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VEER NARMAD SOUTH GUJARAT UNIVERSITY
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વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી
યુનિવર્સિટી કેમ્પસ, ઉધના-મગદલ્લા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.
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-: પરિપત્ર :-

વિજ્ઞાન વિદ્યાશાખા હેઠળની સંલગ્ન બાયોસાયન્સ વિષય ચલાવતી સ્નાતક કોલેજોના આચાર્યશ્રીઓને જણાવવાનું કે, શૈક્ષણિક વર્ષ ૨૦૧૯–૨૦ થી અમલમાં આવનાર B.Sc.Bio-Science Sem-1 & Sem-II નાં અભ્યાસક્રમ અંગે વિચારણા કરતા બાયોસાયન્સ વિષયની અભ્યાસસમિતિની તા.૦૫/૦૪/૨૦૧૯ ની સભાનાં ઠરાવ ક્રમાંકઃ ૩ અન્વયે કરેલ નીચેની ભલામણ વિજ્ઞાન વિદ્યાશાખાની તા.૦૨/૦૫/૨૦૧૯ ની સભાનાં ઠરાવ ક્રમાંકઃ૨૦ અન્વયે સ્વીકારી તે મંજૂર કરવા એકેડેમિક કાઉન્સિલને કરેલ ભલામણએકેડેમિક કાઉન્સિલએ તેની તા.૦૭/૦૬/૨૦૧૯ ની સભાના ઠરાવક્રમાંકઃ ૬૨ અન્વયે સ્વીકારી મંજૂર કરેલ છે. તેની જાણ સંબંધકર્તા શિક્ષકો અને વિદ્યાર્થીઓને કરવી, તદ્ઉપરાંત તેનો અમલ કરવો.

બાયોસાયન્સ વિષયની અભ્યાસસમિતિની તા.૦૫/૦૪/૨૦૧૯ ની સભાનાં ઠરાવ ક્રમાંકઃ ૩

:: આથી ઠરાવવામાં આવે છે કે, B.Sc. Bio-Science Sem-1 & Sem-II નાં અભ્યાસક્રમને જરૂરી સુધારા વધારા સાથે જૂન–૨૦૧૯ થી અમલમાં આવે તે રીતે મંજૂર કરવામાં આવે છે અને તે મંજૂર કરવા વિજ્ઞાન વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

વિજ્ઞાન વિદ્યાશાખાની તા.૦૨/૦૫/૨૦૧૯ ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૦

:: આથી ઠરાવવામાં આવે છે કે, B.Sc. Bio-Science Sem-1 & Sem-II નાં અભ્યાસક્રમ ને જરૂરી સુધારા વધારા સાથે જૂન–૨૦૧૯ થી અમલમાં આવે તે રીતે સ્વીકારી તે મંજૂર કરવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

એકેડેમિક કાઉન્સિલની તા.૦૭/૦૬/૨૦૧૯ની સભાનાં ઠરાવ ક્રમાંકઃ ૬૨

:: આથી ઠરાવવામાં આવે છે કે, વિજ્ઞાન વિદ્યાશાખાએ તેની તા. ૦૨/૦૫/૨૦૧૯ ની સભાના ઠરાવ ક્રમાંક : ૨૦ અન્વયે ભલામણ કરેલ શૈક્ષણિક વર્ષ ૨૦૧૯–૨૦ થી અમલમાં આવનાર B.Sc. Bio-Science Sem-1 & Sem-II નો અભ્યાસક્રમ સ્વીકારી મંજૂર કરવામાં આવે છે.

બિડાણઃ ઉપર મુજબ

ક્રમાંક : એકે./પરિપત્ર/૧૦૪૫૩/૧૯
તા. ૨૧–૦૬–૨૦૧૯

ઈ.ચા. કુલસચિવ

પ્રતિ,

૧) વિજ્ઞાન વિદ્યાશાખા હેઠળની બાયોસાયન્સ વિષય ચલાવતી સ્નાતક કોલેજોના આચાર્યશ્રીઓ.
૨) અધ્યક્ષશ્રી, વિજ્ઞાન વિદ્યાશાખા.
૩) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વી. ન. દ. ગુ. યુનિવર્સિટી, સુરત.

...તરફ જાણ તેમજ અમલ સારૂ.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

CBCS Semester system

F. Y. B. Sc. BIOSCIENCE

Semester I & II (New)

Title Summary for B.Sc. Bioscience Syllabus

(Effective from June 2019)

Semester	Paper	Title
I	BS 101	INTRODUCTION TO MICROBIOLOGY
	BS 102	BASIC GENETICS
	BS 100P	PRACTICALS – SEMESTER I
II	BS 201	MICROBIAL DIVERSITY
	BS 202	EUCARYOTIC CELL STRUCTURE & FUNCTION
	BS 200P	PRACTICALS – SEMESTER II

F. Y. B. Sc. Semester - I
BIOSCIENCE
101: INTRODUCTION TO MICROBIOLOGY

Unit: I History & Scope of microbiology. **[07 Hours.]**

- History of Microbiology.
- Scope & relevance of Microbiology.
- Spontaneous generation and Biogenesis.
- Contribution of scientist in various field of microbiology: Robert Koch, Louis Pasteur, Antony Van Leeuwenhoek, Joseph Lister, Edward Jenner, Alexander Fleming.

