Intent of the course:
This course examines the diversity of microorganisms, their adaptations to special habitats, and their role in the ecosystem and geochemical cycling. Other topics include microbial phylogeny, physiological diversity, species interactions and state of the art methods of detection and enumeration.

Prerequisite: CHMA10H3 & CHMA11H3 & BIOB50H3 & BIOB51H3

Exclusion: (BGYC55H3)

Breadth Requirement: Natural Sciences

Suggested reading:

Lecture notes:
The lecture slides will be posted in *.pdf format on the Blackboard. You will require Adobe Reader to open the files (available free of charge at www.adobe.com).

Course email policy:
Email is not an effective way of teaching and email inquiries regarding course materials will not be answered. Dr. Stefanovic will be available during designated office hours to answer questions regarding course material. Teaching assistant will be available during specified office hours to answer questions pertaining to the term assignment and seminar. If you have questions, then please see instructors during office hours – this time is for you so please do not hesitate to use it.

Grading:
Assignments (2): 20% (10% each)
Seminar 15%
Participation 5%
Midterm 25%
Final Examination 35%
**Assignments:**
You will have two individual assignments during the term, each worth 10% of the final grade. You will be able to access the problem sheets on the Blackboard at the times detailed below. The second week of the tutorial, for each assignment, you will need to complete microorganism identification exercise. The assignments are due during the tutorials at the dates detailed below. More details on the assignments will be circulated during the weekly tutorial sections which will start on of Jan 21th.

<table>
<thead>
<tr>
<th>Topic</th>
<th>On the Blackboard</th>
<th>Submission Due</th>
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<tbody>
<tr>
<td>Assignment #1</td>
<td>Jan. 21th</td>
<td>Feb. 4th</td>
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<tr>
<td>Assignment #2</td>
<td>Mar. 18th</td>
<td>Apr. 1st</td>
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**Seminar:**
Teams of maximum two students will need to review ONE recent research paper (from the last 10 years) on the following topic: Environmental conditions and microbes. Students need to prepare a short power point presentation (about 15 min long) of these findings. The chosen articles have to be pre-approved by your TA. Your TA will organize the seminar presentation schedule and instruct you on format and content guidelines in tutorial on Feb. 4th. The presentations will take place during the tutorials on Feb. 11th, Feb. 25th, Mar. 4th and Mar. 11th. The rest of student will need to submit hand written summery of the presentations for participation mark.

**Midterm:**
The 2 hours IN-CLASS midterm examination will worth 25% of the final grade for the course. It will be a combination of multiple choice, true-false choice, "fill-in-the-blanks" and short answer questions and will cover Lectures 1-4.
The midterm will draw from lectures and assignments and includes lecture notes and any material presented in the classroom. Information from the readings and other resources not directly covered in class will not be tested on exams. More details about the exams will follow.

**Final Exam:**
The 2 hours final examination will worth 35% of the final grade for the course. It will be a combination of multiple choice, true-false choice, "fill-in-the-blanks" and short answer questions and cover lectures 5-10.
The final exam will draw from lectures and assignments and includes lecture notes and any material presented in the classroom. Information from the readings and other resources not directly covered in class will not be tested on exams. More details about the exams will follow. *The final exam is NOT cumulative.*

**Other Course policies:**
Tutorials are MANDATORY. In a case of absence you need to provide you TA with appropriate documentation.
Late assignments will not be accepted and assigned a grade of zero. *Extensions will be granted ONLY with medical note or under exceptional circumstances. Your TA must be informed about that immediately.*
Plagiarism will not be tolerated. Students are expected to submit *individual work* for grading. It is an academic offense to plagiarize and those who do, will be subjected to University procedures (see the University calendar).
Lecture topics:
1. Introduction, ground rules, expectations and course structure.
   Concept of microbial biogeochemistry; Microbial ecology  
   Jan. 10th
2. Microbial metabolism and energy production  
   Jan. 17th
3. Interactions among microbial populations  
   Jan. 24th
4. Interactions between microbes and plants  
   Jan.31st
5. Midterm  
   Feb. 7th
6. Microbes in terrestrial environment  
   Feb.14th
7. READING WEEK  
   Feb.21st
8. Microbes in aquatic environments  
   Feb. 28st
9. Microbes in extreme environments  
   Mar.7th
10. Biogeochemical cycling of carbon, nitrogen and sulphur  
    Mar. 14th
11. Biodegradation of organic pollutants  
    Mar. 21st
12. Biodegradation of inorganic pollutants (metals)  
    Mar. 28th
13. Course review; Final exam preparation  
    April 4th

I will follow this schedule as closely as possible, but things being what they are, some of these topics may "overflow" over into other time slots.

Associated Readings in suggested book:
Week 1 - Lec 1- Ch. 1  
Week 2 - Lec 2- Ch. 1  
Week 3 - Lec 3- lecture notes  
Week 4 - Lec 4- Ch. 9  
Week 5 - Midterm  
Week 6 - Lec 5- Ch. 6  
Week 7- READING WEEK  
Week 8 - Lec 6- Ch. 7  
Week 9 - Lec 7- Ch. 8  
Week 10 - Lec 8- 4, 11  
Week 11- Lec 9- Ch. 3  
Week 12 - Lec 10- lecture notes