

Life Science 2AO3: Research Methodologies in the Life Sciences

Winter 2013

INSTRUCTOR:

Kimberley Dej, Ph.D., LSB425, dej@mcmaster.ca
Office hours posted on A2L.

INSTRUCTIONAL ASSISTANT:

Sunita Nadella, LS2A03@mcmaster.ca

HEAD TA:

Sarra Bahna
Monitoring of A2L Discussion Boards.

LECTURES:

Section CO1: Monday and Thursday, 9:30am to 10:20pm in JHE376

TUTORIALS:

Weekly tutorials are mandatory. Please check your schedule for the time and location. Tutorials are one hour and fifty minutes long. Each tutorial will end with a short quiz

COURSE DESCRIPTION:

What is science? What is the scientific method? How is science conducted? Does this process work? In this course we will examine the history of science and how researchers conduct science today. We will be using the field of stem cell research to frame our examination of the scientific process.

COURSE AIMS:

- Engage in scientific discourse.
- Confront preconceptions and draw conclusions based upon scientific research
- Critically analyze published data
- Thoughtfully and civilly engage in evidence-based arguments
- Examine career fields within the Life Sciences

COURSE OBJECTIVES:

By the end of this course students should be able to,

- Critically read research papers
- Present and describe research data and interpretations in an oral and written format
- Analyze and interpret experimental results

FORMAT:

This course consists of two 50 minute lectures and one 1 hour and 50 minute tutorial each week. In the tutorial, lecture material, new material, and assignments will be addressed. Therefore, the tutorials represent an integral part of the course work and are mandatory. Within the tutorial, grades will be assigned for participation, presentations and written reports.

This course uses Avenue to Learn to post the course outline, assignments, and other notices. Go to

<http://avenue.mcmaster.ca> to find out how to log-on to the course's platform

TEXTBOOK:

There is not a required textbook for this course. Required readings will be provided for each module.

COURSE EVALUATION:

Test 1 Part 1: (February 11th) Multiple-choice test in class that evaluates knowledge-based skills and concepts (15%)
 Part 2: (February 13th) Written assignment on A2L, short answer, graded by grading TAs (10%)

Test 2: Part 1: (April 1st) Multiple-choice test in class that evaluates knowledge-based skills and concepts (15%)
 Part 2: (April 3rd) Written assignment on A2L, short answer, graded by grading TAs (10%)

Term paper (individual) on components of the stem cell niche
 Evaluation includes peer reviews and final grading by TAs (18%)

Presentation (pairs): Completed in tutorial, Evaluation is in tutorial by TAs and the final mark includes peer evaluations and handout (14%)

Tutorials: All tutorials are mandatory. Grading of participation in class and quizzes. Each tutorial is valued at 3%. While your top 6 grades will be counted towards the 18%, you must attend all 7 tutorials. With a submitted MSAF, your top 6 grades will count. Without a submitted MSAF a zero grade will be counted into your average across the 7 tutorial marks. (18%)

SCHEDULE OF LECTURE MATERIAL:

Date	Title	Tutorial	Tests	Assignments	Your Grades	Value
Week 1 January 7 th and 10 th	History of Science and the Scientific Method					
Week 2 January 14 th and 17 th	Studies of Regeneration	Black Box				
Week 3 January 21 st and 24 th	Discovery of stem cells Properties of stem cells: ESCs and ASCs	Experimental Design				
Week 4 January 28 th and 31 st	The stem cell niche	Regeneration and aging				
Week 5 February 4 th and 7 th	Statistical Methods (Dr. Brett Beston)	Stem cell research		Choose presentation team and topic		
Week 6 February 11 th No class on Feb. 14 th	Test #1 Part 1: Monday, Feb. 11 th , in class Part 2: online test opens on Wednesday Feb. 13 th	No in class tutorials	Test# 1 Part 1: MCQ; in class Part 2: Short answers on A2L	Choose essay topic online	% %	15% 10%
Feb. 18 th through 22 nd	READING WEEK					
Week 7 February 25 th and 28 th	Cell Biological and Genetics tools for studying the stem cell niche	Statistical Methods				
Week 8 March 4 th and 7 th	Studying the stem cell niche	Research ethics and publication		Peer Review for essay online		
Week 9 March 11 th and 14 th	Planaria as a model system	Presentations				
Week 10 March 18 th and 21 st	Induced Pluripotent Stem Cells (iPSCs)	Presentations			%	14%
Week 11 March 25 th and 28 th	Transdifferentiation	ePortfolios	Friday March 29 th Final essay due at 5pm		%	18%
Week 12 April 1 st and 4 th	Test #2 Part 1: Monday April 1 st , in class Part 2: online test opens on Wednesday April 3 rd	No in class tutorials	Test# 2 Part 1: MCQ; in class Part 2: Short answers on A2L		% %	15% 10%
Week 13 April 8 th	No lecture. Deferred tests <u>must</u> be completed in class time.					
				Total Test grade:	%	50%
				Total Tutorial grade:	%	18%
				Essay grade:	%	18%
				Presentation grade:	%	14%
THIS CALENDAR IS TENTATIVE AS OF JANUARY 7 TH , 2012. CHANGES WILL BE POSTED ON A2L				FINAL GRADE:	%	100%

CHANGES TO THE COURSE OUTLINE:

At certain points in the course it may make good sense to modify the schedule outlined. The instructor reserves the right to modify elements of the course and will notify students accordingly (in class and post any changes onto Avenue to Learn). Posted changes take precedence over this course outline.

REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK

Students may report absences lasting up to 5 days by using the McMaster Student Absence Form (MSAF) on-line, self-reporting tool, in order to request relief for missed academic work.

Students may use this tool to submit a maximum of ONE request for relief of missed academic work per term.

IMPORTANT: The contact for the MSAF form must be: LS2A03@mcmaster.ca and students MUST contact this address immediately after using the online tool in order to inquire about the nature of the relief. Failure to do so may negate the opportunity for relief.

If you miss a test, you MUST write a makeup or deferred test in the last week of classes (April 8th in class). You are not permitted to defer the deferred test. The makeup test will be of a different format from the original test, but will cover the same material. For example, even if the original test is a multiple-choice in class test, the deferred test will be a short-answer test.

If you complete an MSAF for an essay, the essay must be submitted within 48 hours of the original deadline. Late essays will be deducted 10% per day late. If you are unable to present your poster and you (or one of your group members) submit an MSAF, an alternate time will be arranged to present.

ACADEMIC DISHONESTY:

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at <http://www.mcmaster.ca/academicintegrity>

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work,. While we encourage you to work with your peers in solving problems on your assignments, copying of answers is not acceptable. Your final work must be your own.
3. Copying or using unauthorized aids in tests and examinations.

Grades obtained in LS2A03 will be converted according to the following scheme, which is the one in general use at McMaster University.

90 – 100%	A+	12
85 – 89%	A	11
80 – 84%	A-	10
77 – 79%	B+	9
73 – 76%	B	8
70 – 72%	B-	7
67 – 69%	C+	6
63 – 66%	C	5
60 – 62%	C-	4
57 – 59%	D+	3
53 – 56%	D	2
50 – 52%	D-	1
0 – 49%	F	0

All grade concerns and discrepancies must be reported to the Instructional Assistant, Sunita Nadella (at LS2A03@mcmaster.ca) prior to April 11th in order to be considered.

When the final marks are obtained, ALL borderline cases will be reviewed and, where warranted, adjustments will be made in the final mark.