UNIVERSITY OF SASKATCHEWAN

Department of Biology

COURSE SYLLABUS

COURSE TITLE:	BIOL 226 From Genes to Genomes		
COURSE CODE:	CRN 26105	TERM:	T2 Winter 2013-2014
COURSE CREDITS:	3.0	DELIVERY:	Lecture & Practicum (Lab)
CLASS SECTION:	01	START DATE:	06 Jan 2014
LECTURE LOCATION:	rm 106 Biology Bldg	LAB LOCATION:	Thordvalson G77
LECTURE TIME:	8:30 to 9:20 am	LAB TIME:	M-F 4.30pm TH 8.30 am
WEBSITE:	via Blackboard		

Course Description

Will study basic topics in genetics in the context of the diversity in prokaryotic and eukaryotic life.

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

Course Overview

The course consists of 50 minutes of lecture per day for a total of 34 lectures. Laboratories will be divided in an introduction, protocol explanation and experiment parts. At the end of each experiment, 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 Section

Date	Lecture Number	Topic
January 6 - Monday	Introduction	
January 8 - Wednesday	1	Chapter 1 – The Science of Genetics
January 10 - Friday	2	Chapter 3 – Mendelism –Mendel's experiments
January 13 - Monday	3	Chapter 3 – Mendelism – Applications of Mendel's Principles
January 15 - Wednesday	4	Chapter 4 – Extensions of Mendelism
January 17 - Friday	5	Chapter 4 (and a little of Chapt 12) – From Genotype to Phenotype
January 20 - Monday	6	Chapter 5 – Chromosomal Basis of Mendelism
January 22 - Wednesday	7	Chapter 6 – Chromosome Number and Structure
January 24 - Friday	8	Chapter 7 – Linkage and Crossing Over
January 27 - Monday	9	Chapter 7 – Chromosome Mapping
January 29 - Wednesday	10	Chapter 13 – Molecular Basis of Mutation
January 31 - Friday	11	Chapter 13 – Topics in Mutation
February 3 - Monday	12	Chapter 13 – Mutations?
February 5 - Wednesday	13	Chapter 8 and 9 – Genetics of Viruses
February 7 - Friday	14	Chapter 8 and 9 –Genetics of Bacteria
February 10 - Monday	15	Chapter 17 - Transposons
February 12 - Wednesday	16	Chapter 17 -Transposons
February 14 – Friday	Midterm EXAM Biology 106	
February 17 – Monday	Midterm Break	
February 19 - Wednesday	Midterm Break	
February 21 - Friday	Midterm Break	
February 24 - Monday	17	Chapter 11 – Gene Expression and the Central Dogma of Mol. Biol.
February 26 - Wednesday	18	Chapter 12 – Translation and the Genetic Code
February 28 - Friday	19	Chapter 14 – Recombinant DNA technology 1
March 3 - Monday	20	Chapter 14 – Recombinant DNA technology 2
March 5 - Wednesday	21	Chapter 14 – Recombinant DNA technology 3
March 7 - Friday	22	Chapter 18 – Gene Regulation in Prokaryotes 1
March 10 - Monday	23	Chapter 18 – Gene Regulation in Prokaryotes 2
March 12 - Wednesday	24	Chapter 19 – Gene Regulation in Eukaryotes 1
March 14 - Friday	25	Chapter 19 – Gene Regulation in Eukaryotes 2
March 17 - Monday	26	Chapter 19 – Epigenetics
March 19 - Wednesday	27	'The ghosts in Our Genes" BBC documentary
March 21 - Friday	28	Chapter 21 – Genetics Basis of Cancer
March 24 - Monday	29	Chapter 16 – Applications of Molecular Genetics 1
March 26 - Wednesday	30	Chapter 16 – Applications of Molecular Genetics 2
March 28 - Friday	31	Chapter 16 – Applications of Molecular Genetics 3
March 31 - Monday	32	Chapter 23 – Population Genetics 1
April 2 - Wednesday	33	Chapter 23 – Population Genetics 2
April 4 – Friday	34	REVIEW
	FINAL EXAM TBA	

Laboratory Section

Date	*Lab Exercises*	*Assignment*
January 13-17	*Introduction to Drosophila Genetics*	
January 20-24	*Lab 1:Drosophila Breeding Experiment- Cross 1*	*Concept problem 1*
January 27-31	*Lab 2; Drosophila Breeding Experiment- Cross 2*	*Concept problem 2*
February 3-7	*Lab 3: Drosophila Breeding Experiment- Cross 3*	*Concept problem 3*
February 10-14	*Lab 4: Drosophila- TLC experiment 1*	*Concept problem 4*
February 17-21	*Mid-term Break- No Labs*	
February 24-28	*Lab 5: Drosophila- TLC experiment 2*	*Concept problem 5*
March 3-7	*Lab6: Probability and Chi-Square Test*	*Concept problem 6*
March 10-14	*Lab 7: Review of labs: 1, 2, 4, 5 and 6*	*Concept problem 7*
March 17-21	*Lab 8: In-Lab assignment # 1*	
March 24-28	*Lab 9: Review of cross 3 results*	*Concept problem 8*
March 31-April 4	*Lab 10: In-Lab assignment # 2*	

Instructors:

Contact Information:
Instructor: Carlos Carvalho (course coordinator)
Contact info:
Office: room 129 BIOL Building
Ph# 966-2699
Email: *carlos.carvalho@usask.ca*

Instructor: Jo-Anne Dillon
Contact info:
Office: Vaccine and Infectious Disease Organization. By appointment only as access to building is restricted.
Ph# 966-1535)
Email: *j.dillon@usask.ca*

Lab Coordinator: Vasu Penugonde
Contact info:
Office: room G77 THORV Building
Ph# 966-4431
Email: *penugonde.vasu@usask.ca*

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. Carvalho is an Assistant Professor in the Department of Biology. He holds an MSc in Molecular Biology and a PhD in Molecular Genetics. Dr. Dillon is a Professor of Microbiology and Immunology, an Associate of the Department of Biology and a Research Scientist at the Vaccine and Infectious Disease Organization. She holds an MSc and PhD in Microbiology and Immunology.

Suggested Resources

Textbooks
Principles of Genetics– 6th 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

There are three components in the marking scheme of the course: Midterm exam, Final exam and in-lab exercises. There are no minimal marks required in each individual component in order to successfully pass the course though completion of ALL laboratory exercises is required.

Midterm Exam Value: 30% of final course grade **Date**: February 14th from 8:30 to 9:20 at room 106 (Biology). **Length:** 50 minutes. **Format**: Multiple choice problems and questions. Calculators allowed. No phones, laptops, tablets or other material allowed.

Final Exam Value: 40% 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 in-lab 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 and Laboratory Exercise Requirement

Completion of all laboratory exercises is a required component of this course. Students are expected to attend all scheduled lab Students who provide valid reasons in writing for missing a lab will be given a makeup lab at a later date. Unless a reasonable written explanation is given for missing a lab, a zero mark will be assigned to that lab.

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 an exam because of medical reasons, documentation must be provided and an opportunity to write the missed exam may be given. **Students who miss the final exam must contact directly 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) 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)

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

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. It is the responsibility of the student to contact DSS in advance of exams. 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.