

Mohanlal Sukhadia University

Udaipur

Department of Biotechnology



Syllabus and Scheme of Examination

For

B.Sc. CBCS Programme with Biotechnology

Discipline Specific Electives Theory

S.NO.	Type of course	Semester	Course code	Title of the Course
1.	DSE 1	V	B5ET01BOT01	Botany-I
2.	DSE 2	V	B5ET02BT01	Biotechnology- I
3.	DSE 3	V	B5ET03CHE01	Chemistry- I
4.	DSE 4	VI	B6ET04BOT02	Botany-II
5.	DSE 5	VI	B6ET05BT02	Biotechnology- II
6.	DSE 6	VI	B6ET06CHE02	Chemistry- II

Discipline Specific Electives Practical

S.NO.	Type of course	Semester	Course code	Title of the Course
1.	DSE 1	V	B5EP01BOT01	Botany-I
2.	DSE 2	V	B5EP02BT01	Biotechnology- I
3.	DSE 3	V	B5EP03CHE01	Chemistry- I
4.	DSE 4	VI	B6EP04BOT02	Botany-II
5.	DSE 5	VI	B6EP05BT02	Biotechnology- II
6.	DSE 6	VI	B6EP06CHE02	Chemistry- II

Skill Enhancement Courses (Any four)

Botany	Biotechnology	Chemistry
1. Biofertilizers	1. Probiotic Technology	1. IT Skills for Chemists
2. Herbal Technology	2. Animal Cell Sciences	2. Basic Analytical Chemistry
3. Nursery and Gardening	3. Microbiological Analysis of Air and Water	3. Chemical Technology & Society
4. Floriculture	4. Techniques in Biotechnology	4. Chemoinformatics
5. Medicinal Botany	5. Techniques in Plant Tissue Culture	5. Business Skills for Chemists
6. Plant Diversity and Human Welfare		6. Intellectual Property Rights
7. Ethnobotany		7. Analytical Clinical Biochemistry
8. Mushroom Culture Technology		8. Green Methods in Chemistry
		9. Pharmaceutical Chemistry
		10. Chemistry of Cosmetics & Perfumes
		11. Pesticide Chemistry
		12. Fuel Chemistry

Discipline Specific Electives-Chemistry (Any two)

1. Applications of Computers in Chemistry
2. Analytical Methods in Chemistry
3. Molecular Modelling & Drug Design
4. Novel Inorganic Solids
5. Polymer Chemistry
6. Research Methodology for Chemistry
7. Green Chemistry
8. Industrial Chemicals & Environment
9. Inorganic Materials of Industrial Importance
10. Instrumental Methods of Chemical Analysis
11. Chemistry of d-block elements, Quantum Chemistry and Spectroscopy
12. Organometallics, Bioinorganic chemistry, Polynuclear hydrocarbons and UV, IR Spectroscopy
13. Molecules of Life
14. Dissertation

Ability Enhancement Compulsory Courses

1. English/MIL Communication
2. Environmental Science

Skill Enhancement Courses (Any four)

Botany

1. Biofertilizers
2. Herbal Technology
3. Nursery and Gardening
4. Floriculture
5. Medicinal Botany
6. Plant Diversity and Human Welfare
7. Ethnobotany
8. Mushroom Culture Technology

Biotechnology

1. Probiotic Technology
2. Animal Cell Sciences
3. Microbiological Analysis of Air and Water
4. Techniques in Biotechnology

Sample Collection, Treatment and safety of drinking (potable) water, methods to detect potability of water samples: (a) standard qualitative procedure: presumptive test/MPN test, confirmed and completed tests for faecal coliforms (b) Membrane filter technique and (c) Presence/absence tests Precipitation, chemical disinfection, filtration, high temperature, UV light

Skill Enhancement Course

4: Techniques In Biotechnology

TOTAL HOURS: 30

CREDITS: 2

Unit-I (General Instruments)

Credit hours: 6

Principles, working and applications of- Autoclave, Laminar Airflow, Hot Air Oven, UV and Visible Spectrophotometer.

Unit-II (Microscopy)

Credit hours: 6

Microscopy: Principles and applications of Simple, compound, Phase contrast. Micrometry.

Unit-III (Centrifugation)

Credit hours: 5

Centrifugation: Rotors, Bench top, Low Speed, High Speed, Cooling Centrifuge. Principles and Application of Ultracentrifugation.

Unit-IV (Electrophoresis)

Credit hours: 10

Agarose gel electrophoresis, Native and SDS PAGE analysis, PCR, Molecular, biochemical and cytological markers.

Unit-V (Chromatography)

Credit hours: 3

Principals and applications of Paper and thin layer chromatography.

Skill Enhancement Course

5: Techniques In Plant Tissue Culture

TOTAL HOURS: 30

CREDITS: 2

Unit –I (Introduction to Plant Tissue culture)

Credit hours: 6

Introduction to Plant Tissue culture, Laboratory organization, Tools and techniques, methods of sterilization. Laboratory contaminants- it's control and measures.

Unit-II (Media and Culture Preparation)

Credit hours: 7

Role of Micro and macro nutrients, Vitamins and carbon source in tissue culture, Media preparation- pH, Temperature, Solidifying agents, Various media preparations, Slant Preparations etc. Maintenance of cultures, Environmental Conditions,.

Unit-III (Culture techniques)

Credit hours: 5

Explants selection, explants characteristics, sterilization and inoculation for culture establishment

Unit-IV (Initiation of Cultures)

Credit hours: 6

Induction and growth parameters; Culture initiation, Callus culture., Micropropagation through various explants (Leaf, Stem, Axillary bud).