UZO-473 Fish Physiology and Breeding-II Cr. (2)

Course Objectives

The objectives of the course are:-

1. To provide sufficient knowledge about all physiological phenomena in fishes.
2. To provides practical information to obtain better growth by following physiological aspects during extensive or semi-intensive culture.
3. To emphasize thoroughly in breeding of most cultivable freshwater fishes by manipulating reproductive and endocrinological aspects during natural season as well as off seasons.

Learning outcomes

Upon successful completion of the course, the student will be able to:

1) **Relate** the key concepts of fish physiology and breeding techniques.
2) **Describe** the different systems and their coordination.
3) **Assess** problems associated with natural and artificial breeding.
4) **Determine** the fish production with relation to induced breeding.
5) **Judge** the fish behavior and migration patterns**.**
6) **DEMONSTRATE** the various organs by dissecting the fish and also collection of ill fishes for better understanding of various diseases.

Course Contents:

- Gonads; Testes and ovaries;
- Maturation;
- Reproductive cells (egg and sperm);
- Fertilization of sex cells.

Breeding:

- Natural (seasonal); Artificial;
- Hormonal induced breeding;
- Temperature & photoperiod;

Growth:

- Extensive culture (due to the consumption of natural food);
- Semi-intensive culture (due to natural & artificial food);
- Intensive culture (due to only dry concentrates).

Fish health:

- Water quality;
- Hygiene of fish culture facilities;
- Hygiene of equipments used in fish culture.

Diseases and their control:

- Viral;
- Bacterial;
- Fungal;
- Parasitic;
- Protozoan;
- Helminths (trematodes, cestodes, nematodes, acanthocephalons); Crustaceans (cladocera);
- Annelids (leeches); Arthropods (water ticks, water flea, water mites).

Fish migration:

- To nursery ground;
- To maturation grounds;
- Freshwater to marine water;
- Marine water to freshwater.

Fish behaviour:

- Learning and memory;
- Light response for maturation;
- Courtship behaviour;
- Aquarium fish behavior

Teaching-Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

Assignments

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessments and Examination

Sessional Work:	25 marks
Midterm Exam:	35 marks
Final term Exam:	40 marks

Books Recommended

1. Kestin, S. C. and Warris, P.D. (Editors). Kestin Farmed Fish Quality, 2002, Blackwell Science, Oxford, UK.
2. Saksena, D.N. Ichthyology: Recent Research Advances. 1999. **Oscar Publications. India.**
3. Woo, P.T.K Fish Diseases and Disorder. Vol 1. Protozoan and Metazoan Infections. 1995. CABI Publisher.
4. Brenabe, G. Aquaculture, Vol. I. 1992. Blackwell Publishing, Oxford. UK.
5. Maseke C. Fish Aquaculture. 1987. Pergamon Press, Oxford. UK.
6. Huet M. Text Book of Fish Culture: Breeding and Cultivation. 1973. Blackwell Publishing Company
7. Hoars, W.S. Fish Physiology. 1971. Academic Press. UK.
8. Hoars, W.S. Fish Reproduction. 1969. Academic Press. UK.
9. Matty, A.J. Fish Endocrinology. 1985. Timber Press, UK.
10. Gorbman, A. Comparative Endocrinology. 1st Edition. 1983. John Wiley & Sons. UK
11. Shammi, Q.J. and Bhatnagar, S. 2002. Applied Fisheries, Agro bios, India.
12. Ali, S.S. 1999. Fresh Water Fisher Biology. Naseem Book Depot, Hyderabad.

UZO-474 Fish Physiology and Breeding-II(Lab) Cr. (1)

Course Objectives

The objectives of the course are:-

1. To provide sufficient knowledge about all physiological phenomena in fishes.
2. To provides practical information to obtain better growth by following physiological aspects during extensive or semi-intensive culture.
3. To emphasize thoroughly in breeding of most cultivable freshwater fishes by manipulating reproductive and endocrinological aspects during natural season as well as off seasons.

Learning outcomes.

Upon successful completion of the course, the student will be able to:

1) **Relate** the key concepts of fish physiology and breeding techniques.
2) **Analyse** the gut contents to assess feeding behavior and adaptation.
3) **Assess** problems associated with natural and artificial breeding.
4) **Determine** the dosages of various hormones for different fish species with relation to induced breeding.
5) **Judge** fish behavior and migration patterns**.**
6) **DEMONSTRATE** the various organs by dissecting the fish and also collection of ill fishes for better understanding of various diseases.
7) **Study**the fish behaviour.

Course Contents:

1. Study fecundity of various fish species,
2. Study the effects of various hormone ondifferent fishspecies with relation to induced breeding.
3. Diagnosis of bacterial infection in infected fish,
4. Study of fish parasites,
5. Visit to various fish seed hatcheries during breeding seasons
6. Study of water quality parameters (Carbon dioxide, pH and temperaturs

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