



# UNIVERSITY OF SASKATCHEWAN

Department of Biology

## COURSE SYLLABUS

### **BIOL 226 - Genes to Genomics**

|                 |                 |               |                        |
|-----------------|-----------------|---------------|------------------------|
| Course code:    | CRN 22176       | Term:         | Winter (T2) 2021       |
| Course credits: | 3.0             | Delivery:     | Lecture & Lab          |
| Class session:  | 01              | Start Date:   | January 11, 2021       |
| Lecture room:   | Remote delivery | Lab room:     | Remote delivery        |
| Lectures:       | MWF 10:30-11:20 | Labs:         | MTWRF via Canvas       |
| Website/notes:  | via Canvas      | Prerequisites | Biology 120.3 or 110.6 |

### **Calendar Description**

Content ranges from Mendelian genetics to computational procedures based on the complete genome. Examples from eukaryotic species, including humans, are emphasized. Topics include classical transmission genetics, cytogenetics, DNA structure and replication, gene function, mutation and repair, regulation, recombinant DNA technology, and structural, functional and comparative genomics

Prerequisites: Biology 120.3 or 110.6

### **Remote Learning Context**

This course is being offered for the first time remotely. We have strived to make the best of this, noting that the remote teaching and learning context is new to most. We ask that all participants in the course interact with empathy and care. The entire course has been redesigned for remote access, including the laboratories. If you have any questions about how to do something, please feel free to ask one of the instructors. The lectures will be pre-recorded and uploaded to Canvas, the content management system. There will also be live sessions during scheduled class times to review concepts and address student questions. The laboratory component has been reconfigured for you to complete it remotely. Additional details regarding the lab are found below.

Remote classes are likely a new challenge for many students. The University put together information on tools and technologies to help students navigate the resources needed to be ready for this new delivery style and reduce stress. You can access these resources at: <https://students.usask.ca/study/remote-learning.php#Accessingcoursework>

We would also like to direct you to the USask Netiquette webpage and encourage you to be mindful of your online activities: <https://teaching.usask.ca/remote-teaching/netiquette.php>

If you are experiencing difficulty, please contact the instructors or lab coordinator as soon as possible

## Course Overview

This course combines classical genetics with modern molecular analysis. The first half of the course focuses on Mendelian genetics as it relates to the Chromosomal Theory of Inheritance. Practical applications of classical genetics principles such as linkage and recombination in building genetic maps are explored. In the second half, we turn to understand the fundamental molecular processes (transcription and translation) that coordinate the flow of genetic information (the Central Dogma of Molecular Biology) and how our understanding of genetics and its uses have changed with the advent of recombinant DNA technology. We then move to investigate how the genome is transcriptionally regulated to yield genetic variation at the level of the phenotype. We end by analyzing the flow of alleles in a population level scale with population genetics. This course is an introduction to the basic genetics concepts that permeate several other fields in the biological sciences and is intended to prepare students for senior molecular biology and genetic courses.

Note: The University of Saskatchewan Learning Charter is intended to define aspirations about the learning experience that the University aims to provide, and the roles to be played in realizing these aspirations by students, instructors and the institution. A copy of the Learning Charter can be found at:

[http://www.usask.ca/university\\_secretary/LearningCharter.pdf](http://www.usask.ca/university_secretary/LearningCharter.pdf)

## Learning Outcomes

By the completion of this course, students will be expected to:

1. Understand Mendel's first and second law of genetics and how they relate to cytogenetics.
2. Be able to predict the outcome of crosses and to carry out pedigree analysis.
3. Understand the principles of recombination and be able to map chromosomes
4. Recognize how expression of genetic information is related to phenotype
5. Be conversant with genomics and the application of genomic technologies.
6. Understand how genes behave in populations and how this mechanism contributes to evolutionary processes.

## Instructors and Contact info:

Dr. Christopher Todd

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Dr. Carlos Carvalho

Office: room 220.5 CSRB

Ph# 306-966-4436

Email: [carlos.carvalho@usask.ca](mailto:carlos.carvalho@usask.ca)

Lab Coordinator: Dr. Andres Posso-Terranova

Office: room G77 THORV Building; WebEx room: <https://usask.webex.com/meet/andres.posso>

Ph# 306-966-4431

Email: [andres.posso@usask.ca](mailto:andres.posso@usask.ca)

Office Hours: Specific appointments can be set by email.

