

BGYC17H3 Microbiology: The bacterial cell.

-Winter term 2013-

-Professor: Dr. Mauricio Terebiznik
-Lab Co-ordinator: Dr. Shelley Brunt

During this course, students will be introduced to general principles of microbiology, mainly focused in bacteria, including cellular structure, growth, evolution and classification, metabolism, description of microbiological life forms, uses of microorganisms, and microorganisms in disease. Students will be expected to develop an understanding on these subjects, and be able to use them in class and the laboratory.

-Lectures: Friday 9:00 to 11:00 in HW 216

-Office hours: Friday 2-3h, Room SW-535 or ask for an appointment by e-mail: terebiznik@utsc.utoronto.ca. Please use the email only for questions with straightforward answers- questions involving detailed answers will be addressed at office hours.

-Text books:

Lectures: Prescott's principles of microbiology, McGraw Hill. You will need this text book for the laboratories and to support the topics that will be presented in the lectures.

Laboratory: Microbiology: Laboratory Theory and Application by M. Leboffe and B. Pierce. Course costumed edition, 2013

-Exams and grading :

Midterm exam: 24% of the final grade. The midterm exam includes material from the lectures delivered before the reading week. It doesn't include a Laboratory component. The exam consists of 60-70 multiple choice questions, with 5 possible answers. Duration 2 hours

Final exam: Consist of a laboratory and a lecture component.

The lecture component (35% of the final grade) is not cumulative and consists of 60-70 multiple choice questions with 5 possible answers the questions are based on the lecture presentations that were not included in the midterm exam.

The laboratory component of the final exam contributes to 15% of the final grade. For the grade distribution for the laboratory, including **lab reports and participation**, please see the **Laboratory information and schedule document** .

Participation in class during lectures will be considered for your final grade.

-Laboratory:

The attendance to practicals is mandatory please see the Laboratory information and schedule for more details.

-Lectures:

Outline of the lectures will be uploaded on the intranet one day in advance. Students should print and bring outlines to class to take notes.

Important: The attendance to lectures is not mandatory but highly recommend to succeed in the course. Lectures are not exclusively based on the text book you will need lectures notes and outlines to study for the exams. The text book chapters corresponding to the topics presented in the lectures will be indicated in the lectures handouts and by the figure numbers.

DATE	TOPIC	
Lecture 1	Introduction to the microbial world. When size matters. The relevance of microbiology past and present	
Lecture 2	From the discovery of microbes to the establishment of a scientific discipline. Pleomorphism and spontaneous generation. The golden age of Microbiology. Pure culture. Germ Theory of Diseases. Koch's postulates	
Lecture 3	Microbial taxonomy and phylogeny: nomenclature, methodology, 16 SSU rRNA and signature sequences. Universal phylogeny and the 3 Domains of life. Crisis of the pure culture .	
Lecture 4	The origin of Life. RNA world. Microbial evolution. The Endosymbiotic theory	
Lecture 5	Guest Lecture: TBD Microbial nutrition and metabolism	
Lecture 6	Microbial nutrition and metabolism Discussion for the midterm exam	
Feb 16-24	Reading Week	
Midterm	to be determined	
Lecture 7	Bacterial envelope, composition , biochemistry and function. Antibiotics. Special lecture: Bacterial endospores	
Lecture 8	Bacterial secretion systems, function and relevance. Bacterial motility, mechanism structure and function. Chemotaxis in bacteria. Quorum Sensing	
Lecture 9	Bacterial cell cycle, cytoskeleton and chromosomal replication. Extrachromosomal elements. Horizontal gene transfer, mechanism and relevance.	
Lecture 10	Bacteria in health and disease. Commensal and pathogenic flora. Immune recognition of bacteria.	
Lecture 11	Virus, general characteristics, structure, taxonomy and pathogenesis	
Lecture 12	Speciall ecture: Antibiotic Resistance. Discussion for the final exam.	
Final exam	to be determined	

-The lectures outlined above are highly tentative. Some switching of topic must be expected.

-Almost all the topics listed are given over more than one lecture period.