

**Course Curriculum, Scheme of Examination  
for  
B. Sc. Biotechnology  
(Three Year Degree Course)**



**Department of Biotechnology  
Vigyan Bhawan Block – B: New Campus  
Mohanlal Sukhadia University  
Udaipur**

## **Course Curriculum and Scheme of Examination for B. Sc. Biotechnology (Three Year Degree Course)**

### **Course Curriculum**

There will be 6 Theory papers (of 75 marks each) both in I<sup>st</sup> Year and II<sup>nd</sup> Year TDC while in III<sup>rd</sup> Year there will be five Theory papers and One Project work (All of 75 marks each).

In each year there will be Three Practical Examinations based on theory papers. The details of the scheme has been given as under:

### **B. Sc. Biotechnology (Integrated) Three Year Degree Course Course Structure**

#### **I<sup>st</sup> Year Biotechnology**

Paper Code	Nomenclature of the paper	Max. Marks	Teaching hours per week	Minimum Credit hours
I	Plant Biology and Diversity	75	3 hrs.	60
II	Animal Biology and Diversity	75	3 hrs.	60
III	Microbial Biology and Diversity	75	3 hrs.	60
IV	Fundamentals of Biochemistry	75	3 hrs.	60
V	Cell Biology, Genetics and Evolution	75	3 hrs.	60
VI	Basics of Molecular Biology	75	3 hrs.	60
VII	Practical I	75	4 hrs.	80
VIII	Practical II	75	4 hrs.	80
IX	Practical III	75	4 hrs.	80

In addition to above main papers a candidate will be required to offer either Hindi or English as a compulsory paper of 50 marks.

There will be an additional compulsory Credit course of 100 marks on Environmental Studies.

## II<sup>nd</sup> Year Biotechnology

Paper Code	Nomenclature of the paper	Max. Marks	Teaching hours per week	Minimum Credit hours
I	Principles of Plant Tissue Cultures	75	3 hrs.	60
II	Principles of Animal Cell Culture	75	3 hrs.	60
III	Metabolic Pathways	75	3 hrs.	60
IV	Immunology and Enzymology	75	3 hrs.	60
V	Biophysics and Biostatistics	75	3 hrs.	60
VI	Plant and Animal Physiology	75	3 hrs.	60
VII	Practical I	75	4 hrs.	80
VIII	Practical II	75	4 hrs.	80
IX	Practical III	75	4 hrs.	80

The Candidate will be required to offer a compulsory paper on Computer Application of \_\_\_\_\_ Marks.

## III<sup>rd</sup> Year Biotechnology

Paper Code	Nomenclature of the paper	Max. Marks	Teaching hours per week	Minimum Credit hours
I	Microbial Technology	75	3 hrs.	60
II	Recombinant DNA Technology	75	3 hrs.	60
III	Natural Resource Management and Environmental Biotechnology	75	3 hrs.	60
IV	Biotechnology in Human and Animal Health	75	3 hrs.	60
V	Plant Biotechnology and its Commercial applications	75	3 hrs.	60
VI	Project Work	75	3 hrs.	60
VII	Practical I	75	4 hrs.	80
VIII	Practical II	75	4 hrs.	80
IX	Practical III	75	4 hrs.	80

**MOHANLAL SUKHADIA UNIVERSITY, UDAIPUR**

**B. Sc. BIOTECHNOLOGY I YEAR TDC (2016-17)**

**Paper I : *Plant Biology and Diversity***

**Unit I**

Introduction to plant world – Plant kingdom; History and principles of classification and units of classification. Binomial nomenclature.

General features, distribution, classification, thallus organization, mode of nutrition, reproduction, life cycle patterns and economic importance of algae, fungi, bryophytes and pteridophytes. Alternation of generation. Thallus structure, ecological significance and economic importance of lichens.

**15 Credit hours**

**Unit II**

General features, classification, evolution, distribution, external features, comparative anatomy, development, reproduction, life-cycle, affinities and economic importance of gymnosperms. Evolutionary parallelism between gymnosperms and angiosperms.

**15 Credit hours**

**Unit III**

Technical description of a plant, systematic study, affinities, distinguishing characters of the following families of angiosperms with special reference to Cruciferae, Malvaceae, Leguminosae, Compositae, Solanaceae, Liliaceae.

**15 Credit hours**

**Unit IV**

Life history of a typical angiosperm, Male gametophyte – Structure of anthers, microsporogenesis, role of tapetum, pollen germination, pollen tube growth and guidance.

Female gametophyte – Megasporogenesis, organization of the embryo sac, types of embryo sacs, synergids and antipodal haustoria.

Pollination biology – Structural and functional aspects of pollen and pistil interaction, self and interspecific incompatibility, fertilization and control of fertilization, embryo and seed development.

Polyembryony : Types: genetic, somatic and pollen embryo apomixis and parthenocarpy.

**15 Credit hours**

## Unit V

Introduction to economic botany, centre of origin, description and use of economically important plants from each category such as :

Cereals (Wheat, Rice, Maize)

Millets (Sorghum)

Pulses (Pigeonpea, Chickpea)

Vegetables (Potato, Onion)

Fruits (Mango, Banana)

Sugar producing plants (Sugar cane)

Oil crops (Groundnut, Mustard)

Spices and Condiments (Ginger, Turmeric)

Beverage Plants (Tea, Coffee)

Medicinally important Plants (*Cinchona*, Opium poppy, *Withania*)

Fibres (Cotton, Jute)

Wood (Sal, Teak, Shisham.)

**15 Credit hours**

### Recommended Books

1. Alexopoulos, C.J., Mims, C.W. and Blackwell, M. 1996. Introductory Mycology. John Wiley and Sons, Inc.
2. Kumar, H.D. 1988. Introductory Phycology. Affiliated East-West Press Ltd., New Delhi.
3. Parihar, N.S. 1991. Bryophyta. Central Book Depot, Allahabad.
4. Stewart, W.N. and Rathwell, G.W. 1993. Paleobotany and the evolution of plants. Cambridge University Press.
5. Vashishta, P.C. 1991. Vascular Cryptogam. S. Chand and Co. Ltd., N. Delhi.
6. Pandey, Mishra and Trivedi. 2001. A text book of Botany, Vol. 1 and II. Publishing House New Delhi.
7. Bhatnagar, S.P. and Moitra, A. 1996. Gymnosperm. New Age International Limited, New Delhi.
8. Davis, P.H. and Heywood, V.H. 1963. Principles of Angiosperm taxonomy. Oliver and Boyd, London.
9. Bhojwani, S.S. and Bhatnagar, S.P. 2000. The embryology of Angiosperm, 4<sup>th</sup> Revised and Enlarged edition. Vikas Publishing House, New Delhi.
10. Sambamurthy, A.V.S.S. and Subramanyam, N.S. 1989. A Textbook of Economic Botany. Wiley Easter Ltd. New Delhi.