

**SWAMI RAMANAND TEERTH MARATHWADA
UNIVERSITY, NANDED**

SYLLABUS EFFECTIVE FROM JUNE - 2011

B.Sc Third year Vth semester

Subject: - Fishery Science

Theory Paper - XII Indian Fisheries and Mericulture. Marks 50

Unit - I

Study of estuarine and marine fisheries:- classification, external feature distribution, food & feeding, reproduction and fishing.

- 1) Sardine Fishery.
- 2) Bombay duck fishery.
- 3) Mackerel Fishery.
- 4) Prawn Fishery.

Unit – II

- 1) Hilsa Fishery.
- 2) Pomfreet Fishery.
- 3) Mollusk Fishery, (Cephalopod, Chunks).
- 4) Chika lake Fishery.

Unit - III

1) **Mericulture:-**

- 1) Prawn Culture.
- 2) Mussel Culture (Edible oyster)
- 3) Perl oyster culture.
- 4) Seaweed culture.

Unit - IV

Important Estuaries of India and there fisheries.

- 1) Hooghly-Malta estuary
- 2) Chilka lake
- 3) Pulicat lake
- 4) Kolleru lake .

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B.Sc Third Year V Semester

Subject: - Fishery Science

Theory Paper – XIII

Fish Nutrition and Feed Manufacturing

Marks: 50

Unit I

I) Ingredients for Fish Feed Manufacturing

- a) Introduction
- b) Mill by-products
- c) Oil Extractives
- d) Animal by-products
- e) Miscellaneous

Unit II

II) Anti-oxidants in compounded feeds

- a) Introduction
- b) Criteria for selecting feed Anti-oxidants
- c) Commonly used feed Anti-oxidants
- d) Functional effect of Anti-oxidants
- e) Level of anti-oxidant usage in feed
- f) Other effect on Anti-oxidant in feed

III) Storage problems of Feedstuffs

- a) Introduction
- b) Insects
- c) Micro-organisms
- d) Deteriorative changes in stored feed stuffs
- e) Storing feedstuffs

Unit III

IV) Stability of micro-ingredients in fish feed

- a) Introduction
- b) Selection of Micro-ingredient sources
- c) Stability of micro-ingredient
- d) Diluents for premixes

V) Fish Feed Formulation

- a) Introduction
- b) Balancing crude protein level
- c) Steps in feed formulation
- d) Best-buy techniques

Unit IV

VI) Material Flow in Feed Manufacturing

- a) Introduction
- b) Receiving
- c) Processing
- d) Packaging
- e) Storage and distribution

VII) Feed Milling Processes

- a) Introduction
- b) Grinding
- c) Mixing
- d) Pelleting

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SYLLABUS EFFECTIVE FROM JUNE - 2011

B.Sc Third year VI Semester

Subject: - Fishery Science

Theory Paper – XIV

Aquarium keeping, Fish Genetics,

Mark 50

Unit - I

Fish Aquarium

- 1) Introduction
- 2) Types of an aquarium.
- 3) Importance of an aquarium.
- 4) Accessories of an aquarium.
- 5) Aquarium fabrication.
- 6) Setting of an aquarium.

Unit – II

- 1) Care and maintenance of an aquarium.
- 2) Maintenance of aquarium water quality.
- 3) Aquarium fishes.
- 4) Aquarium plants.
- 5) Types of fish food of Aquarium fishes.
- 6) Aquarium fish diseases and their control.

Unit - III

Fish Genetics :

- 1) Introduction
- 2) Fish genetic (germ plasm) resources.
- 3) Application to genetic approach to fisheries management.
 - a) Capture fishery management
 - b) Fish culture management.
- 4) Cryopreservation of gamete (Gen banking)
- 5) Cryopreservation technique for sperm..
- 6) Sterile fish.

Unit IV

Biotechnology and aquaculture.

1) Genetic engineering And Aquaculture

- A) Genetic engineering method
 - a)Genomic manipulation
 - i)Indirect manipulation:- Intraspecific hybridization, Inetrspecific hybridization, Intergenic hybridization,
 - ii) Direct manipulation:- Gynogenesis,Androgenesis,Polyploidy.
 - b)Gene Transfer
- B) i) Artificial gynogenesis, androgenesis, sex reversal, and polyploidy
- ii) Transgenic fishes, Inbreeding, Cross breeding, selective breeding, breeding technique in ornamental fishes.

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SYLLABUS EFFECTIVE FROM JUNE - 2011

B.Sc Third year VI Semester

Subject: - Fishery Science

Theory Paper – XV

Fish Economics, Management & Extension

Mark 50

Unit I

Fish Economics :-

- 1) Definition and application of economic principles fisheries.
- 2) Fish marketing and importance of marketing and management.
 - 1) Characteristics of fish marketing
 - 2) Channels and stages of fish marketing
 - 3) Factors affecting fish marketing patterns
 - 4) Marketing regulation.
 - 5) Fish export trade
 - 6) Marketing infrastructure.
 - 7) Analysis of price making forces of different stages in the marketing.

Unit II

- 3) Fisheries Co-operatives:-
 - 1) Principles of co-operatives
 - 2) Legal status of cooperatives
 - 3) Structure and function of fisherman co-operatives.
 - 4) Problems of fisherman Societies & remedial menses.
 - 5) Welfare schemes of fisherman.
 - 6) Training programme in fishing & Fish processing.

