



**GOVT. COLLEGE FOR WOMEN PARADEGROUND
JAMMU (Autonomous)
(Erstwhile Maharani Mahila College) Estd 1944
Affiliated to University of Jammu**

Programme: - Undergraduate programme (FYUGP) in Biotechnology

Semester- I, II, III

Course type: - Multidisciplinary Course

Course title: - Biotechnology and Allied Sciences

Course code: - UBTMDT101/ UBTMDT201/ UBTMDT301

Objectives of the Course: - To introduce the students about the branches of science allied to biotechnology

Learning outcomes of the course: - To create an awareness about the scope and utility of biotechnology in solving environmental problems and to learn about the application of biotechnology in food preservation and food industry. Introduction of students to the micropropagation technique and commercial utility of true to type plants. Students will learn the application of transgenic animals in pharmaceutical industry.

Total marks: - 75

Total credits: 03

Total teaching hours: - 45 hrs.

Syllabus

Unit-01

Introduction, history (wine, beer bread, antibiotics, alcohol production) and scope of biotechnology, old and new biotechnology, Red, white, blue and green Biotechnology, Industrial Biotechnology, Medical Biotechnology. History, development and scope of Microbiology. 09hrs

Unit-02

Biotechnology and Environment: Components of Environment: Abiotic and Biotic. Scope & importance of biotechnology in mitigating the environmental problems. Use of microbial biodiversity in improving soil fertility (Vermitechnology), application of Bio-fertilizers, bioinsecticide, biofungicide and bioherbicides in environmental Biotechnology. 12hrs

Unit-03

Biotechnology and Food: Basic concept of Food: Classification of Food, Classification of Nutrients, Nutrition and Balanced diet. Concept of food and its components: Carbohydrates, Proteins, Lipids, Vitamins, Water, Minerals. Enzymes. Role of different enzymes in food processing. Different preservation techniques used in food Biotechnology. 12hrs

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Unit-04

Biotechnology and Plants: Scope and importance of micropropagation: stages of propagation, advantages and applications. Transgenic plants and their importance. Biotechnology and Animals: Introduction to Animal Biotechnology- Concept and Scope. Applications of transgenic animals in pharmaceutical industry. Biotechnology and food security in future, Biotechnology and Ethics. **12hrs**

Books recommended

1. Biotechnology- B.D. Singh, Kalyani Publications.
2. Pelczar, M.J.J., Chan, E.C.S. and Kreig, N.R. Microbiology. Tata McGraw Hill, New Delhi.
3. Prescott, L.M., Harley, J.P. and Klein, D.A. Microbiology. McGraw Hill, USA.
4. S. N. Jogdand. Environmental biotechnology. 4th edition. Himalaya Publishing House, Private Limited.
5. Bruce E. Rittmann, Perry L. McCarty. Environmental Biotechnology: Principles and Applications. McGraw-Hill Education: New York, Chicago, San Francisco, Athens, London, Madrid, Mexico City, Milan, New Delhi, Singapore, Sydney, Toronto.
6. Swaminathan, M., Handbook of Food and Nutrition, 1st ed., bapco publishers.
7. Desrosier, N.W. & James, N. Technology of food preservation. AVI. Publishers Fellows, P.J
8. Bhojwani S.S. and Razdan M.K. (2005) Plant tissue culture: Theory and practice. Elsevier Science, New Delhi.
9. Hammound, J., McGarvey, P. and Yusibov, V., eds (2000), Plant Biotechnology; Springer Veriag.
10. Roitt, I.M., Brostoff, J. and Male, D.K. (2001), Immunology, 6th Edition. Grower Medical Publishing, New York.
11. Kuby, J. (2002), Immunology. 5th Edition. W.H. Freeman and company, New York

Examination pattern shall be as under: -

Internal Assessment 15 marks

1. 15 marks shall be earmarked for internal assessment (5 marks for attendance +10 for assessment test).
2. Scheme for award of marks for attendance shall be same as followed by the College
3. Internal assessment test shall be conducted after the completion of 40% of the syllabus in a particular course.

Pattern for setting internal assessment test paper

The paper shall comprise of three sections: -

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- Short answer questions - Attempt two questions of 1 mark each out of three questions (Maximum of 20 words each)
 - Medium answer question - Attempt two questions of 2 marks each out of 3 questions (Maximum of 30 words each)
 - Long answer question - Attempt one question out of two questions of 4 marks each. (Maximum of 50 words)
- Questions should be set in such a way that the entire syllabus prescribed for the examination is represented

Duration of the paper: -45 Minutes

Pattern of External Examination:

Total marks: - 60

Time allowed:- 2 hr: 30min

The paper shall comprise of 3 sections.

- Short answer questions - 4 questions of 3 marks each. The questions shall be set in such a way that the whole syllabus prescribed for a course is represented.
All questions are compulsory.
- Medium answer questions - 4 questions of 6 marks each (one question shall be asked from each unit).
All questions are compulsory
- Long answer questions: - 4 questions be set from four units, and the students shall be asked to attempt 2 questions only.
Each question shall be of 12 marks.

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