

To

The Principal

Sahebraoji Butte Patil Mahavidyalaya,

Rajgurunagar

Subject :- Teaching plan of S.Y.B.Sc. (Microbiology) is as follows:

FIRST TERM : MB – 211: BACTERIAL SYSTEMATICS & PHYSIOLOGY

Sr. No.	Topic	Duration
1.	BACTERIAL SYSTEMATICS (15) a. Concept of species 2 b. Chemotaxonomy 4 c. Numerical taxonomy 3 d. Genetic basis of taxonomy i. G + C content ii. DNA hybridization iii. Base sequence similarity (Use of 16s rRNA databanks)	July 2019
2.	BACTERIAL PHYSIOLOGY (20) a. Radioisotopes in the study of metabolic pathways i. Autoradiography ii. Phosphor imaging iii. Pulse chase (tracer studies) 3 b. Definitions of Metabolism, catabolism, anabolism, respiration and fermentation 1 c. Metabolic pathways (with structures) EMP, HMP, ED, Phosphoketolase, Glyoxylate, TCA (with emphasis on amphibolism), Homofermentative and heterofermentative pathways 12 d. High Energy Compounds, Electron transport chain, Oxidative phosphorylation and Substrate level phosphorylation , Chemiosmotic hypothesis of ATP formation, Concept of Standard redox potential(Nernst equation)	August 2019

3.	BIOCATALYSTS (13) a. Introduction to Enzymes: Nature of active site, ribozymes,	September 2019
	coenzymes, apoenzymes, prosthetic group and cofactors. 3 b. Nomenclature & classification as per IUB (up to class level). 2 c. Structure of active site; common amino acids at active site Models for catalysis – i. Lock and key ii. Induced fit iii. Transition state. 4 d. Specific catalytic groups involved in enzyme catalyzed reactions: Acid-base catalysis, metal ion catalysis, covalent catalysis. 1 e. Effect of pH & temperature, substrate concentration & enzyme concentration, activators and inhibitors of enzyme	
	Revision and question paper solving	October 2019

S.S. Belhekar

Prof. Belhekar S.S.

Department of Microbiology

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Rajgurunagar

Subject :- Teaching plan of S.Y.B.Sc. (Microbiology) is as follows:

FIRST TERM: PAPER II

MB – 212: INDUSTRIAL AND SOIL MICROBIOLOGY

Sr. No.	Topic	Duration
1.	INTRODUCTION TO INDUSTRIAL MICROBIOLOGY a. Strains of industrially important microorganisms: i. Desirable characteristics of industrial strain ii. Principles and methods of primary and secondary screening iii. Master, working and seed culture; development of inoculum b. Equipment: Design of a Fermenter (typical CSTR Continuous stirred Tank Reactor); different parts and their operation. c. Process Control and Monitoring of different fermentation parameters (temperature, pH, aeration, agitation, foam) d. Types of fermentations: Batch, continuous, dual fermentations e. Media for industrial fermentations: Constituents of media (Carbon source, nitrogen source, amino acids and vitamins, minerals, water, buffers, antifoam agents, precursors, inhibitors and inducers) f. Contamination: Sources, precautions and consequences.	July 2019
2.	SOIL MICROBIOLOGY (26) a. Soil microorganisms, composition and types of soil. 2 b. Rhizosphere microflora and its role in the rhizosphere 1	August 2019 September 2019

	<p>c. Role of microorganisms in composting and humus formation 2</p> <p>d. Biofertilizers: Bacterial, Cyanobacterial ,fungal and their large scale production 3</p> <p>e. Biocontrol agents: Bacterial, Viral, Fungal and their large scale production 3</p> <p>f. Role of microorganisms in following elemental cycles in nature Carbon, Nitrogen, Sulphur, Phosphorous. 8</p> <p>g. Degradation of cellulose, hemicelluloses, lignin and pectin 3</p> <p>h. Brief account of microbial interactions Symbiosis, Neutralism, Commensalism, Competition, Ammensalism, Synergism, Parasitism, and Predation</p>	
	<p>Revision and question paper solving</p>	<p>October 2019</p>



Prof. Mrs. A. A. Indais

Department of Microbiology