Unit: II Introduction to Microscopy. **[07 Hours.]**

- Lenses & bending of light, working principle of microscope, Resolution, NA.
- The Light Microscope, Optical & mechanical component of microscope.
- Types of Light Microscope. (Bright-field, Dark-field, Phase-contrast, Fluorescence)
- Electron microscopy. (Transmission &scanning electron microscope)

Unit: III Dyes, Stains and Staining. **[08 Hours.]**

- Basic concept of dyes and stains. Types of stain.(Classification of stain)
- Application of dyes in microbiology: Indicator & Inhibitor dyes.
- Fixatives, mordent, decolorizer & intensifier.
- Mechanism of staining, simple staining & negative staining.

Unit: IV Control of Microorganisms. **[08 Hours.]**

- Introduction to microbial control methods: Sterilization, antisepsis, disinfection, sanitization and chemotherapy.
- Physical agents: Heat (Dry & Moist heat), Low temperature.
- Chemical agents: Aldehyde, Alcohol, Halogens Heavy metals, Phenolics, Quaternary Ammonium compound, and Sterilizing Gases.
- Control by filtration & radiation.

Reference books:

- **Microbiology** 5th ed. by Pelzar, Chan & Kreig (Tata McGraw-Hill)
- **Fundamental Principles of Bacteriology** 7th ed. by A. J. Salle (Tata McGraw- Hill)
- **Elementary Microbiology Vol. I** by H. A. Modi (Ekta prakasan)
- **Introduction to Microbiology Physiology** by P. J. Soni (Nirav Prakashan)

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F. Y. B. Sc. Semester - I
BIOSCIENCE
102: BASIC GENETICS

Unit: I Mendelian genetics. **[08 Hours.]**

- Mendel's experiments: Mono hybrid and di-hybrid cross.
- Mendel's law: Law of dominance.
  Law of segregation.
  Law of independent assortment.
- Incomplete dominance & Co-dominance.
- Multiple allele & Blood group inheritance.

Unit: II Gene concept. **[08 Hours.]**

- Gene concept: Morgan classical concept.
- Linkage, crossing over & recombination.
- Modern concept of gene, Gene-enzyme, Gene-polypeptide relationship.
- Properties of genes, Fine structure of gene.

Unit: III Sex Determination & Sex linked Inheritance. **[07 Hours.]**

- Sex determination, Chromosomal theory of sex determination.
- Theory of heterogamesis, Sex determination in drosophila & human.
- Sex linked inheritance: X & Y linked inheritance, Hemophilia & color blindness.
- Pedigree analysis of genetic disorders.

Unit: IV Human genetics. **[07 Hours.]**

- Human Karyotype.
- Banding technique.
- Chromosomal abnormality: Structural abnormality (chromosomal aberrations) Deletion, Inversion, Duplication and Translocation.
- Chromosomal abnormality: Numerical abnormality - Non disjunction & aneuploidy.

Reference books:

- **Genetics** by Varma P. & Agrawal V. (S Chand Pub)
- **Genetics** by Arora & Shandhu (Himalaya)
- **Human Genetics** 4th ed. by S. D. Gangane (Elsevier)
- **Cytology, Genetics & Evolution** by P. K Gupta (Rastogi Pub)

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F. Y. B. Sc. Semester - I
100P: BIOSCIENCE PRACTICAL

Practical based on paper 101 & 102
(Time duration: 4 hours/week)

1. Introduction to basic microbiological laboratory rules.
2. Introduction to Lab apparatus.
3. Introduction to microscope.
4. Microscopic examinations of Hay infusion by Wet-mount preparation.
5. Contribution of scientists: Robert Koch, Louis Pasteur, Antony Van Leeuwenhoek, Joseph Lister, Edward Jenner, Alexander Fleming.
6. Study of antiseptics & disinfectants.
7. Preparation of staining solutions.
8. Monochrome staining by basic dye. (Positive staining)
9. Monochrome staining by acidic dye. (Negative staining)
10. Monochrome staining of tarter by acidic dye. (Negative staining)
11. Viability staining technique for bacteria.
12. Study of human karyotype & banding technique by chart/images.
13. Study of chromosomal abnormalities by chart/images.
14. Study of sex chromatin. (Barr body)

Reference books:

- **Manual of Microbiology** 2nd ed. by Kanika Sharma, (Ane Books Pvt. Ltd)
- **Experimental Microbiology Vol. 1** 9th ed. by Rakesh Patel & Kiran Patel (Aditya Publication)
- **Microbiology: A Laboratory Manual** 11th ed. by J. G. Cappuccino (Pearson Education Pvt. Ltd, Singapore)
- **Experiments in Microbiology, Plant Pathology, and Biotechnology** 4th ed. by K. R. Aneja (New Age International Publishers)
- **Basic Human Genetics** by V. Kapur & R. K. Suri (Jaypee)
- **Practical Cytology, Applied Genetics & Biostatistics** 2nd ed. by Goswami (Himalaya)

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F. Y. B. Sc. Semester - II
BIOSCIENCE
201: MICROBIAL DIVERSITY

Unit: I Introduction to microbial taxonomy. [07 Hours.]

