

Course Objectives:

The objective of the course is:-

1. To provide students with a thorough understanding of the importance of cell, tissue and organ culture and its application in life sciences.

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. **EXPLAIN** the various components of cell and tissue culture media, e.g. minerals, growth factors, hormones and what governs the choice of components
2. **UNDERSTAND** how to initiate, grow and harvest eukaryotic cells and their uses.

Course Contents:

An overview of background, advantages, limitations, terms and definitions, growth of attachment-dependent and suspended cells; cell lines. Biology of Cultured Cell, Culture environment, cell adhesion, cell proliferation, differentiation and evolution of cell line. Design, Layout and Equipment in Animal Cell Culture Construction, layout; essential, beneficial and useful equipment; consumable items. Aseptic Technique and Safety Objectives, element of aseptic environment, sterile handling, general safety, risk assessment, radiation and biohazard. Media and Serum-free Media Physicochemical properties, complete media, serum, selection, advantages and disadvantages of serum free media, replacement of serum, media development.

Teaching-Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

Assignments

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessments and Examination

Sessional Work:	25 marks
Midterm Exam:	35 marks
Final term Exam:	40 marks

Text Books

1. Freshney, R.I., (2000), Culture of Animal cell: A Manual of Basic Techniques, 4th Ed., Wiley Liss.
2. Dodds, J.H., and Roberts, L.W., (1995), Experiment in Plant Tissue Culture, 3rd Ed., Cambridge University Press.

Books Recommended:

1. Harrison, M.A., and Rae, I.F., (1997), General Techniques of Cell Culture, Cambridge University Press.
2. Dixon, R.A., (1985), Plant Cell Culture: Practical Approach, IRL Press.
3. Doyle, A., and Griffiths, J.B., (2000), Cell and Tissue Culture for Medical Research, John Wiley and Sons.
4. Chawla, H.S., (2002), Introduction to Plant Biotechnology, 2nd Ed., Science Publisher

UZO-430 Cell and Tissue Culture-I (Lab.)

Cr. (1)

Course Objectives:

The objective of the course is:-

1. To provide students with a thorough understanding of the importance of cell, tissue and organ culture and its application in life sciences.

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. **EXPLAIN** the various components of cell and tissue culture media, e.g. minerals, growth factors, hormones and what governs the choice of components
2. **UNDERSTAND how to initiate, grow and harvest eukaryotic cells and their uses.**

Course Contents:

Isolation of Liver cells; Cell culture in vitro.

Teaching-Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

Assignments

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessments and Examination

Sessional Work:	25 marks
Midterm Exam:	35 marks
Final term Exam:	40 marks