



बिरसा मुंडा ट्रायबल युनिवर्सिटी Birsā Munda Tribal University

राजपिपला, जि. नर्मदा Rajpipla, Dist. Narmada

Established by Tribal Development Department, Govt. of Gujarat

School of Science B.Sc. (Zoology) Programme

Subject Code & Name: BS05MIZOO3 Fisheries and Parasitology

Teaching and Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
2	-	2	4	25 %	25 %	25 %	25 %

Programme Name	B.Sc. Zoology
Semester	V
Course Code	BS05MIZOO3
Course Title	Fisheries and Parasitology
Course Content Type (Th./Pr.)	Theory
Course Credit	4
Sessions + Lab. Per Week	2 + 4
Total Teaching/Lab. Hours	60 Hours
* 2 Laboratory = 1 Session	

Learning Objectives

- Scope and importance of fisheries in India, Types of fishery resources: freshwater, brackish water, marine
- Techniques: fish culture, breeding, aquaculture practices, Fish preservation, products and economics
- Common animal parasites and host-parasite relationships, parasite morphology, life cycle and control
- Apply fisheries and parasitology knowledge in various fields

Prerequisites (if any)

- Students should have basic knowledge of General Zoology, Animal Diversity, Cell Biology and Genetics, Ecology and Environmental Biology
- Basic concepts of anatomy and physiology of animals

Learning Outcomes

After completing this course, students will be able to:

- Explain fishery resources and fish farming practices.
- Demonstrate knowledge of aquaculture, hatchery management, fish preservation and fishery economics.
- Identify major parasites and explain their life cycles.
- Describe host-parasite interactions, disease transmission, preventive and control measures for parasitic diseases





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Detailed Contents		
UNIT	TOPIC/SUB-TOPIC	TEACHING HOURS
I	Fisheries Biology and Fishery Resources Brief introduction and importance of Studying Fishery Science • Definition, scope, and importance of fisheries. • History and development of fisheries in India. • Present status of fisheries in India and Gujarat. Fishery Resources • Freshwater fisheries, Brackish water fisheries and Marine fisheries. Important Cultivable Fishes: (Identification and Classification) Fish Identification and Classification: Catla, Rohu, Mrigal, Hilsa, Dara, Ghol, Bombay Duck and Pomfret. Study of Fishing Gears and Crafts: • Fishing Nets: Stringed cast net, Gill net, Drag net, Trawl net. • Fishing Boats: Dugout Canoe, Machhwa, Flat bottomed boat, Trawler boat. Fish by-products: Fish meal, Fish oil, Fish manure, Fish fertilizer, Fish silage, Fish glue, Isinglass.	15
II	General Parasitology and Parasites Introduction: • Parasite, Host and Parasitology. • Types of parasites: Facultative, Obligate, Endoparasites and Ectoparasites. • Types of hosts: Principal Host, Intermediate Host and Reservoir Host. • Host-parasite relationship Parasitic Adaptations • Morphological adaptations • Physiological adaptations • Reproductive adaptations Morphology, Life Cycle, Pathogenicity, Laboratory Diagnosis and prevention of some Protozoan and Helminth Parasites: • <i>Entamoeba histolytica</i> • <i>Leishmania donovani</i> • <i>Taenia solium</i> • <i>Wuchereria bancrofti</i>	15





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Practical

List of Practical (Practical may demonstrated using charts, models and multimedia videos)

1. Study the identification and classification of cultivable fishes: Catla, Rohu, Mrigal, Hilsa, Dara, Ghol, Bombay Duck and Pomfret.
2. Study the external morphology of freshwater, brackish water and marine fishes.
3. Study fish scales and fin types in different fishes.
4. Study the fishing gears: cast net, gill net, drag net and trawl net.
5. Study the fishing crafts: dugout canoe, Machhwa, flat bottomed boat and trawler boat.
6. Study fish by-products: fish meal, fish oil, fish manure, fish fertilizer, fish silage, fish glue and isinglass.
7. Study fish preservation and processing methods through demonstration.
8. Study the identification and classification of common parasites: *Entamoeba histolytica*, *Leishmania donovani*, *Taenia solium* and *Wuchereria bancrofti*.
9. Study the morphology of protozoan and helminth parasites using permanent slides/charts.
10. Study morphological, physiological, and reproductive adaptations of parasites through charts/models.

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Text Book(s)

1. Nirav College Zoology – 204 for B.Sc. Students by Mihir Suthar, Haresh Patel and Kamlesh Shah
2. Fisheries and Aquaculture by A. D. Dholakia, Saraswati Book Depot, Ahmedabad
3. Economic Zoology by Shukla and Upadhyay, Rastogi, Meerut
4. Fish and Fisheries by V. K. Tandon and K. K. Sharma, Narendra Publishing House
5. Parasitology by K. D. Chatterjee, CBS Publishers & Distributors
6. Medical Parasitology by Arora and Arora, CBS Publishers & Distributors
7. Aquaculture Principles and Practices by T. J. Pandian, Narendra Publishing House
8. A Textbook of Fish Biology and Indian Fisheries by R. P. Parihar. Publication: Central Publishing House
9. A Textbook of Fish Biology and Fisheries by S.S. Khanna and H.R. Singh, Narendra Publishing House
10. Aquaculture and Fisheries by Arumugam, Saras Publication, Kotter
11. Text book of Parasitology by Dr. Dev Bhattacharya, wave Books publication, Delhi

Reference Books

1. Fishery Science and Indian Fisheries by S. S. Khanna and H. R. Singh, Central Book Depot, Allahabad
2. Freshwater Aquaculture by R. K. Trivedi, Pointer Publishers
3. General Parasitology by Thomas C. Cheng, Academic Press
4. Foundations of Parasitology by Larry Roberts and John Janovy, McGraw-Hill Education
5. Fish Biology, Fisheries and Aquaculture by A. A. Ayyappan, Daya Publishing House
6. Nirav College Zoology – 201 for B.Sc. Students by Mihir Suthar, Haresh Patel and Kamlesh Shah
7. Modern Textbook of Zoology Invertebrate zoology by R.L. Kotpal, Rastogi Publications, Meerut





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Web Resources

1. Central Institute of Fisheries Education (CIFE) – <https://www.cife.edu.in>
2. Indian Council of Agricultural Research (ICAR Fisheries) – <https://icar.org.in>
3. Central Marine Fisheries Research Institute (CMFRI) – <https://www.cmfri.org.in>
4. Central Inland Fisheries Research Institute (CIFRI) – <https://www.cifri.res.in>
5. NCBI Bookshelf – <https://www.ncbi.nlm.nih.gov/books>
6. CDC Parasites – <https://www.cdc.gov/parasites>
7. WHO Parasitic Diseases – <https://www.who.int/health-topics/parasites>
8. FAO Fisheries and Aquaculture – <https://www.fao.org/fisheries>
9. FishBase – <https://www.fishbase.se>
10. Aquaculture India – <https://aquacultureindia.org>

L:: Lecture, **T::** Tutorial, **P::** Practical

CCE:: Continuous and Comprehensive Evaluation

(CCE Theory includes Mid Semester Examination, Assignment, MCQ quizzes, Seminar, Reflective notes, class participation, case analysis and presentation, slip tests (announced/ surprised), attendance etc. or any combination of these)

PWE:: Practical Work Examination

(PWE includes Laboratory practical work, project work, viva simulation exercise work etc.)

SEE:: Semester End Evaluation

