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Academic Session:2021-2022 Semester Name:TRIMESTER-I Course Year Name:FY - IX

Subject Name : Biology for Engineers

Sr No	Unit	Topic Details
1	UNIT-I	Biological Engineering
		Difference between scientific and engineering approaches to the study of Biology
		The value of scientific models
2	UNIT-II	The principles of Mathematics governing biological structure
		The principles of Chemistry governing biological structure
		The principles of Physics governing biological structure
		Function and responses
3	UNIT-III	Origins and divergence of basic cell types
		Genetic Basis and Genetic code
		Biological Hierarchies
		Form and function: from molecular to organism level
		Modularity and incremental change
		Competition and Selection
4	UNIT-IV	Heat sources and sinks
		Need for water, oxygen, nutrients
		Optimized use of resources
		Communication
		Chemical and mechanical stresses
		Adaptation and response to environments
		Effect of toxic substances and waste products
5	UNIT-V	Allometric relationships
		Self-similarity of tissues and organs
		Fractal scaling within an organism
		Golden ratio
		Dimensional analysis
6	UNIT-VI	Bionics; Biomimetics; Biomechanics
		Biotechnology; Nanobiotechnology, Computational Biology
		Bioprocess Engineering
		Biological engineering
		Systems approach

Sr No	Unit	Topic Details
		Biomedical engineering
		Control and stability