## Instructor Profiles & Other Information:

Dr. Todd is a regular faculty member and head of the Department of Biology. His research program focuses on plant molecular biology and physiology. His undergraduate training was in genetics and molecular biology and he holds a PhD in plant biology. Dr. Carvalho is a regular faculty member in the Department of Biology. He holds an MSc in molecular biology and a PhD in molecular genetics. Dr. Posso-Terranova is a laboratory coordinator for genetics courses in the Department of Biology. He holds a MSc in plant breeding and a PhD in evolutionary genetics.

## Required Resources

**Textbook:** Introduction to Genetic Analysis – 12th edition. Griffiths et. al. 2020. It is available through the bookstore and includes Sapling access (see below).

**Electronic Resources:** Students must acquire a license to use the Sapling® homework platform (saplinglearning.com). Access is bundled with your textbook or available online separately through the bookstore. Online assignments using the Sapling platform will account for 5% of the student's marks. More information about Sapling® will be given in lecture in the beginning of the course.

Students are required to purchase an access code from the U of S campus bookstore for downloading the lab manual (<https://artsandscience.usask.ca/ebook>).

## Lecture Topics

The course material is organized around the main topics below:

### Part I – Dr. Todd

|           |                                     |                    |
|-----------|-------------------------------------|--------------------|
| TOPIC 1 – | Principles of Mendelian Inheritance | (Griffths Ch. 2,3) |
| TOPIC 2 – | Chromosomal basis of inheritance    | (Griffths Ch. 2,3) |
| TOPIC 3 – | Extensions of Mendelian Principles  | (Griffths Ch. 5)   |
| TOPIC 4 – | Recombination and Mapping           | (Griffths Ch. 4)   |
| TOPIC 5 – | Large Scale Chromosomal Changes     | (Griffths Ch. 17)  |

### Part II – Dr. Carvalho

|            |                                              |                    |
|------------|----------------------------------------------|--------------------|
| TOPIC 6 –  | The Central Dogma of Molecular Biology       | (Griffths Ch. 8,9) |
| TOPIC 7 –  | Gene isolation and Manipulation              | (Griffths Ch. 10)  |
| TOPIC 8 –  | Regulation of Gene Expression in Prokaryotes | (Griffths Ch. 11)  |
| TOPIC 9 –  | Regulation of Gene Expression in Eukaryotes  | (Griffths Ch. 12)  |
| TOPIC 10 – | Epigenetic Control of Gene Expression        | (Griffths Ch. 12)  |
| TOPIC 11 – | Population Genetics                          | (Griffths Ch. 18)  |

## Proposed Schedule

Students will be able to progress through the material as it is released via Canvas. Weekly topics indicate the suggested pace of the course and the corresponding topics to be addressed in the live session. Other synchronous activities (lab and midterm exams) are also indicated.

### Dr. Todd's section

#### Week 1

|        |     |     |      |                                     |
|--------|-----|-----|------|-------------------------------------|
| Jan 11 | Mon | L01 | Todd | Introduction to Biol 226 (Live)     |
| Jan 13 | Wed | L02 | Todd | Mendelian Inheritance               |
| Jan 15 | Fri | L03 | Todd | Live Session, Mendelian Inheritance |

#### Week 2

|       |     |     |        |                                        |
|-------|-----|-----|--------|----------------------------------------|
| Jan18 | Mon | L04 | Todd   | Mendelian Inheritance                  |
| Jan20 | Wed | L05 | Todd   | Mendelian Inheritance                  |
| Jan22 | Fri | L06 | Todd - | Live Session, Mendelian Inheritance II |

#### Week 3

|       |     |     |        |                                                 |
|-------|-----|-----|--------|-------------------------------------------------|
| Jan25 | Mon | L07 | Todd   | Chromosomal Basis of Inheritance                |
| Jan27 | Wed | L08 | Todd   | Chromosomal Basis of Inheritance                |
| Jan29 | Fri | L10 | Todd - | Live Session, Chromosomal Basis of Inheritance; |

