Telangana State Council of Higher Education, Govt.of Telangana

PRAPOSED SCHEME FOR CHOICE BASED CREDIT SYSTEM IN B.Sc. MICROBIOLOGY (2016-17)

FIRST YEAR - **SEMISTER-1**				
Code	Course Title	Course Type	HPW	Credits
BS101	Communication			
BS102	English			
BS103	Second Language			
BS104	**General Microbiology**	DSC-1A	4+2	5
BS105	Optional-II			
BS106	Optional-III			
SEMISTER-2				
BS201	Environmental studies			
BS202	English			
BS203	Second Language			
BS204	**General Microbiology-II**	DSC-1B	4+2	5
BS205	Optional-II			
BS206	Optional-III			
SECOND YEAR-SEMISTER-3				
BS301	A/B **HAEMATOLOGY**	SEC-1	2	2
BS302	English			
BS303	Second Language			
BS304	**Microbial Physiology and Enzymology**	DSC-1C	4+2	5
BS305	Optional-II			
BS306	Optional-III			
SEMISTER-4				
BS401	C/D-**FOOD ADULTERATION**	SEC-2	2	2
BS402	English			
BS403	Second Language			
BS404	**Microbial Genetics and molecular biology**	DSC-1D	4+2	5
BS405	Optional-II			
BS406	Optional-III			
THERD YEAR-SEMISTER-5				
BS501	**Mushroom cultivation**	SEC-3	2	2
BS502	**Microbiology and Human health**	GE-1	2	2
BS503	***APPLIED MICROBIOLOGY***	DSC-1E	3+2	4
BS504	Optional-II			
BS505	Optional-III			
BS506	**A-IMMUNOLOGY**	DSE-1E	3+2	4

	B- PHARMACEUTICAL MICROBIOLOGY			
BS507	Optional-II-A/B/C			
BS508	Optional-III-A/B/C			
SEMISTER-6				
BS601	G/H **HOSPITAL WAST MANAGEMENT**	SEC-4	2	2
BS602	**CONTAGIOUS DISEASES AND IMMUNISATION**	GE-2	2	2
BS603	**MEDICAL MICROBIOLOGY**	DSC-1F	3+2	4
BS604	Optional-II			
BS605	Optional-III			
BS606	**A-FOOD MICROBIOLOGY B- INDUSTRIAL MICROBIOLOGY**	DSE-1F	3+2	4
	Optional-II-A/B/C			
	Optional-III-A/B/C			
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Dept.of Microbiology: Osmania University

Proposed scheme for B.Sc Microbiology program under choice based credit system (CBCS)

With effect from 2016-17

Syllabus for B.Sc Microbiology **Code: 104, DSC- 1A**

B.Sc I year: 1st semester

Title: General Microbiology -I **4HPW -creditd-4**

UNIT-1: HISTROY OF MICROBIOLOGY-

Meaning, definition and history of microbiology, Contribution of Antony Van Leeuwenhoek, Edward Jenner, Louis Pasteur, Robert, koch, lwanoswky, Beijernik, Winogradsky and Alexander Fleming. Importance and application of Microbiology.

UNIT-2: MICROSCOPY-

Principles of Microscopy-Bright field, Dark field, Phase-contrast, Fluorescent and Electron microscopy (SEM and TEM). Ocular and stage micrometry. Size determination of microorganisms. Principles and types of stains-simple stain, differential stain, negative stain. Structural stains-spore, capsule, flagella. Hanging drop method.

UNIT-3-MICROBIOLOGICAL TECHNIQUES-

Sterilization and disinfection techniques. Principles and methods of sterilization. Physical methods-Autoclave,Hot air oven,pressure cooker,Laminar air flow,Filter sterilization. Radiation methods-U.V rays, Gamma rays, Ultrasonic methods. Chemical methods-use of Alcohols, Aldehydes, Fumigants, Phenol, Halogens and Hypochlorides, Phenol coefficient.

UNIT-4-PURE CULTURES TECHNIQUES-

Isolation of Pure cultural techniques- Enrichment culturing, Dilution plating, streak plate, spread plate, Micromanipulator. Preservation of Microbial cultures – Sub culturing, overlaying cultures with minerals oils, lyophilization, sand cultures, storage at low temperature

References:

1. Michael J. Pelczar, Jr. E.C.S.Chan, Noel R. Krieg Microbiology Tata McGraw- Hill Publisher.
2. Prescott, M.J., Harly, J.P. and Klein Microbiology 5th Edition, WCB Mc GrawHill, New York.
3. Madigan, M.T., Martinkl, J.M and Parker,j. Broch Biology of Microorganism, 9th Edition, MacMillan Press, England.
4. Dube, R.C. and Maheshwari, D.K. General Microbiology S Chand, New Delhi.

