

Semester:	06		
Course Code:	ZOOL 32733		
Course Name:	Aquaculture		
Credit Value:	03		
Status:	Optional for the BSc degree. Compulsory for the BSc Honours in Zoology degree.		
Pre-requisite:	ZOOL 12703		
Co-requisites:	None		
Hourly Breakdown:	Theory	Practical	Independent Learning
	30	45	75

Intended Learning Outcomes:

After completion of this course unit, the student will be able to:

1. demonstrate knowledge of the major taxa of interest to aquaculture including finfish, molluscs, crustaceans and algae,
2. compare different types of aquaculture practices and suggest suitable culture systems and species for different geographical locations,
3. apply knowledge in induced breeding, hatchery and nursery rearing and grow out culture of selected edible aquatic species,
4. describe strategies adopted in managing feed and water quality in sustainable aquaculture production systems
5. demonstrate skills in breeding and commercial production of selected ornamental fish and aquatic plant species, and
6. apply knowledge in identifying diseases and suggesting disease preventive and control strategies.

Course Content:

Aquaculture: definition, cultured aquatic species; characteristics of aquaculture, aquaculture systems, monoculture, polyculture and integrated aquaculture methods; Selection of species and sites for aquaculture.

Freshwater food fish culture: hatchery, nursery and grow out culture practices, harvesting and marketing of Asian major carps. Hormonal control of fish reproduction, induced breeding of carps and catfishes. Reproduction of tilapias, techniques of fry production; mono sex culture; Inter-specific hybridization, Genetically Male Tilapia (GMT) production.

Shrimp culture: Life history phases of shrimp (*Penaeus monodon*, *P. vannamei*), induced breeding, larval quality assessment and rearing, culture pond preparation, water quality and feed management.

Ornamental fish culture: Types of aquaria, setting up of an aquarium; Ornamental fish breeding methods and culture practices, Aquatic plant propagation and culture practices.

Fish nutrition: Feed ingredients, nutrients, mineral and vitamin requirements of fish, aquaculture feed types and live feed production.

Mollusc and seaweed culture systems and practices.

Fish and shrimp health management: common fish and shrimp diseases, symptoms, identification and treatment.

Laboratory sessions and field studies: Cultured freshwater / brackish water / marine fish, shrimp / prawn, mollusc and crab species identification, desirable features of cultured aquatic species, ornamental fish and aquatic plant species identification, setting up of an aquarium, aquaculture feed ingredients and types, infusoria culture (*Daphnia/ Moina/ Paramecium*), identification of fish and shrimp diseases and control methods, on farm management of feeding and water quality, production of healthy fish/shrimp, field studies at an ornamental fish and a shrimp farm.

Teaching /Learning Methods:

A combination of lectures, laboratory and field practical sessions, field studies, computer-based learning, self-studies and small group discussions.

Assessment Strategy:

Continuous assessment and end of semester examination. Percentage given for each sub-component indicates the percent contribution to the final marks.

Continuous Assessment 30 %		Final Assessment 70 %		
Details:		Theory 50 %	Practical 20 %	Other -
Quizzes	5 %			
Field based assignments	10 %			
Practical reports	15 %			

Recommended Readings:

1. Stickney, R. R. (2017). Aquaculture: An Introductory Text, CABI (Publisher).
2. Pillay, T. V. R. & M. N. Kutty (2005). Aquaculture: Principles and Practices, Wiley.
3. Abilio, C. (2016). Handbook on Freshwater Aquaculture, Scitus Academics LLC.
4. John, S. L., C. S. Paul & S. T. Craig (2019). Aquaculture: Farming Aquatic Animals and Plants, 3rd Edition, Wiley-Blackwell.
5. Frederick, S. B. K & D. P. Mark (2020). Aquaculture Health Management: Design and Operation Approaches, Elsevier Science.
6. Epa, U. P. K. (2016). A comprehensive guide to ornamental fish culture in Sri Lanka. Godage International Publishers, Colombo.
7. Millamena, O. M., M. C. Relicardo & P. Felicitas (2002). Nutrition in Tropical Aquaculture: Essentials of Fish Nutrition, Feeds, and Feeding of Tropical Aquatic Species. Southeast Asian Fisheries Development Center.