#### Week 4

|       |     |     |      |                                 |
|-------|-----|-----|------|---------------------------------|
| Feb01 | Mon | L11 | Todd | Gene Interactions               |
| Feb03 | Wed | L12 | Todd | Gene Interactions               |
| Feb05 | Fri | L13 | Todd | Live Session, Gene Interactions |

#### Week 5

|       |     |     |      |                                         |
|-------|-----|-----|------|-----------------------------------------|
| Feb08 | Mon | L14 | Todd | Recombination and Mapping               |
| Feb10 | Wed | L15 | Todd | Live Session, Recombination and Mapping |
| Feb12 | Fri | L16 | Todd | <b>Midterm Exam</b>                     |

|       |     |  |  |                       |
|-------|-----|--|--|-----------------------|
| Feb15 | Mon |  |  | Winter mid-term break |
| Feb17 | Wed |  |  | Winter mid-term break |
| Feb19 | Fri |  |  | Winter mid-term break |

#### Week 6

|       |     |     |      |                                                                       |
|-------|-----|-----|------|-----------------------------------------------------------------------|
| Feb22 | Mon | L17 | Todd | Large Scale Chromosomal Changes<br>(for final exam, at your own pace) |
| Feb24 | Wed | L18 | Todd | Large Scale Chromosomal Changes                                       |

## Dr. Carvalho's section

|                  |     |              |                 |                                                     |
|------------------|-----|--------------|-----------------|-----------------------------------------------------|
| Feb26            | Fri | L01          | Carvalho        | Central Dogma<br><b>LAB EXAM 1</b>                  |
| Week 7           |     |              |                 |                                                     |
| Mar01            | Mon | L02          | Carvalho        | Central Dogma                                       |
| Mar03            | Wed | L03          | Carvalho        | Central Dogma                                       |
| Mar05            | Fri | L04          | Carvalho        | Central Dogma                                       |
| Week 8           |     |              |                 |                                                     |
| Mar08            | Mon | L05          | Carvalho        | Central Dogma                                       |
| Mar10            | Wed | L06          | Carvalho        | Gene Isolation and Manipulation                     |
| Mar12            | Fri | L07          | Carvalho        | Gene Isolation and Manipulation                     |
| Week 9           |     |              |                 |                                                     |
| Mar15            | Mon | L08          | Carvalho        | Gene Isolation and Manipulation                     |
| Mar17            | Wed | L09          | Carvalho        | Gene Expression in Prokaryotes                      |
| Mar19            | Fri | L10          | Carvalho        | Gene Expression in Prokaryotes<br><b>LAB EXAM 2</b> |
| Week 10          |     |              |                 |                                                     |
| Mar22            | Mon | L11          | Carvalho        | Gene Expression in Prokaryotes                      |
| Mar24            | Wed | L12          | Carvalho        | Gene Expression in Eukaryotes                       |
| Mar26            | Fri | L13          | Carvalho        | Gene Expression in Eukaryotes                       |
| Week 11          |     |              |                 |                                                     |
| Mar29            | Mon | L14          | Carvalho        | 'The Ghost in Our Genes' BBC Doc                    |
| Mar31            | Wed | L15          | Carvalho        | Epigenetic Control of Gene Expression               |
| Apr02            | Fri | Easter Break |                 |                                                     |
| Week 12          |     |              |                 |                                                     |
| Apr05            | Mon | L16          | Carvalho        | Population Genetics                                 |
| Apr07            | Wed | L17          | Carvalho        | Population Genetics                                 |
| Apr09            | Fri | L18          | Carvalho        | Population Genetics<br><b>LAB EXAM 3</b>            |
| week 13          |     |              |                 |                                                     |
| April12          | Mon | L19          | Carvalho & Todd | Review                                              |
| Final Exam – TBA |     |              |                 |                                                     |

## Grading Scheme

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|                            |      |
|----------------------------|------|
| <b>Midterm exam</b>        | 20%  |
| <b>Final exam</b>          | 40%  |
| <b>Laboratory</b>          | 35%  |
| <b>Sapling Assignments</b> | 5%   |
| <b>Total</b>               | 100% |

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## Evaluation Components

### Midterm Exam:

**Value:** 20% of final course grade  
**Date:** Friday February 12 in class time  
**Length:** 50 minutes  
**Format:** Multiple choice problems and questions  
**Description:** Based on all lecture material prior to the exam date unless otherwise indicated.

