



Syllabus – BIOL 226 – Genes to Genomes

COURSE TITLE:	BIOL 226, From Genes to Genomes		
COURSE CODE:	CRN 26105	TERM:	T2 (Winter 2016)
COURSE CREDITS:	3.0	DELIVERY:	3L - 3P
CLASS SECTION:	01		
START DATE:	January 6 (note 1 st lab meeting is Jan. 11-15)		
LECTURE LOCATION:	Biology Building, Room 106		
LECTURE TIME:	MWF 10:30 am - 11:20 am		
LAB LOCATION:	Thorvaldson G77		
LAB TIME:	M-F 1:30 pm – 4:20 pm, TTh 8.30 am - 11:20 am		
WEBSITE:	via Blackboard		

Course Description

Basic topics in genetics in eukaryotic and prokaryotic life.

Prerequisite

BIOL 120.

Note: BIOL 121 is strongly recommended. Students with credit for BIOL 211 will not receive credit for BIOL 226.

Learning Outcomes

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

1. Understand genetic analysis at the gene, genome and population levels.
2. Understand the basic organisation of eukaryotic and prokaryotic genomes.
3. Understand gene expression and regulation mechanisms.
4. Be able to solve genetic problems.

Note: The University of Saskatchewan Learning Charter is intended to define aspirations about the learning experience that the University aims to provide. A copy of the Learning Charter can be found at:

<http://www.usask.ca/secretariat/documents/LearningCharter.pdf>

Course Overview

This course is intended for students who want to explore genetics in greater depth. Lectures are 50 minutes each, for a total of 34 lectures, plus one in-class midterm exam held on **Feb. 10**.

Laboratories will include an introduction, explanation of procedures, and experiments. At the end of each experiment, we will hold a discussion of the data generated in the lab.

Following each lab discussion, there will be problem-solving exercises to highlight key concepts in genetics, as illustrated by the experiment performed. The experiments include three crosses of the fruit fly *Drosophila melanogaster*, and a thin layer chromatography (TLC) assay of eye pigments.

Lecture Topics

- Topic 1: Introduction to genetics
- Topic 2: Inheritance of simple traits
- Topic 3: Chromosomes
- Topic 4: Linkage, recombination, and mapping
- Topic 5: Bacterial and viral genetics
- Topic 6: From DNA to RNA to protein
- Topic 7: Mutations
- Topic 8: Control of gene expression
- Topic 9: DNA technology
- Topic 10: Applications of molecular genetics
- Topic 11: Population genetics and evolution

Lab Schedule

Date	Week	Lab Exercise	Assignment
Jan 4 – 8	1	No lab	
Jan 11 – 15	2	Introduction to <i>Drosophila</i> genetics	
Jan 18 – 22	3	Lab 1: Cross 1	
Jan 25 – 29	4	Lab 2: Cross 2	Problem set
Feb 1 – 5	5	Lab 3: Cross 3	Problem set
Feb 8 – 12	6	Lab 4: TLC of eye pigments	Problem set
Feb 15 – 19	7	Winter break – no lab	
Feb 22 – 26	8	Lab 5: TLC of eye pigments	Problem set
Feb 29 – Mar 4	9	Lab 6: χ^2 test	Problem set
Mar 7 – 11	10	Lab 7: Count F2 progeny from crosses 2 and 3.	Problem set
Mar 14 – 18	11	Lab 8: Review of all the labs	Problem set
Mar 21 – Apr 1			
	12 – 13	Final lab exam during an evening, exact date and time TBA	
Apr 4 – 8	14	No lab	

Instructors

Lecture: Daniel Schott

office: room 240 Biology building

email: daniel.schott@usask.ca

phone: Skype can be arranged, on request

email will be the most reliable way of contacting me. On weekdays I'll try to respond within 24 hours; on weekends I might not get to email until Monday.

I'll be happy to hold office hours, by email appointment.

Lab: Vasu Penugonde

office: room G77 Thorvaldson

email: vap462@mail.usask.ca / penugonde.vasu@usask.ca

phone: 966-4431

Suggested Resources

Textbook: Principles of Genetics – 6th Edition. Snustad and Simmons (2012)

Most lectures will be based on chapters of the textbook listed above. Chapter links to the lectures will be announced in class. The 5th edition (2009) is also a good resource. Copies of the textbook are on reserve in the Natural Sciences Library.

Electronic Resources: Study aids and laboratory material will be posted on Blackboard (sign in through PAWS).

Grading Scheme

Midterm Exam: Feb 10, in class. Multiple choice, **25%** of final course grade. No phones, laptops, tablets, or other aids allowed, except a simple calculator.

Final Exam: 3 hours; date and time TBA, consult the Final Exam Schedule. Multiple choice, **45%** of final course grade. The exam is comprehensive in that it will cover all lecture material. No phones, laptops, tablets, or other aids allowed, except a simple calculator.

Laboratory Exam: 2.5 hours; date and time TBA. Multiple choice and short answer questions. The laboratory comprises **30%** of final course grade. Exam covers the laboratory experiments and their background.

Attendance Expectations

Students are expected to attend all scheduled labs. No make up labs will be offered.

Midterm and Final Examination Scheduling

Midterm and final examinations must be written on the date scheduled. Final course examinations may be scheduled at any time during the examination period; students should therefore avoid making prior travel, employment, or other commitments for this period. If a student is unable to write a midterm or the lab exam through no fault of his or her own for medical or other valid reasons, documentation must be provided and an opportunity to write the missed exam may be given. Students who miss the final exam must contact the College and apply for a deferred 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 University examination policies and procedures:

<http://www.usask.ca/calendar/exams&grades/examregs/>

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. A description of grading at the University of Saskatchewan can be found at:

<http://students.usask.ca/current/academics/grades/grading-system.php>

Recording of Lectures

Lecture capture has been activated so that videos of the lectures are available to students on the Blackboard website. Please contact the instructor if you have concerns about this.

Recording of classes by students is not allowed.

Examinations with Disability Services for Students (DSS)

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Disability Services for Students (DSS) if they have not already done so. Students who suspect they may have disabilities should contact DSS for advice and referrals. In order to access DSS programs and supports, students must follow DSS policy and procedures. For more information, check

<http://www.students.usask.ca/disability/> or

<http://students.usask.ca/health/centres/disability-services-for-students.php#Registration> or

contact DSS at 966-7273 or dss@usask.ca

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

Integrity Defined (from the Office of the University Secretary)

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 behaviour 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

(<http://www.usask.ca/secretariat/student-conduct-appeals/StudentAcademicMisconduct.pdf>) as well as the Standard of

Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals

(<http://www.usask.ca/secretariat/student-conduct-appeals/StudentNon-AcademicMisconduct.pdf>)

For more information on what academic integrity means for students see the Student Conduct & Appeals section of the University Secretary Website at:

<http://www.usask.ca/secretariat/student-conduct-appeals/forms/IntegrityDefined.pdf>

Academic Courses Policy

More information on the Academic Courses Policy on course delivery, examinations and assessment of student learning can be found at:

<http://policies.usask.ca/policies/academic-affairs/academic-courses.php>

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

Student Supports

Student Learning Services (SLS) offers assistance to U of S undergrad and graduate students. For information on specific services, please see the SLS web site <https://www.usask.ca/ulc/>

The Student and Enrolment Services Division (SESD) focuses on providing developmental and support services and programs to students and the university community. For more information, see the SESD web site <http://www.usask.ca/sesd/>