

BTC DSC 303P
PLANT BIOTECHNOLOGY AND ANIMAL
BIOTECHNOLOGY

Contact Hours: 60

Full Marks = 100

Two Experiments are to be performed – one from each part

Course Objective: *The course objective for Plant and Animal Biotechnology is to provide students with a comprehensive understanding and practical proficiency in the techniques and principles of biotechnology as applied to both plants and animals. Students will gain hands-on experience in areas such as growth nutrient preparation, explant selection, aseptic techniques, DNA isolation, quantification, and gel electrophoresis. This course aims to prepare students for a range of career opportunities in biotechnology and to contribute to their understanding of this rapidly advancing field.*

Part A: Plant Biotechnology

1. Preparation of simple growth nutrient (knop's medium) and
2. Preparation of complex nutrient medium (Murashige & Skoog's medium)
3. Selection, sterilization and preparation of an explant for culture.
4. Techniques of inculcation under aseptic conditions
5. Determination of seed viability
6. Demonstration of various steps of Micropropagation

Part B: Animal Biotechnology

1. Sterilization techniques: glassware sterilization, media sterilization, laboratory sterilization
2. Preparation of Hanks Balanced salt solution
3. Preparation of Minimal Essential Growth medium
4. DNA isolation from animal tissue
5. Quantification of isolated DNA.
6. Resolving DNA on Agarose Gel.

Course Outcome: *By the end of this combined course in Plant and Animal Biotechnology, students will have acquired practical skills in laboratory techniques essential for both plant and animal biotechnology. These practical competencies will equip students for careers in biotechnology and research.*

SUGGESTED READING

1. Trigiano, R. N., & Gray, D. J. (2015). Plant Tissue Culture Concepts and Laboratory Exercises. CRC Press.
2. Bhojwani, S. S., & Razdan, M. K. (1996). Practical Plant Tissue Culture. Oxford & IBH Publishing.
3. Dutta Gupta, S., & Prakash, Y. S. S. (2013). Plant Tissue Culture and Biotechnology: Emerging Trends. Springer.
4. Freshney, R. I. (2015). Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications. Wiley.
5. Green, M. R., & Sambrook, J. (2012). Molecular Cloning: A Laboratory Manual. Cold Spring Harbor Laboratory Press.