### Final Exam:

**Value:** 40% of final course grade  
**Date:** Consult Final Exam Schedule  
**Length:** 100 minutes  
**Format:** Multiple choice problems and questions  
**Description:** The exam is a comprehensive evaluation (i.e. cover all lectures and material). Material delivered since the midterm exam will be emphasized.

### Laboratory

**Value:** 35% of final grade (20% assignments, 15% three lab exams, worth 5% each)  
**Date:** see Laboratory Schedule  
**Format:** Varies by lab  
**Description:** A total of nine (9) lab assignments must be submitted online through Canvas, according to the lab schedule (deadlines). The lab exams are based on the information provided in the briefings, video material, lab manual and problem-solving. They will be performed remotely through Canvas on the following format: multiple choice, fill in the blank, matching concepts, true/false.

### Sapling Assignments

**Value:** 5% of final grade  
**Date:** Multiple online assignments, available through the Sapling learning site on a weekly basis  
**Format:** Question types vary (multiple choice, sorting, problem solving)  
**Description:** Online problems that can be attempted multiple times aimed at improving comprehension. A license to use the Sapling homework platform is included with the purchase of the course textbook or available independently through the U of S bookstore.

**Submitting Assignments** All assignments will be submitted through Sapling or Canvas and will be due at the specific date and time indicated.

## **Scheduling of Exams**

Midterm and final examinations, and the lab exams, must be written on the date scheduled. Final examinations may be scheduled at any time during the examination period in December. Students should therefore avoid making prior travel, employment, or other commitments for this period.

In the event that a student is absent from the midterm exam through no fault of his/her own due to a medical emergency, death in the family, or other valid reasons, documentation must be provided explaining the absence, to assist in the determination of whether permission will be granted for the student to write a deferred mid-term exam. Students absent for the Mid-Term Lecture Exam must advise their Instructor in person or by telephone (not by email) and initiate arrangements for writing a Deferred Mid-Term Exam, within 3 working days of the missed exam, in order to avoid being assigned a grade of zero for the exam.

If a student is absent from the final exam through no fault of his or her own for medical or any other valid reason, he/she must apply to the Dean's Office of the College in which he/she is registered for an opportunity to write a Deferred Final Exam, within 3 working days of the missed exam. Documentation must also be provided to explain the absence from the final exam. Deferred exams may utilize a different format than the regular exam, at the sole discretion of the instructors.

Students are encouraged to review all examination policies and procedures:

<https://students.usask.ca/academics/exams.php>

## **University of Saskatchewan Grading System**

Students in BIOL 226 are reminded that the University has established a grading system to be used in all of its courses. Information on literal descriptors for grading at the University of Saskatchewan (reproduced below) can be found at: <https://students.usask.ca/academics/grading/grading-system.php>

## **Required Components**

Students must write the final exam in order to pass the course.

## **Late Assignments**

- Sapling Assignments are due on the date indicated. There will be no extensions or late assignments accepted.
- Lab assignments are due on the day and time indicated in Canvas. Extensions are only granted in extraordinary circumstances (notably as a result of family or medical emergencies) and upon receipt of adequate documentation. It is your responsibility to contact the laboratory coordinator before the due date if possible or as soon after the due date if it was unfeasible to do so beforehand.

## **Student Feedback:**

The Department of Biology or the instructors may survey students regarding the course. This is generally done through an assessment near the end of term.

