College of Applied Medical Sciences
Department of Environmental Health
Course Syllabus
Applied and Environmental Microbiology

Course Description: The course will introduce students to complex concepts that link microbial activities to key physical, geological, and chemical processes on earth. Topics to be covered in the course will include geo-microbiology, soil microbiology, and aquatic microbiology, as well as some industrial aspects of microbiology. Students will learn how microbes influence geochemical processes at the earth's surface, the cycling of nutrients in the oceans, lakes and rivers, and use of microorganisms to accelerate natural biodegradation or transformation of chemicals and elements in the subsurface environment through bioremediation. Students will learn how microorganisms are selected and engineered to accelerate degradation of contaminants in water and soils, the limitations and benefits of bioremediation, and the future of this technology in contaminant clean-up in remote environments. Students will also be introduced to microbial processes of industrial importance of waste water treatment. The course will include field trips to the Al Husseinia River and Al-Seeb Marsh (Hoor) in order to see the concepts they have learned in the classroom in practice in the field.

Text/Assigned Reading:
Environmental Microbiology, 2000 Maier et al. (editors)

Instructor:
Dr Muhsin Al-Mossawi , Dean of Applied Medical Sciences

Grading:
1 midterm exam, worth 25% of the final grade
1 Lab. reports and discussion in class room+ presentation worth 20% of grade
1 Practical exam worth 20% of final grade
1 final exam, worth 25% of final grade
Attendance, 10% of final grade

Exam questions will be developed from lecture, and assigned reading material. Exams will take the format of written short-answers to questions.
There will be no make-up exams. If student has a legitimate excuse (doctor's written letter) for missing class or midterm exam, weight of missed exam will be distributed across other course requirements. Student will receive a fail grade for any exams missed without a legitimate excuse approved by instructor prior to the exam.

Attendance/Participation Policy:

All students enrolled in the course are expected to attend each lecture and laboratory and participate in class discussion. Class attendance will be taken. Both attendance and class

participation will count toward final grade. Late submission of each laboratory report will result in deduction of 1% of the total grade value.

Exam Times and Deadlines:
Midterm –March 18 ,2014
Laboratory reports–April 23 ,2014
Final Exam- June 1, 2014

Course Outline/Schedule

Week of	
Feb.12	Course introduction, Modern Environmental Microbiology
Feb. 19	Basic structure and function of a microorgaism's cellular components.
Feb. 26	Pathogenic Micro-organisms in Aquatic Environment (Lec. I)
March 5	Pathogenic Micro-organisms in Aquatic Environment (Lec.II)
March 12	Pathogenic Bacteria in Soil
March 19	Aeromicrobiology
March 26	Measurement of Microbial Activities, Midterm exam
April 2	Use of Microorganisms in assessment of chemical pollutants (Environmental Mutagens / carcinogens)
April 9	Microbial Transport and Cross Infections in the hospital environment
April 16	Microorganisms and extreme environmental conditions
April, 23	Microorganisms and Organic Pollutants,
April, 30	Waste Water Treatment, Student Presentations
May, 7	Bioremediation of Contaminated Subsurface Sites, Student Presentations
May 14	Student Presentations
May 21	Climate Change, Student Oral Presentations
June 1	Final Exam (see exam schedule)