



<input type="checkbox"/> Role playing <input type="checkbox"/> Student presentation <input type="checkbox"/> Project <input type="checkbox"/> Simulation game <input checked="" type="checkbox"/> Exercises and problems	<input type="checkbox"/> Company visits <input type="checkbox"/> e-learning <input type="checkbox"/> Independent study Others: _ _ _
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Major Assessment Methods: For each Major Assessment Method below, please indicate the specific pedagogical methods involved (by putting a ✓ in the relevant box(es) on the right-hand side).	Case Study	Role Playing	Student Presentation	Individual project/paper	Group project/paper	Simulation Game	Exercises & problems	Service learning	Internship	Field Study	Company visits	Written examination	Oral examination	Others (please specify)
Class Participation/ Discussion														
Assignment(s)							✓							
Test(s)												✓		
Examination												✓		
Others (please specify) _____														
Course Web: (if any)	Course materials are available in UMMoodle ( <a href="http://webcourse.umac.mo/">http://webcourse.umac.mo/</a> ).													

Course Content: (topic outline)	Week no.	Topics	Assignment no.	LO no.
	1	<b>Course Overview: Introduction (Environmental Biotechnology)</b>	--	1
	2	<b>Basics of Environmental Microbiology</b>	--	1,2
	3	<b>Stoichiometry / Energetics / Kinetics</b>	--	1,2
	4	<b>Aerobic Environmental Processes</b>	1	1,2
	5	<b>(Facultative) Anaerobic / Anoxic (Hypoxic/Microaerobic) Environmental Processes</b>	--	1,2
	6	<b>Suspended vs. Immobilized Systems</b>	--	1,2
	7	<b>(Biological) Wastewater Treatment</b>	--	2,3
	8	<b>Midterm Exam; BNR (Biological Nutrients Removal) Processes</b>	--	2,3
	9	<b>Renewable Energy (Biodiesel) Production from (Waste)Water</b>	--	2,3
	10	<b>Renewable Energy (Biogas) Production from (Waste)Water</b>	--	2,3
	11	<b>Reuse of (Waste)Water and Sludge</b>	--	2,3
	12	<b>(Bio)Remediation</b>	2	2,3
	13	<b>(Enhanced) Phyto-/Rhizoremediation</b>	--	2,3
	14	<b>Drinking Water Treatment</b>	--	2,3

Percentage Content of:	Mathematics and Basic Sciences	Engineering Subjects	Complementary Studies	Total
	35	65	0	100
Timetabled work in hours per week:	Lecture	Tutorial	Practice	Total
	3	1	---	4

Contribution to Program Outcomes:	Programme Outcomes		Contribution to POs	
			Primary	Secondary
	(a) an ability to apply knowledge of mathematics, science, and engineering appropriate to the degree discipline		✓	
	(b) an ability to design and conduct experiments, as well as to analyse and interpret data			
	(c) an ability to design a system, component or process to meet desired needs within realistic constraints, such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability			
	(d) an ability to function on multi-disciplinary teams		✓	
	(e) an ability to identify, formulate and solve engineering problems	✓		
	(f) an ability to understand professional and ethical responsibility		✓	
	(g) an ability to communicate effectively	✓		
	(h) an ability to understand the impact of engineering solutions in a global and societal context, especially the importance of health, safety and environmental considerations to both workers and the general public	✓		
	(i) an ability to stay abreast of contemporary issues		✓	
	(j) an ability to recognise the need for, and to engage in life-long learning		✓	
	(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice appropriate to the degree discipline			
(l) an ability to use the computer/IT tools relevant to the discipline along with an understanding of their processes and limitations				
Course Instructor:	Prof. Hojae SHIM (Please refer to the following link for the consultation hours of the course instructor: <a href="http://www.fst.umac.mo/cee/contacthour.html">http://www.fst.umac.mo/cee/contacthour.html</a> )			