

Name of the Programme: M. Sc. Zoology

Course Code: ZOO-603

Title of the Course: Animal Cell culture (Practical)

Number of Credits: 03

Effective from AY: 2023-24

Pre-requisites for the Course:	Basic knowledge of anatomy, cell biology and laboratory setup	
Course Objectives:	1. To provide aseptic environment for cell culture 2. To defend the sterilization techniques 3. To design the isolation techniques based on cell types to attain successful cell culture 4. To improvise the isolation and characterization techniques based on the hands on experience gained during the course	
Content:	Module 1 Sterilization of Animal cell culture/Tissue culture Room Preparation of Laminar Flow hood for cell culture Sterilization techniques: Steam & Hot Air Preparation and sterilization of medias and buffers	15 x 2 hours
	Module 2 Isolation and inoculation of gill cells from bivalves by mechanical (trituration) dissociation Isolation of mantle cells from bivalves by explant culture method Isolation of siphon cells from bivalves by enzymatic (Trypsinization) dissociation Isolation and culture of cells from hepatopancreas of prawns/crabs Isolation and primary culture of hepatocytes from fish	15 x 2 hours
	Module 3 Primary cultures of fibroblast from chick embryo. Isolation and maintenance of chicken embryonic stem cell from blastoderm. Isolation and culture of chicken cartilage Stem/Progenitor cells. Isolation and inoculation of mesenchymal stem cells from chicken compact bones.	15 x 2 hours

	Isolation and culture of dermis-derived mesenchymal Stem/Progenitor cells from chick embryo.	
Pedagogy:	Practicals/tutorials/self-study/videos//mini projects/Group activities	
References/ Readings:	1. A. A. Boulton, G. B. Baker and W. Walz Practical cell culture techniques (Vol. 23). Totowa, New Jersey: Humana Press, 1992. 2. R. I. Freshney, Culture of animal cells: a manual of basic technique and specialized applications. John Wiley & Sons, 2015. 3. R. Lanza, J. Gearhart, B. Hogan D. Melton, R. Pedersen, E. D. Thomas, and J. A. Thomson, Essentials of stem cell biology, Elsevier, 2005. 4. J. Masters, Animal cell culture: a practical approach (Vol. 232). OUP Oxford, 2000. 5. J. Mitsuhashi, Invertebrate tissue culture methods. Springer science & business media, 2002.	
Course Outcomes:	The Learner will 1. Use sterile techniques and sterile environment for cell culture 2. Choose the isolation techniques best suited for any particular cell culture 3. Compare the isolation techniques 4. Modify the isolation and maintenance as per the need of the cells for better growth and proliferation of cell culture	