:30 – 11:20 am.

Classes start Tuesday Jan 12<sup>th</sup> and end Friday April 9<sup>th</sup> 2021.

Lecture format is a combination of asynchronous (upload pre-recorded lecture slides) and synchronous (live lectures on Zoom).

### How do we connect in this online setup?

- 1. Brightspaces** will be used to post lecture slides, pre-recorded lectures, assignments, Q&A forums, quizzes, announcements and more...
- 2. Zoom will be used to connect with you in real time** (lectures, office hours and Q&A sessions).

Join Zoom Meeting (valid for entire term!)

<https://uvic.zoom.us/j/5541110796?pwd=N2pCRjR1cTd0Z0pNckRNNHdzZFZGUT09>

Meeting ID: 554 111 0796

Password: UVic

Please log in via **UVic SSO** (Single Sign On) and you can access the meeting right away without being in the waiting room! If you have privacy issues please contact UVic privacy office.

As it is really **nice to see your faces** we would really appreciate if you would turn on your videos during zoom meetings!

You can participate by writing in the chat and/or raising a hand (in your video or by clicking the hand symbol on the right side after you clicked on 'participants').

*Office hours:* In order to meet on Zoom individually, please send us an email and we will agree on a time.

*Administrative questions:* If you have any administrative related questions, please post your question on Brightspace under 'Administrative Q & A forum'. Those could be questions like 'When do we write quiz 1?' (Hint: often you find the answers to those question in the course outline or on Brightspace)

*Scientific questions:* if you have any topic related question, please post your question on Brightspace under 'Scientific Q & A forum'. Those could be question like 'Does the *lacI* gene belong to the lac operon?' You will get 1.5% participation grade for ASKING at least ONE question and 1.5% participation grade for ANSWERING at least ONE question. This is a great study tool before quizzes/exams!

*Lab-specific questions:* if you have any questions related to the laboratory content, please post your question on Brightspace under 'Lab Q & A forum'.

#### **Textbook and Lecture slides:**

**Genetics Analysis and Principles** by Robert J. Brooker, 7<sup>th</sup> (2021) edition, McGraw- Hill Education. Lecture notes will be posted on a Brightspace website for you.

*All course content and materials (lecture notes and exam/quiz questions) are made available by instructors for educational purposes and for the exclusive use of students registered in their class. The material is protected under copyright law, even if not marked with a ©. **Any further use or distribution of materials to others requires the written permission of the instructor, except under fair dealing or another exception in the Copyright Act. SHARING LECTURE SLIDES and QUIZ QUESTIONS through note-sharing sites or other means VIOLATES THE POLICY ON ACADEMIC INTEGRITY. Violations may result in disciplinary action under the Resolution of Non-Academic Misconduct Allegations policy (AC1300).***

#### **Tentative lectures schedule:**

1. Transcription (BE)
2. Regulation of Gene expression (BE)
3. Translation (BE)
4. Non-coding RNAs (RG)
5. Chromosomes and cell cycle: mitosis and Meiosis (RG)
6. Mendelian inheritance, probability and statistics, Non-Mendelian Inheritance (RG)
7. Gene mutation, DNA repair and recombination (RG)
8. Genes and Mendel's peas (JT)
9. De-novo genes and gene duplication (JT)

10. Pedigrees and linkage (including Lego sex) and the LOD Score (JT)
11. Genes and disease (including X inactivation and mtDNA inheritance) (JT)
12. Phylogenetics (will be a BLAST) (JT)
13. Population genetics (you will need your Lego for this too) (JT)

Pre-requisite: Biol225. Pre- or Co-requisite: Chem231. Recommended: Biochem299

### **Evaluation:**

#### **Lecture component (60%):**

- 4 quizzes (4% each: 16% total)
- 1 midterm (16%)
- 1 final exam (25%). Time determined by UVic during exam period in April, cumulative.
- Q&A forum participation (3%). We will have a Question & Answer forum for **genetic** related topics. Everybody can post questions and everybody can answer/comment on the questions. You get a participation mark for ASKING at least ONE question (1.5%) and for ANSWERING at least ONE question (1.5%) anytime during the term, but not later than **April 9<sup>th</sup> 2021**.

#### **Lab component (40%):**

- 10% *My Gene* project and presentation
- 5% participation (showing up, discussions, Labster simulations)
- 15% assignments (primer assignment, pub med assignment, discussion assignment)
- 10% lab exam (written together with final lecture exam)

Please see the lab manual for lab-specific assessments and policies.

**Students must pass both the lecture & lab by scoring at least an overall 50% in both components in order to pass the course.**

**Grade conversion:** A+ 90-100%; A 85-89.5%; A- 80-84.5%; B+ 77-79.5%; B 73-76.5%;  
B- 70-72.5%; C+ 65-69.5%; C 60-64.5%; D 50-59.5%; F <49.5%

You are expected to **observe UVic academic regulations and standards of scholarly integrity** especially with regards to plagiarism and cheating. All exams are written online at home, so they are all open book exams: you are allowed to consult lecture notes and textbook, however budget your time carefully (there will NOT be enough time to look up the answers for every single question)! The exams (quizzes and final exam) must be taken **individually** and not with a friend/classmate or a group. You are prohibited from sharing any information about the exam with others or from capturing or recording exam questions.

