



UNIVERSITY OF  
SASKATCHEWAN

Department of Biology

### COURSE SYLLABUS

<b>Course</b>	COURSE TITLE:	BIOL 226 From Genes to Genomes	TERM:	T1 Fall 2013
	COURSE CODE:	CRN 85703	DELIVERY:	Lecture & Practicum (Lab)
	COURSE CREDITS:	3.0	START DATE:	06 Sept 2013
	CLASS SECTION:	01	LAB LOCATION:	Thordvalson G77
	LECTURE LOCATION:	rm 106 Biology Bldg	LAB TIME:	M-F 4.30pm, TH 8.30 am
	LECTURE TIME:	8:30 to 9:20 am		
	WEBSITE:	via Blackboard		

### Description

Will study advanced topics in genetics in the context of the diversity in eukaryotic life. Prerequisite(s): BIOL 226.

### Learning Outcomes

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

1. Understand the basic of genetic analysis at the gene, genome and population levels.
2. Understand the basic organization of prokaryotic and eukaryotic 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, 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)

### Course Overview

The course consists of 50 minutes of lecture per day for a total of 24 lectures.. Laboratories will be divide in an introduction, protocol explanation and experiment parts. At the end of each experiments, a discussion will take place considering the data generate in the class. The laboratory exercises will be composed of simple questions about the experiment performed and will be taken individually at a scheduled lab time after the respective laboratory exercise and discussion are completed.

## Lecture Topics

Course Introduction: Lect 1

Topic 1: **The science of genetics**

Topic 2: **Mendelian genetics. Modified mendelian genetics. Chromosome theory**

Topic 3: **Linkage, recombination Mapping**

Topic 4 **Quantitative genetics**

Topic 5: **Analyses of genes through mutations. Chromosomal arrangements**

Topic 6: **Gene expression from DNA to RNA to proteins. Gene regulation**

Topic 7: **Recombinant DNA technology**

Topic 8: **Epigenetics**

Topic 9: **Population genetics and evolution**

## Laboratory Exercises

Three *Drosophila melanogaster* controlled crosses. One chromatography assay and concept problems.

### SEPTEMBER

	Lectures	Labs
Sept 06 – F	Introduction	
Sept 09 – M	Lec01	
Sept 11 – W	Lec02	NO LABS
Sept 13 – F	Lec03	
Sept 16 – M	Lec04	Lab Intro –
Sept 18 – W	Lec05	
Sept 20 – F	Lec06	
Sept 23 – M	Lec07	Lab Cross 1
Sept 25 – W	Lec08	
Sept 27 – F	Lec09	
Sept 30 – M	Lec10	Lab Cross 2

### OCTOBER

Oct 02 – W	Lec11	
Oct 04 – F	Lec12	
Oct 07 – M	Lec13	Lab Cross 3
Oct 09 – W	Lec14	

Oct 11 – Thanksgiving		
Oct 14 – Thanksgiving		
Oct 16 – W	MIDTERM	Lab Chromatography
Oct 18 – F	Lec15	
Oct 21 – M	Lec16	Lab Chromatography results discussion
Oct 23 – W	Lec17	
Oct 25 – F	Lec18	
Oct 28 – M	Lec19	Lab Results. Analyses
Oct 30 – W	Lec20	
NOVEMBER		
Nov 01 – F	Lec21	
Nov 04 – M	Lec22	Lab Results. Analyses (II)
Nov 06 – W	Lec23	
Nov 08 – F	Lec24	
Nov 11 – Remembrance Day		
Nov 13 – W	Lec25	Lab writing assignment (I)
Nov 15 – F	Lec26	
Nov 18 – M	Lec27	Lab writing assignment (II). Return assignment I
Nov 20 – W	Lec28	
Nov 22 – F	Lec29	
Nov 25 – M	Lec30	Return assignment II
Nov 27 – W	Lec31	
Nov 29 – F	Lec32	
DECEMBER		
Dec 02 – M	Lec33	
Dec 04 – W	Lec34	
FINAL EXAM : TBA		

### Instructors:

#### Contact Information:

**Instructor:** Jose Andres

#### Contact info:

Office: room 129 BIOL Building

Ph# 966-2699

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

**Lab Coordinator:** Vasu Penugonde

#### Contact info:

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**Office Hours:** Please note that all instructors have other commitments that may take them away from their office. Specific appointments can be set by email only.

**Instructor Profiles & Other Information:** Dr. Andres is a regular faculty member in the Department of Biology. He holds a PhD in evolutionary biology and he is a good marathon runner for his age (PR: 2 h 50 min).

## Suggested Resources

### Textbooks

*Principles of Genetics*— 6<sup>th</sup> Edition. Snustad and Simmons. 2012.

Most lectures will be based on chapters of the textbook listed above. Chapter link to the lectures will be announced in class.. Copies of the textbook can be found in the Natural Sciences Library.

### Electronic Resources

Lecture notes, laboratory material, etc, will be posted on Blackboard (Paws).

## Grading Scheme

### Evaluation of Student Performance

**Midterm Exam Value:** 25% of final course grade **Date:** October 16<sup>th</sup> from 10:30 to 11:20 at room 106. **Format:** Multiple choice problems and questions. Calculators allowed. No phones, laptops, tablets or other material allowed.

**Final Exam Value:** 45% of final grade **Date:** Consult the Final Exam Schedule **Length:** 3 hours **Format:** Multiple choice problems and questions. **Description:** The exam is comprehensive in that it will cover all lecture, material. Material delivered since the midterm exam will be emphasized. Calculators allowed. No phones, laptops, tablets or other material allowed.

**Individual Laboratory writing assignments: Value:** together 30% of final grade **Due Date:** See Course Schedule **Format:** Multiple choice and short answer questions about the experiments and background of the laboratory experiments.

### Attendance Expectations

There are no mandatory components to this course. Students are expected to attend all scheduled lab. No make 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. Information on literal descriptors for grading at the University of Saskatchewan can be found at:

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

### **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 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 ([http://www.usask.ca/university\\_secretary/honesty/StudentAcademicMisconduct.pdf](http://www.usask.ca/university_secretary/honesty/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/university\\_secretary/honesty/StudentNonAcademicMisconduct2012.pdf](http://www.usask.ca/university_secretary/honesty/StudentNonAcademicMisconduct2012.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/university\\_secretary/pdf/dishonesty\\_info\\_sheet.pdf](http://www.usask.ca/university_secretary/pdf/dishonesty_info_sheet.pdf)

### **Examinations through 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://students.usask.ca/current/disability/> or contact DSS at 966-7273 or [dss@usask.ca](mailto:dss@usask.ca).