



University of Management & Technology

School of Science

Department of Life Sciences

Advances in Biotechnology

Lecture Schedule	Monday 06:30-09:30	Semester	Spring 2021
Pre-requisite	BS Biotechnology	Credit Hours	3
Instructor	Dr. Kaneez Fatima	Contact	kaneez.fatima@umt.edu.pk
Office	IHM Hall	Office Hours	See office window
Course Description	The emergence of new tools and ideas in biotechnology continues to accelerate, and this course is an introduction to a range of topics at the forefront of this field. This objective of this class is to expose students to the multidisciplinary research, and provide technical and intellectual skills from fields such as biochemical engineering, biochemistry, bioengineering, biomaterials, molecular biology, nano-biotechnology, pharmacology, tissue and environmental engineering.		
Expected Outcomes	<p>On successful completion of the course students will be able to</p> <ol style="list-style-type: none"> 1. An understanding of the important theories and concepts of environmental science and ecology that are used to describe environmental systems, such as population growth, biomes, food webs, biogeochemical cycles, and biodiversity. 2. Familiarity with the major environmental and natural resource problems facing Pakistan and the world, in the present and in the future, including causes and potential solutions. 		
Textbook(s)	3. Advances in Biotechnology, Indu Ravi, Mamta Baunthiyal, Jyoti Saxena		
Grading Policy	<ul style="list-style-type: none"> • Quizzes & Assignment(s): 25% • Presentation 10% • Midterm: 25% 		

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| | <ul style="list-style-type: none"> Final Exam: 40% |
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Advances in Biotechnology

Week	Lectures	Topics
Week 1	Introduction to Advanced methods in Biotechnology DNA sequencing: Methods and Applications	
Week 2	Next Generation Sequencing	
Week 3	Metagenomics: The exploration of un-culturable microbial world	
Week 4	RNA interference and its Applications	
Week 5	DNA microarray	
Week 6	Biosensors	
Week 7	Recent advances in stem cell research	
Week 8	Types of PCR and Real time PCR	
Week 9	Mid term	
Week 10	Algal-bacterial biotechnology in environmental management and protection	
Week 11	Bio fertilizers	
Week 12	Application of Nanotechnology in the Biotechnology	
Week 13	Engineering plants for phytoremediation	
Week 14	FISH	
Week 15	Biofuels	