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## Lab Schedule (Winter 2021)

| Date             | Week | Lab Exercise                                                                                                                   | Key points                                                                                                                                                                                                                                            | Lab Assignment*/Exam                                                                                                                                                |
|------------------|------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| January 11 - 15  | 1    | Complete Academic Integrity Module                                                                                             | Rules and regulations for remote teaching and academic conduct                                                                                                                                                                                        | -                                                                                                                                                                   |
| January 18-22    | 2    | Important information and general introduction. Mandatory to continue with Lab # 1                                             | Presentation of lab details and support, how to access the genetics simulator, assignment requirements, meet the TAs                                                                                                                                  | -                                                                                                                                                                   |
| January 25 - 29  | 3    | <b>Laboratory # 1.</b> Introduction to genetics. Mandatory to continue with Lab # 2                                            | -The different stages of a model organism ( <i>Drosophila melanogaster</i> )<br>-Phenotypic traits and male vs. female flies.<br>- <i>Drosophila</i> genetics notation                                                                                | Return <b>Assignment # 1</b> (Deadline 24 hours after live TA session)                                                                                              |
| February 1 - 5   | 4    | <b>Laboratory # 2.</b> <i>Drosophila</i> breeding experiment: (Dihybrid cross simulations). Mandatory to continue with Lab # 3 | - Theoretical framework to perform a <i>Drosophila</i> cross simulation<br>- Obtain and analyze F1 and F2 data that illustrate segregation and assortment.<br>- Propose a genetic model of inheritance for two traits based on simulated data         | Return <b>Assignment # 2</b> (Deadline 24 hours after live TA session)                                                                                              |
| February 8 - 12  | 5    | <b>Laboratory # 3.</b> <i>Drosophila</i> breeding experiment: (Sex-linked traits). Mandatory to continue with Lab # 3          | -Obtained simulated F1 data that illustrate sex-linkage.<br>- Propose a genetic model of inheritance for two traits<br>- Analyze hypothetical crosses that illustrate a gene-interaction                                                              | Return <b>Assignment # 3</b> (Deadline 24 hours after live TA session)                                                                                              |
| February 15 - 19 | 6    |                                                                                                                                | <b>Middle of the term break. No lab this week</b>                                                                                                                                                                                                     |                                                                                                                                                                     |
| February 22-26   | 7    | <b>Laboratory # 4.</b> Gene linkage and chromosome mapping. Mandatory to continue with Lab # 5                                 | - Obtained F1 data that illustrates trihybrid and test-crosses.<br>- Describe the difference between independent assortment and gene linkage<br>- Map two genes on a chromosome<br>- Analyze real-case data from a trihybrid cross to map three genes | - <b>LAB EXAM # 1.</b> Friday, February 26th. Lecture time. Remote access through Canvas<br>-Return <b>Assignment # 4</b> (Deadline 24 hours after live TA session) |



|                    |    |                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                    |
|--------------------|----|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| March 1<br>- 5     | 8  | <b>Laboratory # 5.</b><br><i>Drosophila</i> eye color:<br>A combination of protein pigments                              | <ul style="list-style-type: none"> <li>-Describe the <i>Drosophila's</i> protein-pigment differences.</li> <li>- Identify genes (enzymes) that are involved in the biosynthesis of protein pigments.</li> <li>- Recognize the epistatic interactions between pigmentation genes. <ul style="list-style-type: none"> <li>- Implement a home-made experiment to illustrate chromatography.</li> </ul> </li> </ul> | Return <b>Assignment # 5</b><br>(Deadline 24 hours after live TA session)                                                                                          |
| March 8<br>- 12    | 9  | <b>Laboratory # 6.</b> The Chi-square (X <sup>2</sup> ) test: A statistical test for experiments.                        | <ul style="list-style-type: none"> <li>- Propose a scientific hypothesis for a genetic cross.</li> <li>- Calculate a X<sup>2</sup> statistic value</li> <li>- Use a calculated X<sup>2</sup> value to determine whether there is a statistically significant difference between hypotheses</li> </ul>                                                                                                           | Return <b>Assignment # 6</b><br>(Deadline 24 hours after live TA session)                                                                                          |
| March 15 - 19      | 10 | <b>Laboratory # 7.</b><br><i>Drosophila</i> class data review: Gene mapping, X <sup>2</sup> test and genes on a pathway. | <ul style="list-style-type: none"> <li>-Determine the genetics model of inheritance of four genes</li> <li>- Propose a scientific hypothesis (dihybrid cross) and statistically test its validity.</li> <li>- Map three genes on a chromosome</li> </ul>                                                                                                                                                        | <b>-LAB EXAM # 2.</b> Friday, March 19th. Lecture time. Remote access through Canvas<br><b>-Return Assignment # 7</b><br>(Deadline 24 hours after live TA session) |
| March 22 - 26      | 11 | <b>Laboratory # 8.</b> <i>In-Silico</i> PCR genotyping of <i>Drosophila</i> eye mutants: The white-1 locus (w)           | <ul style="list-style-type: none"> <li>- Establish the link between genotype and the white-eyes phenotype in <i>Drosophila</i>.</li> <li>- Identify two common molecular genetics methods.</li> <li>- Perform a virtual PCR to identify <i>Drosophila</i> mutants.</li> </ul>                                                                                                                                   | Return <b>Assignment # 8</b><br>(Deadline 24 hours after live TA session)                                                                                          |
| March 29 - April 2 | 12 | <b>Laboratory # 9.</b><br>Population genetics: Gene pool and allele frequencies                                          | <ul style="list-style-type: none"> <li>- Describe the gene pool concept.</li> <li>-Estimate genotype and allele frequencies based on phenotypic data.</li> </ul>                                                                                                                                                                                                                                                | Return <b>Assignment # 9</b><br>(Deadline 24 hours after live TA session)                                                                                          |
| April 9            | 13 | No labs                                                                                                                  | -                                                                                                                                                                                                                                                                                                                                                                                                               | <b>-LAB EXAM # 3.</b> Friday, April 9th. Lecture time. Remote access through Canvas                                                                                |