Dept.of Microbiology: Osmania University

B.Sc I year –I-semester Practical Syllabus

CHOICE BASED CREDIT SYSTEM-2016-17(CBCS)

GENERAL MICROBIOLOGY

2HPW-Credits-1

- Light compound microscope and its handling.
- Calibration of microscopic measurements(ocular, stage micrometer)
- Measuring dimensions of microorganisms (Bacteria and fungal spores)
- Simple and differential staining (Gram stating),Spore stating, capsule staining and negative statining.
- Preparation of culture media: Solid/Liquid.
- Sterilization techniques: Autoclave, Hot air oven and filtration.
- Enumeration of bacterial numbers by serial dilution and plating.
- Microscopic observation of bacteria (Gram positive bacilli and cocci:Gram negative bacilli),cyanobacteria (nostoc,spirulina).

References:

1. Experiments in Microbiology by K.R. Aheja.
2. Gopal Reddy.M., Reddy. M.N., Sai Gopal, DVR and Mallaiah K.V. Laboratory Experiments in Microbiology.
3. Dubey, R.C. and Maheshwari, D.K. Practical Microbiology, S. Chand and Co New Delhi.
4. Alcamo, I.E. Laboratory Fundamentals of Microbiology. Jones and Bartlett Publishers, USA.

Dept.of Microbiology: Osmania University

Proposed scheme for B.Sc Microbiology program under choice based credit system (CBCS)

With effect from 2016-17

Syllabus for B.Sc Microbiology **Code: BS 204, DSC-1B**

B.Sc I year: 2nd semester

Title: General Microbiology-I I **4HPW-creditd-4**

Unit-1; BIOLOGY OF MICROORGANISM

Classification of living organisms; Heckel, Whittaker and carlwoese systems. Place of microorganisms in the living world. Differentiation of prokaryotes and eukaryotes. Prokaryotes—General characteristics of bacteria, Archea bacteria. Rickettiasis, Mycoplasma,cynobacteria and Actinomycets. Classification of bacteria as per the second edition of bergyes manual of systematic bacteriology

UNIT-2 STRACTURE OF MICROORGANISMS

Ultra structure of bacteria cel; invariant components-cellwall ,cellmembarane, Ribosomes ,nucleiod. Variant components-Capsule,flagella,fimbriae,endospores& storage granules. Gemneral characteristuics and classification of virus. Morphology and structure of TMV and HIV. Structure and multiplication of lambda bacteriophage. Eukaryotes- General characteristics and classification. Eukaryotic microorganism-protozoa,microalgae,molds and yeast.

UNIT-3 BIOMOLECULES

Outline classification and general characteristics of carbohydrate (Monosaccharides, disaccharides and polysaccharides). General characteristics of Amino acids and proteins,Fatty acids(saturated and unsaturated) and lipids (sphingo lipids,sterols and phospholipids)

UNIT-4 BIOMOLECULES

Structure of nitrogenous bases,nucleoides and nucleic acids. Hydrgen ion concentration in biological fluids.PH measurement. Types of buffers and their uses in biological reactions. Principles and application of colorimetry and chromatography(paper and thin layer)

References:

1. Michael J. Pelczar, Jr. E.C.S.Chan, Noel R. Krieg Microbiology Tata McGraw- Hill Publisher.
2. Prescott, M.J., Harly, J.P. and Klein Microbiology 5th Edition, WCB Mc GrawHill, New York.
3. Madigan, M.T., Martinkl, J.M and Parker,j. Broch Biology of Microorganism, 9th Edition, MacMillan Press, England.
4. Dube, R.C. and Maheshwari, D.K. General Microbiology S Chand, New Delhi.
5. Voet, D Biochemistry WCB. Mc GrawHill, Iowa.
6. N.J. Dimmock, A.J Easton, and K.N. Leppard. Introduction to Modern Virology. Blackwell Publishing.

B.Sc I year –II-semester Practical Syllabus

CHOICE BASED CREDIT SYSTEM (CBCS)-2016-17

GENERAL MICROBIOLOGY-II

2HPW- CREDITS-1

- Paper chromatography-separation of sugars/amino acids
- Determination of pH
- Preparation of Buffers
- Colorimetry- Principles, laws, determination of absorption maximum.
- Microscopic observation of algae
- Microscopic observation of fungi (sacharomyces, Rhizopus, Aspergillus, Pencillium, Fusarium)

References:

1. Experiments in Microbiology by K.R. Aheja.
2. Gopal Reddy.M., Reddy. M.N., Sai Gopal, DVR and Mallaiah K.V. Laboratory Experiments in Microbiology.
3. Dubey, R.C. and Maheshwari, D.K. Practical Microbiology, S. Chand and Co New Delhi.
4. Alcamo, I.E. Laboratory Fundamentals of Microbiology. Jones and Bartlett Publishers, USA.
5. Mahy, B.W.J. and Kangro, H.O. Virology – Methods Manual Academic Press, USA.
6. Burleson et al Virology – A Laboratory Manual. Academic Press, USA.