

Lecture Plan							
Name of the College: Government College of Arts, Science and Commerce. Sanquelim - Goa							
Name of Faculty: Miss. Ayesha E. Shetkar			Subject: Zoology				
Paper code: ZOO 133 – Aquarium Fish Keeping			Program: F.Y.B.Sc.			Division: -	
Academic year: 2024-25			Semester: II			Total Lectures: 15	
Course Objectives: 1. Understand the basic principles of aquarium fish keeping, including water quality, filtration, and habitat requirements. 2. Outline the techniques of rearing /maintaining fishes in an aquarium. 3. Identify the requirements for an Aquarium fabrication. 4. Examine strategies for disease prevention, quarantine procedures, and treatment options for sick fish.							
Expected Course Outcome: 1. Explain the biology of aquarium fishes, their nutritional requirements and care. 2. Identify the requirements for setting up and maintenance of an aquarium. 3. Evaluate aquarium fish diseases based on common symptoms. 4. Demonstrate construction of an aquarium set-up.							
Student Learning Outcome: The students will gain knowledge of species of aquarium fishes, plants, favourable conditions to grow fish in an aquarium.							
Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
December 2024	9th	14th	1	Topic 1: Introduction: Definition of an Ornamental fish, aquarium, Aquariculture		Power point	1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991.

				and Aquarists. Benefits of Aquarium Fish Keeping		presen tation	<p>2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996.</p> <p>3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972.</p> <p>4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998.</p> <p>5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.</p>
	16th	21st	1	Topic 2: Types of Aquarium fishes (Exotic, Endemic and indigenous species; Fresh water& Marine water aquarium fishes; Surface feeders		Power point presen tation	<p>1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991.</p> <p>2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996.</p> <p>3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972.</p> <p>4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998.</p> <p>5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.</p>
January 2025	2nd	11th	1	Topic 3: Column feeders, Bottomfeeders; Carnivores, Omnivores, Herbivores with two examples of each type		Power point presen tation	<p>1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991.</p> <p>2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996.</p> <p>3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972.</p> <p>4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998.</p> <p>5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.</p>
	13th	18th	1	Topic 4: Importance of Aquarium Plants		Power point	<p>1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991.</p>

					presen tation	<p>2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996.</p> <p>3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972.</p> <p>4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998.</p> <p>5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.</p>
	20th	25th	1	Topic 5: Types of Aquaria	Power point presen tation	<p>1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991.</p> <p>2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996.</p> <p>3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972.</p> <p>4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998.</p> <p>5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.</p>
Februar y 2025	27th	1st Feb	1	Topic 6: Factors need to consider when selecting Aquarium Fish: Water and Water parameters required; Size of the fish and thefish tank; compatibility(water conditions, behavioural patterns, food requirements and feeding habits; Health of the fish, Aquarium equipment)	Power point presen tation	<p>1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991.</p> <p>2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996.</p> <p>3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972.</p> <p>4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998.</p> <p>5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.</p>
	3rd	8th	1	Topic 7: Ornamental fish transportation	Power point	<p>1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991.</p>

					presen tation	<p>2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996.</p> <p>3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972.</p> <p>4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998.</p> <p>5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.</p>
	10th	15th	1	Topic 8: Types of fish feed - Artificial	Power point presen tation	<p>1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991.</p> <p>2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996.</p> <p>3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972.</p> <p>4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998.</p> <p>5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.</p>
	17th	22th	1	Topic 9: Types of fish feed - Live	Power point presen tation	<p>1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991.</p> <p>2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996.</p> <p>3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972.</p> <p>4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998.</p> <p>5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.</p>

March 2025	24th	1st March	1	Topic 10: Common aquarium fish diseases	Power point presen tation	1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991. 2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996. 3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972. 4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998. 5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.
	3rd	8th	1	Topic 11: Common aquarium fish diseases	Power point presen tation	1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991. 2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996. 3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972. 4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998. 5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.
	10th	15th	1	Topic 12: Important points to be considered while choosing a place for aquarium set up : Sunlight, Accessibility, Noise, Visibility, Electrical Sockets, etc. (Power point presen tation	1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991. 2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996. 3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972. 4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998. 5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.

	17th	22nd	1	Topic 13: The potential scope of Aquarium Fish Industry as a Cottage Industry and budget for setting up an Aquarium Fish Farm as a Cottage Industry		Power point presentation	1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991. 2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996. 3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972. 4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998. 5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.
	24th	29th	1	Topic 14: The potential scope of Aquarium Fish Industry as a Cottage Industry and budget for setting up an Aquarium Fish Farm as a Cottage Industry		Videos	1. A. V. G. Jhingran, Fish and Fisheries of India. Hindustan Publishing Co., 1991. 2. J. D. Jameson, and R. Santhanam. Manual of ornamental fisheries and farming technology. Fisheries College and Research Institute, Thoothukudi, 1996. 3. J. E. Baradach, J. H. Ryther, and W.O. McLarney, Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms. NewYork: Wiley Interscience, 1972. 4. M. Beazley, The complete guide to tropical aquarium fish care. London: Read and Consumes Book Ltd., 1998. 5. R. K. Rath, Freshwater Aquaculture. India: Scientific Publishers, 2000.
April 2025	31st	11th	1	Topic 15: Revision		Videos	

*** Assessment
Rubrics**

Component	Max Marks
ISA 1	5
ISA 2	5
Practical	--
Project	--
Semester End Exam	20