- Taxonomic ranks and Hierarchical arrangement in Taxonomy.
- Position of microbes in the Living world.
- Three domains of life & their comparison.
- Criteria for microbial taxonomy. (Morphological, physiological, metabolic, ecological characteristics)

Unit: II Introduction to Prokaryotes. [08 Hours.]

- Morphology & types of bacteria.
- Cyanobacteria & Archeobacteria.
- Introduction to viruses: General properties, structure & classification.
- Viruses: Cultivation & reproduction.

Unit: III Introduction to Protists. [07 Hours.]

- General characteristics of Protists. (Distribution, Nutrition, Morphology & Reproduction)
- Outline classification of Protists.
- Study of some protozoa. (Habitat, morphology, structure, life cycle & reproduction of Amoeba, Paramecium & Plasmodium)
- Importance of Protists.

Unit: IV Introduction to Fungi. [08 Hours.]

- General characteristics of fungi.
- Outline classification of fungi.
- Study of some fungi. (Habitat, morphology, structure, life cycle & reproduction of Yeast & Mucor)
- Importance of fungi.

Reference books:

- **Microbiology** by Taylor O.
- **Elementary Microbiology Vol. II** by H. A. Modi (Ekta prakasan)
- **General Microbiology** by Powar & Daginawala
- **Microbiology-A systems Approach by** M. K. Cowan and K. P. Talaro (McGraw-Hill)

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F. Y. B. Sc. Semester - II
BIOSCIENCE
202: EUCARYOTIC CELL STRUCTURE & FUNCTION

Unit: I Introduction to cell. **[07 Hours.]**

- Cell - A unit of life, cell theory.
- Cell size, shape, types of cell.
- Differences between Prokaryotic and eukaryotic cell.
- Cell structure: Prokaryotic & eukaryotic, Cell organization.

Unit: II Cell organelles – I **[07 Hours.]**

Structure, composition and functions of cell organelles.

- Cell membrane.
- Ribosome.
- Nucleus.
- Centriol, Cilia & Flagella.

Unit: III Cell organelles – II **[08 Hours.]**

Types, distribution, ultra structure, composition and functions of cell organelles.

- Mitochondria.
- Golgi body, Lysosome.
- Endoplasmic reticulum.
- Chloroplast.

Unit: IV Chromosome and cell cycle. **[08 Hours.]**

- Chromosome: Morphology, types, structure.
- Special chromosome: Polytene, lampbrush chromosome.
- Cell cycle: Interphase, Mitosis & Meiosis.
- Apoptosis.

Reference books:

- **Cell Biology** by Satyesh Chandra and K. Kumar De (Central)
- **Cytology** by Agrawal (S Chand pub)
- **Cytology, Genetics & Evolution** by P. K Gupta (Rastogi Pub)
- **Elementary Microbiology** Vol. I by H. A. Modi (Ekta prakasan)

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F. Y. B. Sc. Semester - II

200P: BIOSCIENCE PRACTICAL

Practical based on paper 201 & 202
(Time duration: 4 hours/week)

1. Study of bacterial motility by Hanging drop preparation.
2. Study of Nostoc. (Habitat, morphology, structure & reproduction)
3. Study of Oscillatoria. (Habitat, morphology, structure & reproduction)
4. Lacto phenol cotton blue mounting of fungi.
5. Microscopic examination of free living protozoa.
6. Study of bacteria & blue green algae by slide/images.
7. Microscopic study of algae, fungi & protozoa by slide/images.
8. Study of Mucor. (Habitat, morphology, structure & reproduction)
9. Study of Saccharomyces –Yeast. (Habitat, morphology, structure & reproduction)
10. Study of Paramecium. (Habitat, morphology, structure & reproduction)
11. Study of nucleus and nucleolus by staining of onion peel.
12. Demonstration of chloroplast and study of various types of chloroplast.
13. Demonstration of mitochondria.
14. Study of mitotic cell division of onion root tip.

Reference books:

- **Manual of Microbiology** 2nd ed. by Kanika Sharma, (Ane Books Pvt. Ltd)
- **Experimental Microbiology Vol. 1** 9th ed. by Rakesh Patel & Kiran Patel (Aditya Publication)
- **Microbiology: A Laboratory Manual** 11th ed. by J. G. Cappuccino (Pearson Education Pvt. Ltd, Singapore)
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