Unit - III

Fisheries Extension :

- 1) Extension education objectives and principles.
 - 1) Need of education objectives and principles.
 - 2) Indian fishing communities & their social status.
 - 3) Role of extension activities in fishing community development.
 - 4) Role of FFDA (Fish former development agency).

Unit - IV

- 1) Role of remote sensing, in fishery.
- 2) Indian Exclusive economic zone (EEZ).
- 3) Indian Fisheries Act strategies for exploitation of deep sea & Shore fisheries.
- 4) Organization setup of fisheries sector of states, central level.
- 5) Commercial Fisheries Institution of Indian CIFE, CMERI, CIFT.

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SYLLABUS EFFECTIVE FROM JUNE - 2011

B.Sc IIIrd Year Semester V&VI

Fishery Science

Practical Paper – XVI

50Marks

- 1] Identification, classification and commercial importance of following fishes.
A)1) Sardine 2) Mackerel 3) Bombay duck 4) Sole fish 5) Pomfret
B)1) Ribbon fish 2) Hilsa 3) Mugil 4) Etroplus 5)
- 2] Peanus indices 2) Peanus Monodon 3) Edible oyster 4) Peral oyster
5) Sepia 6) Loligo 7) Chunks.
- 3] Study locally available feed ingredients (any 5)
- 4] Study of tools used in fish feed manufacturing (any 5)
- 5] Packing and storage of feed stuffs
- 6] Study of insects & microorganism affecting the feeds storage
- 7] Formulation of feed for herbivorous fishes
- 8] Formulation of feed for carnivorous fishes
- 9] Estimation of crude protein from feed ingredients and feed
- 10] Estimation of lipid from feed ingredients and feed
- 11] Estimation of carbohydrate from feed ingredients and feed
- 12] Estimation of vitamin from feed ingredients and feed.
- 13] Collection and submission of locally available feed ingredients
- 14] Submission of preparing fish feed.

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SYLLABUS EFFECTIVE FROM JUNE - 2011
B.Sc IIIrd Year Semester V&VI.
Fishery Science.
Practical Paper – XVII.

Mark50

- 1] Identify and describe the aquarium accessories with their use and maintains. (any five).
- 2] Preparation of an aquarium tank of suitable size
- 3] Setting of aquarium.
- 4] Maintenance of an aquarium.
- 5] Identify classify and describe an aquarium fishes (any five).
- 6] Identify and describe an aquarium plants (any five).
- 7] Isolation and estimation of DNA from any locally available fish
- 8] Project report submission on any one aspect
 - 1) Aquarium fishes.
 - 2) Breeding Techniques in aquarium fishes.
 - 3) Case study of fishing co-operating study.
- 9] Calculate per hectore income by traditional method of fish cultivation and intensive method of fish cultivation from given data.
- 10] Case study of price determination of fish from local fish market.
- 11] Visit to cooperative society (at least two) and submit report.

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B.Sc V & VI Semester

Subject :- Fishery Science

List of Reference Book Theory Paper –XII,XIII,XIV&XV

- 1] Marine fisheries by Dr. Bal & K. Virbhadrarao.
- 2] Fishery science and Indian fisheries by C.B.L. Shrivastav.
- 3] The Economic of Fisheries management of Anderson L 1977 & John Hapkins.
- 4] Fish economic by P.S. Rao
- 5] Fishery economic and Introduction by cunningan Dunn whit masesh, (1985) Marshall st. martins.
- 6] Marketing management by Kothar P 1988 prentice Halt.
- 7] Extension Education by Adivia Reddy 1976 & Bapatlal.
- 8] Aquaculture Extension Gibbons M.J. & R. Shrider 1983 peace cons. In formation collection Exchange manual M 18.
- 9] A Text book of aquaculture. M.Srinivasulu Reddy, K.R.S. Sambasiva Rao.
- 10] A Text book of fish, fisheries and technology K.P.Biswas
- 11] Hand Book of fish aquarium Dr.C.J.Hiware, Dr.(Mrs.) S.R.Sonawane.
- 12] Aquaculture and aquarium keeping. S.P.Chavan, M.S.Kadam, S.D.Niture.
- 13] Fish feed Technology-FAO/UNDP/REP/80/11 Fisheries and agriculture Dept.

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SYLLABUS EFFECTIVE FROM JUNE - 2011
B.Sc V&VI Semester
Fishery Science
Practical Paper – XVI**

Time: 3 hrs

Marks: 50

- | | | |
|----|---|----|
| 1] | Identify, Classify and comments on commercially Important Marine fishes. (Any five) | 10 |
| 2] | Identify, Classify and comments as per instruction (1 brackish water prawn, 1 marine prawn, two mollusks & one aquatic weed). | 10 |
| 3] | Identify & describe fish feed ingredients (any two) | 06 |
| 5) | Estimation of protein /Carbohydrate /Lipid from fish feed | 10 |
| 6] | Submission of fishing crafts & gears model, prepared fish feed and feed ingredients. | 04 |
| 7] | Record book & viva-voce & Excursion report. | 10 |

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B.Sc V&VI Semester
Fishery Science
Practical Paper – XVII**

Time: 3 hrs

Marks : 50

1]	Identify and Comments on use of aquarium accessories (any four)	08
2]	Fabrication of glass aquarium glass (cutting, glass fitting)	08
3]	Identify& describe aquarium fish & aquarium plant.(Two each)	08
4]	Estimation/Isolation of DNA from locally available fish	08
5]]	Submission of collection of culturable fishes, Fish feed & Fertilizers.	06
6]	Submission of project report on fish marketing /fisheries co-operative society	06
7]	Record book & viva voce.	06