UVic and we as instructors are committed to promoting, providing and protecting a supportive and safe learning and working environment for you and us.

**Exam times can be very stressful for you. In order to stay healthy physically and mentally make sure that you get enough sleep, eat well, exercise and take breaks. Avoid last minute study panic by working regularly throughout the term: we recommend that you spend at least 1-2 hours studying after each lecture!**

Life can happen and it can happen to every one of us. If there is any situation arising that makes it difficult for you to be successful in this class, please come and talk to me (BE). I am sure that together we can find solutions!

If you cannot attend an assessment (quiz, exam, presentation) for a valid reason (illness, accident, family crisis or athletic competition representing UVic), it is your responsibility to inform the course coordinator (BE) as soon as possible.

If you miss too many components of this course, an alternative assessment might be considered and your grade will be calculated accordingly. If you miss too many components and you are not able to compensate for missed assessment, you will be given an N grade.

All of my lectures are live, no Q&A sessions (of course they can ask questions during the lecture)

**Important dates this term Winter 2021. Events happen during class time unless noted otherwise.**

Jan 12 <sup>th</sup>	<b>Introduction</b> live on Zoom on Tuesday
Jan 22 <sup>nd</sup>	Live Q&A session on Zoom (30 min)
Jan 19 <sup>th</sup>	Last day for 100% reduction of second term fees
Jan 22 <sup>th</sup>	Last day for adding courses that begin in the second. term
Jan 25 <sup>th</sup>	Labs start this week
Jan 26 <sup>th</sup>	<b>Quiz 1</b> (20 min)
Feb 5 <sup>th</sup>	Live Q&A session on Zoom (30 min)
Feb 9 <sup>th</sup>	<b>Quiz 2</b> (20 min)
Feb 15- 19	reading week, no lectures, no labs
Feb 26 <sup>th</sup>	Live Q&A session on Zoom (30 min)
Mar 2 <sup>nd</sup>	<b>Midterm</b> (50 min)
Mar 12	Live Q&A session on Zoom
Mar. 16	<b>Quiz 3</b> (20 min)
Mar 26	Live Q&A session on Zoom
Mar 30	<b>Quiz 4</b>
April 2 <sup>nd</sup>	Good Friday: NO lecture today
Apr 9 <sup>th</sup>	Last class

**How to be successful?** Do you want good grade in this course? Look for the 'How-to-Study' guide on Brightspace. But here is the **most important advice**: I want you to know that **off – task activities** (checking email, surfing the internet, checking social network sites) during lectures and study time is **negatively affecting students' grades by more than 10%** (Sana *et al.*, 2013).

**We hope that you enjoy a great spring term with Biol230 Genetics!**

### **Need help?**

If you have any **technical issues** using Brightspace, this is the time to figure this out and please contact the **computer help desk** via email ([helpdesk@uvic.ca](mailto:helpdesk@uvic.ca)) ASAP.

**Student Supports for Online Technology:**

- information on **Zoom** at

<https://www.uvic.ca/systems/services/avmultimedia/zoomvideoconferencing/index.php>

**Learn anywhere:**

<https://onlineacademiccommunity.uvic.ca/LearnAnywhere/>

### **New Student Connect Program**

*As a critical tool to build student communities and meaningful engagement outside of the learning setting in a predominately online environment, all **new to UVic** students (undergraduate & graduate) will have opportunities to participate in New Student Connect. Participating students will be assigned in small groups by Faculty and/or interest groups to upper year peer mentors who will provide a wealth of knowledge about student life, the UVic student community, available support services, and ways that students can get connected as needed.*

<https://www.uvic.ca/services/studentlife/initiatives/new-student-connect/index.php>

### **New Student Mental Health Supports**

*In addition to providing both face to face and online mental health resources through our new Student Wellness Centre (opened in July), a new 24x7 phone & online student mental health resource and support program is now available for all UVic students, no matter where they are located, at any time.*

<https://www.uvic.ca/services/counselling/resources/supportconnect/>

**Counselling Services** - *Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students. Due to covid19 service is now offered by phone.*

<https://www.uvic.ca/services/counselling/>

**Health Services** - *University Health Services (UHS) provides a full service primary health clinic for students, and coordinates healthy student and campus initiatives. UVic Health has transitioned to offering services almost entirely by telehealth.* <http://www.uvic.ca/services/health/>

**Centre for Accessible Learning** - *The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations.*

<https://www.uvic.ca/services/cal/>. *The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.*

**Elders' Voices** - *The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being.*

<https://www.uvic.ca/services/indigenous/students/programming/elders/index.php>

### **Sexualized Violence Prevention and Response at UVic**

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized

violence and its overall approach by visiting [www.uvic.ca/svp](http://www.uvic.ca/svp). If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out: Where: Sexualized violence resource office in EQHR; Sedgewick C119, Phone: [250.721.8021](tel:250.721.8021), Email: [svpcoordinator@uvic.ca](mailto:svpcoordinator@uvic.ca), Web: [www.uvic.ca/svp](http://www.uvic.ca/svp)