This syllabus is a general representation of the course as previously offered and is subject to change.

BIOL 346 – Microbes and Society

General Course Syllabus (as of May 2019)

About the Course:

Course Description: An elementary course in molecular microbiology primarily for Arts students. The course covers the historical development of recent discoveries in molecular biology with emphasis on bacteria and viruses and their interaction with humans and animals. (Consult the Credit Exclusion list within the Faculty of Science section of the Calendar.) Not for credit in Life Sciences.

Course Format: Lecture. The class will meet twice a week for 1.5 hour sessions. Class meeting times will consist of lectures, in-class group work, and class discussions. Reading will be assigned to prepare for class discussions.
Credits: 3
Prerequisites: n/a. This course is restricted to students not in any of these programs: BSC.

Course Learning Objectives:

By the end of this course, students will be able to:

- Identify the general properties (good and bad) of microbes that co-inhabit with all living organisms.
- Associate the biological processes occurring at the cellular level with the effects seen in real world examples.
- Explain how the immune system functions to protect against disease.
- Explain and appraise the different concepts underlying important health issues such as vaccines and the use of antibiotics (including antibiotic resistance).
- Discuss how microbes are used in the preparation of foodstuffs and beverages by comparing and contrasting different examples.
- Discuss how microbes are used in industry and medicine by comparing and contrasting different examples.
- Explain the ways that microbes impact all aspects of life on earth by composing examples.

Textbooks:

None

Evaluation:

Assessment	Weight
Midterm examination	20%
Final examination	40%
3-Minute Micro-bytes	15%
Canvas quizzes	10%
Poster	15%

Midterm: The midterm exam will be held during normal class hours, and will be comprised of questions in short answer format. The questions will be drawn from the lectures and in-class discussion.

Final Examination: The final examination is scheduled by Enrolment Services during the term exam period, and will be comprised of questions in short answer format. The questions will be drawn from the lectures and in-class discussion.

3-Minute Micro-bytes: Every day, there is something in the local, national and international news that is relevant to BIOL 346. It might be a story about an outbreak of disease following an earthquake, or an outbreak of food-borne illness in a restaurant chain, or a new vaccine developed in Canada to help stop the Ebola crisis.

For the 3-Minute Micro-bytes, students will be asked to find a story about a microbe(s) in the news, print it from the website (or clip it from the paper) and present it to the class. The source articles are then handed in (labeled with name and student number). The presentation should be in power point format and cover the following: what makes the story interesting? What is your view(s) on the topic? Is this something Canadians should be concerned about? Is this something the typical UBC student needs to be concerned about or should be excited about?

Each student is required to do two presentations during the term. A schedule will be drafted during the first 2 weeks of class.

Canvas Quizzes: There will be 2 canvas quizzes to help students prepare for the types of questions that will be on the midterm and final exams. The first quiz will be held a few weeks before the midterm exam, the second quiz to be held a few weeks before the end of classes.

Poster: Scientific poster presentations are usually large posters that are used to effectively communicate research at a scientific meeting. Students will draw a topic in the 2nd week of term. A poster session will be held at the end of the term where students will present their poster to the class. Further details regarding the poster will be discussed in class.

Laboratory: There will be 1 laboratory session where students can explore different aspects of bacterial cells and growth. Students are expected to follow the general

laboratory safety rules, which will be discussed during the first lab session. Lab coats will be provided.

Potential Course Topics:

- History of microbiology: Hooke, Pasteur, Koch and other notables will be discussed relative to their contributions to the development of the science of microbiology.
- Description of different microbes and their structures: viruses, bacteria, fungi, parasites, etc.
- Metabolic characteristics of microbes: how do they produce energy, how do they replicate?
- The basic pathways of the metabolism of sugars, fats, protein, etc.
- The genetic basis of microbial function: introduction to DNA and RNA: structures and distribution.
- The importance of DNA: replication, synthesis, mutation, and repair.
- RNA and protein production: mechanisms and outcomes.
- The genetic code.
- Microbes in the environment: their roles in recycling and in maintaining the components of the biosphere.
- Microbes and disease: pathogens and their specific virulence functions.
- Disease prevention and treatment.
- Antibiotics: discovery and applications.
- The immune system and disease prevention.
- Vaccinology: theory and practice.
- Antibiotic resistance: its consequences and combating the problem.
- Industrial microbiology: production of consumer materials.
- Waste management and the role of microbes.
- Microbes and food: applications of fermentation processes.
- Biotechnology and genetic engineering: tailor-made processes for valuable products.
- The “new” microbiology: genomes, microbiomes and their manipulation.
- Microbiology and the law. Use of microbial techniques in crime detection.

Course Policies:

Policy on missed exams: If students are unable to write the midterm exam for medical reasons or other excusable circumstances (e.g., family emergency), a make-up exam will be scheduled for the following week. If students are unable to write the final exam for medical reasons or other excusable circumstances they must report to their Faculty’s advising office for approval to write a deferred exam.

Classroom Civility: To create and preserve a classroom atmosphere that optimizes teaching and learning, all participants share a responsibility in creating a civil and non-disruptive forum. Students are expected to conduct themselves at all times in this classroom in a manner that does not disrupt teaching or learning.

- Students are expected to be on time.
- Classroom discussion should be civilized and respectful to everyone and relevant to the topic discussed.
- Electronic devices such as cell phones and pagers must be turned off during class.
- Laptops or other computing devices may be used in class only to view or make notes on course related materials that are being used in the class. Other uses of computers (movies, TV, sports, games, etc.) are not productive use of class time and are distracting to students around them. Please be considerate of others in the classroom.

University Policies:

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence.

UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom.

UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances.

UBC values academic honesty and students ae expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on the UBC Senate website.