## **Recording of the Course**

### **Use of video and recording of the course:**

Video conference sessions in this course, including your participation, will be recorded and made available only to students in the course for viewing via Canvas after each session. This is done, in part, to ensure that students unable to join the session (due to, for example, issues with their internet connection) can view the session at a later time. This will also provide you the opportunity to review any material discussed.

Please remember that course recordings belong to your instructor, the University, and/or others (like a guest lecturer) depending on the circumstance of each session, and are protected by copyright. Do not download, copy, or share recordings without the explicit permission of the instructor.

For questions about recording and use of sessions in which you have participated, including any concerns related to your privacy, please contact your instructor. More information on class recordings can be found in the Academic Courses Policy <https://policies.usask.ca/policies/academic-affairs/academic-courses.php#5ClassRecordings>.

### **Required video use:**

At times in this course you may choose to have your video on during video conferencing sessions. It is not required for planned course activities.

## **Copyright**

Course materials are provided to you based on your registration in a class, and anything created by your professors and instructors is their intellectual property, unless materials are designated as open education resources. This includes exams, PowerPoint/PDF slides and other course notes. Additionally, other copyright-protected materials created by textbook publishers and authors may be provided to you based on license terms and educational exceptions in the Canadian Copyright Act (see <http://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>).

Before you copy or distribute others' copyright-protected materials, please ensure that your use of the materials is covered under the University's Fair Dealing Copyright Guidelines available at <https://library.usask.ca/copyright/general-information/fair-dealing-guidelines.php>. For example, posting others' copyright-protected materials on the open web is not covered under the University's Fair Dealing Copyright Guidelines, and doing so requires permission from the copyright holder.

For more information about copyright, please visit <https://library.usask.ca/copyright/index.php> where there is information for students available at <https://library.usask.ca/copyright/students/rights.php>, or contact the University's Copyright Coordinator at <mailto:copyright.coordinator@usask.ca> or 306-966-8817.

## **Integrity in a Remote Learning Context**

Although the face of teaching and learning has changed due to covid-19, the rules and principles governing academic integrity remain the same. If you ever have questions about what may or may not be permitted, ask your instructor. Students have found it especially important to clarify rules related to exams administered remotely and to follow these carefully and completely.

The University of Saskatchewan is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Conduct & Appeals section of the University Secretary Website and avoid any behavior that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All students should read and be familiar with the Regulations on Academic Student Misconduct (<https://secretariat.usask.ca/student-conduct-appeals/academic-misconduct.php>) as well as the Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals (<https://secretariat.usask.ca/student-conduct-appeals/academic-misconduct.php#IXXIIAPPEALS>)

For more information on what academic integrity means for students see the Academic Integrity section of the University Library Website at: <https://library.usask.ca/academic-integrity#AboutAcademicIntegrity>

You are encouraged to complete the Academic Integrity Tutorial to understand the fundamental values of academic integrity and how to be a responsible scholar and member of the USask community - <https://library.usask.ca/academic-integrity.php#AcademicIntegrityTutorial>. As part of the lab you are required to complete the first tutorial module.

