

5th SEMESTER
VETERINARY TECHNOLOGY
(COMMERCIAL FISH FARMING/AQUACULTURE)
SKILL ENHANCEMENT COURSE (SEC)

CCF520S COMMERCIAL FISH FARMING/AQUACULTURE-II (NUTRITION & BREEDING)

CREDITS: THEORY: 2, PRACTICAL: 2
MAX MARKS: THEORY: 30, PRACTICAL: 30
MIN MARKS: THEORY: 12, PRACTICAL: 12

Learning Objectives: Basic knowledge about culture techniques of some commercially important organisms, basic knowledge about the feeds, formulation and feeding.

Learning outcome: The course will give a theoretical basis and practical experience for understanding of the principles in aquatic food production especially important ones. It will also cover introduction to various nutritional requirements for better growth and production and formulation of fish feed for aquaculture.

THEORY (2 CREDITS)

UNIT 1: FISH NUTRITION

Fundamentals of fish nutrition, nutritional (carbohydrate, protein, lipids, vitamins & minerals) requirements of common aquaculture species (carps, trouts, mahseers). Feed management in aquaculture, Supplementary feeding, live fish food. Methods of feed formulation; fish feed ingredients (plant & animal based feed ingredients) and feed management in trouts, mahaseers and carps. Forms of feed: wet feeds, moist feeds, dry feeds, mash, pelleted feeds, floating and sinking pellets. Feed additives: binders, antioxidants, enzymes, pigments, growth promoters, feed stimulants.

UNIT 2: FISH BREEDING

Sexual maturity and breeding season of various cultivable species (carps and trouts). Development of gametes in male and female. Fish egg and embryonic development. Broodstock rearing and identification of commercially fish species viz, carps, trouts, catfishes, mahaseers etc. Induced breeding of carps and trouts, environmental factors affecting spawning, sympathetic breeding. Hypophysation of fishes. Fish pituitary gland — its structure, collection, preservation and preparation of extract for injection, dosages and methods of injection. Brood-stock management & larval rearing and transportation of brood fish. Synthetic hormones used for induced breeding of carps.

PRACTICALS (2 CREDITS)

Proximate composition analysis of feed ingredients and feeds. Preparation of artificial feeds using locally available feed ingredients. Determination of sinking rate and stability of feeds. Culture of live fish food (Infusoria, tubifex, earthworm). Captive breeding in carps and trouts. Study of egg, embryonic and larval development of carps & trouts. Water quality management in aqua-hatcheries (Carp & trout). Packing and transportation live fish & fish seed. Visit to different hatcheries. Visit to Manasbal & Kokernag feed manufacturing units of J& K Govt.

BOOKS RECOMMENDED

1. Lovell, R.T. 1998. Nutrition and feeding of fishes, Chapman & Hall, New York.
2. New, M.B. 1987. Feed and feeding of fish and shrimp. A manual on the preparation and preservation of compound feeds for shrimp and fish in aquaculture. F.A.O. Rome.
3. Sena S. De Silva, Trevor A. Anderson. 1995. Fish nutrition in aquaculture, Chapman & Hall Aquaculture Series, London.
4. Lakra, W.S. 2000. Fish Genetics and Biotechnology. CIFE. ICAR. Mumbai.
5. Purdom, Colise 1993. Genetics and Fish Breeding. Chapman and hall, London.