

## **BIOL371: Microbiology**

Fall 2016 • Wednesday & Friday 11:45-1:00 in HB-130

### **Instructor**

Dr. David Walsh • GE 330.17 • ext. 3477 • david.walsh@concordia.ca

**Course Description:** We live in a microbial world. There are billions of times more microbes on Earth than stars in the universe and microbial metabolisms are critical to the maintenance of life on our planet. The objective of this course is to provide an overview of microbial diversity from the scale of genomes to ecosystems. This is an introductory course designed to provide students with an appreciation for microbial life.

**Textbook and course material:** Brock Biology of Microorganisms 14<sup>th</sup> edition 2015 by MT Madigan, *et al.* (ISBN# 978-0-321-89739-8). The course will follow the textbook, but is also partly developed from the primary scientific literature. Lecture material (*i.e.* power point slides) will be made available at the Moodle site prior to each lecture.

**Office Hours:** Office hours with Dr. Walsh are held in GE 330.17 on Monday at 1:00-3:00. Alternatively, please schedule an appointment if you wish to discuss the course outside of this time.

### **Student Evaluation**

- 30% Midterm exam I (lectures 1-7)
- 30% Midterm exam II (lectures 8-14)
- 40% Final exam (cumulative, weighted to lectures 15-24)

**Examination format:** A variety of multiple-choice, short answer & essay questions will be used.

**Prerequisites to the course:** Six credits chosen from BIOL 226 (Biodiversity and Ecology), BIOL 261 (Molecular and General Genetics), CHEM 271 (Introductory Biochemistry).

NOTE: It is strongly recommended to have all three pre-requisites.

**Plagiarism:** The most common offense under the Academic Code of Conduct is plagiarism, which the Code defines as “**the presentation of the work of another person as one’s own or without proper acknowledgement.**” This could be material copied word for word from books, journals, internet sites, professor’s course notes, etc. It could be material that is paraphrased but closely resembles the original source. It could be the work of a fellow student, for example, an answer on a quiz, data for a lab report, a paper or assignment completed by another student. It might be a paper purchased through one of the many available sources. Plagiarism does not refer to words alone - it can also refer to copying images, graphs, tables, and ideas. “Presentation” is not limited to written work. It also includes oral presentations, computer assignments and artistic works. Finally, if you translate the work of another person into French or English and do not cite the source, this is also plagiarism. In Simple Words: ***Do not copy, paraphrase or translate anything from anywhere without saying where you obtained it!***

**Course topics and tentative lecture schedule:**

<b>Class</b>	<b>Date</b>	<b>Topic</b>	<b>Relevant chapter in Brock</b>
01	Sep 07	Introduction to microbiology	Ch. 1
02	Sep 09	Survey of bacteria and archaea	Ch. 14, 15, and 16
03	Sep 14	Cell structure and function	Ch. 2
04	Sep 16	Metabolism I	Ch. 3
05	Sep 21	Metabolism II	Ch. 3
06	Sep 23	Growth and control I	Ch. 5
07	Sep 28	Growth and control II	Ch. 5
08	Sep 30	Microbial ecosystems I	Ch. 19
	Oct 05	<b>Midterm I (lectures 1-7)</b>	
09	Oct 07	Microbial ecosystems II	Ch. 19
10	Oct 12	Microbial evolution and genomics I	Ch. 6 and 12
11	Oct 14	Microbial evolution and genomics II	Ch. 6 and 12
12	Oct 19	Metabolic diversity I	Ch. 13 and 14
13	Oct 21	Metabolic diversity II	Ch. 13 and 14
14	Oct 26	Metabolic diversity III	Ch. 13 and 14
15	Oct 28	Methods in microbial ecology I	Ch. 18
	Nov 02	<b>Midterm Exam II (lectures 8-14)</b>	
16	Nov 04	TBA	
17	Nov 09	Methods in microbial ecology II	Ch. 18
18	Nov 11	Nutrient cycles I	Ch. 20
19	Nov 16	Nutrient cycles II	Ch. 20
20	Nov 18	The built environment	Ch. 21
21	Nov 23	Microbial symbioses I	Ch. 22
22	Nov 25	Microbial symbioses II	Ch. 22
23	Nov 30	Interactions with humans	Ch. 23
24	Dec 02	Ecology of antimicrobial drugs and resistance	--

**Marking scheme:**

A+ = 90	A = 85-90	A- = 80-85	B+ = 77-80	B = 74-77	B- = 70-74	C+ = 67-70
C = 64-67	C- = 60-64	D+ = 57-60	D = 54-57	D- = 50-54	F = <50	