## **Access and Equity Services (AES) for Students**

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Access and Equity Services (AES) if they have not already done so. Students who suspect they may have disabilities should contact AES for advice and referrals at any time. Those students who are registered with AES with mental health disabilities and who anticipate that they may have responses to certain course materials or topics, should discuss course content with their instructors prior to course add / drop dates. In order to access AES programs and supports, students must follow AES policy and procedures. For more information or advice, visit <https://students.usask.ca/health/centres/access-equity-services.php>, or contact AES at 306-966-7273 or [aes@usask.ca](mailto:aes@usask.ca).

Students registered with AES may request alternative arrangements for mid-term and final examinations. Students must arrange such accommodations through AES by the stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by AES.

For information on AES services and remote learning please visit <https://updates.usask.ca/info/current/accessibility.php#AccessandEquityServices>

## **Student Supports**

### **Academic Help for Students**

The University Library offers a range of learning and academic support to assist USask undergrad and graduate students. For information on specific services, please see the Learning page on the Library web site <https://library.usask.ca/support/learning.php>.

- Remote learning support information <https://students.usask.ca/study/remote-learning.php>
- Remote learning tutorial [https://libguides.usask.ca/remote\\_learning](https://libguides.usask.ca/remote_learning)
- Study skills materials for online learning <https://libguides.usask.ca/studyskills>
- A guide on netiquette, principles to guide respectful online learning interactions <https://teaching.usask.ca/remote-teaching/netiquette.php>

### **Teaching, Learning and Student Experience**

Teaching, Learning and Student Experience (TLSE) provides developmental and support services and programs to students and the university community. For more information, see the students' web site <http://students.usask.ca>.

### **College Supports**

Students in Arts & Science are encouraged to contact the Undergraduate Student Office and/or the Trish Monture Centre for Success with any questions on how to choose a major; understand program requirements; choose courses; develop strategies to improve grades; understand university policies and procedures; overcome personal barriers; initiate pre-career inquiries; and identify career planning resources. Contact information is available at: (<http://artsandscience.usask.ca/undergraduate/advising/>)

### **Financial Support**

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact Student Central (<https://students.usask.ca/student-central.php>).

### **Aboriginal Students' Centre**

The Aboriginal Students' Centre (ASC) is dedicated to supporting Aboriginal student academic and personal success. The centre offers personal, social, cultural and some academic supports to Métis, First Nations, and Inuit students. The centre is also dedicated to intercultural education, bringing Aboriginal and non-Aboriginal students together to learn from, with and about one another in a respectful, inclusive and safe environment. Students are encouraged to visit the ASC's Facebook page (<https://www.facebook.com/aboriginalstudentscentre/>) to learn more.

### **International Student and Study Abroad Centre**

The International Student and Study Abroad Centre (ISSAC) supports student success and facilitates international education experiences at USask and abroad. ISSAC is here to assist all international undergraduate, graduate, exchange and English as a Second Language students in their transition to the University of Saskatchewan and to life in Canada. ISSAC offers advising and support on matters that affect international students and their families and on matters related to studying abroad as University of Saskatchewan students. Please visit [students.usask.ca](https://students.usask.ca) or [updates.usask.ca](https://updates.usask.ca) for more information.

## **Treaty Acknowledgement**

As we engage in Remote Teaching and Learning, we would like to acknowledge that the Saskatoon campus of the University of Saskatchewan is on Treaty Six Territory and the Homeland of the Métis. We pay our respect to the First Nation and Métis ancestors of this place and reaffirm our relationship with one another. We would also like to recognize that some may be attending this course from other traditional Indigenous lands. We ask that you take a moment to make your own Land Acknowledgement to the peoples of those lands. In doing so, we are actively participating in reconciliation as we navigate our time in this course, learning and supporting each other.