



# THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE

## *Department of Fisheries and Aquaculture Technology*

### FAT 310 - Larval Food Production

#### COURSE PARTICULARS

**Course Code:** FAT 310

**Course Title:** Larval Food Production

**No. of Units:** 2

**Course Duration:** One hour of theory and three hours of practicals per week for 15 weeks.

**Status:** Compulsory

**Prerequisite:** NIL

#### COURSE INSTRUCTORS

**Professor O. T. Adebayo**

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#### COURSE DESCRIPTION

This course is designed mainly for students in Fisheries, Aquaculture and related disciplines. The course provides applied training on the production and cultivation of freshwater finfish and shellfish larval; and production of live foods and micro algae for fish larvae. This course will impart valuable skill to the students in order to enhance their hands-on production of fish larvae and live foods for the larvae. Topics to be covered include introduction to larval cultivation of fin fish and shellfish and the necessity to produce live food. Production methods and environmental conditions for cultivating marine and freshwater finfish and shellfish larval. Principles and practices of larval food production; plankton aquaculture - *Chlorophycota*, *Bacillariopyta*, *Cyanophycota*, *Rhodophyta* *Chrysophyta*. Rotifer, copepods and micro algae culture parameters, production level reliability. Current advances in commercial-scale production of live feeds for larvae of finfish and shellfish. Preparation, culture and feeding of micro algae, rotifers and brine shrimp artemia. Artemia biology and ecology applications in aquaculture. Intensive cultivation of Artemia.

#### COURSE OBJECTIVES

The objectives of this course are to:

- introduce students to the cultivation and production of finfish and shell fish larvae. and
- provide students with opportunities to develop basic larval food production skills such as plankton aquaculture, micro algae, rotifers, copepods, brine shrimp artemia.

## COURSE LEARNING OUTCOMES / COMPETENCIES

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

*(Knowledge based)*

- highlight the importance of live food in fish larviculture;
- explain the environmental conditions necessary for the production of fish larvae;
- describe the various methods of producing finfish and shellfish larval;
- understand the biology and ecology of Artemia;
- understand the production methods for micro algae, rotifers, copepods and brine shrimp artemia.

*(Skills)*

- use the pituitary glands and hormones such as ovaprim, DOCA, ovatide to stimulate maturation and ovulation in fish;
- fertilisation and incubation of fish eggs;
- Production and culture of micro-algae;
- production of live feeds for larvae of finfish and shellfish.
  - preparation,
  - culture and;
  - feeding of micro algae to rotifers, copepods and brine shrimp artemia.

## GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Class Attendance	5%
Assignments	5%
Practicals	20
Test(s)	10%
<u>Final Examination</u>	<u>60%</u>
<b><u>TOTAL</u></b>	<b><u>100%</u></b>

## GENERAL INSTRUCTIONS

**Attendance:** In this course every student is expected to be in class for lectures and also partake in all practical trainings. Attendance will be taken in all lectures and practical sessions. The records will be kept and used to establish the suitability of the student to sit for the final examination. However, cases of illness or other inevitable cause of absence must be communicated to the course lecturer stating the reason for the absence.

**Academic Integrity:** Contravention of academic integrity, including dishonesty in assignments, examinations, or other academic performances are forbidden. All cases of academic dishonesty will be reported to the University Management for appropriate sanctions in accordance with the guidelines for handling students' misconduct as spelt out in the Students' Handbook.

**Assignments and Group Work:** Students are expected to submit assignments as at when due. Failure to submit an assignment as scheduled will earn the student zero for that assignment. Late

submission will only be allowed under justifying circumstances, for which the student has notified the lecturer.

***Code of Conduct in Lecture Rooms, Laboratories and Fish Farm:*** Students are expected to attend lectures and practical sessions punctually. Silence must be observed in class. Students should turn off their cell phones during lectures and practical sessions. Food and drinks are not permitted in the laboratories.

## READING LIST

<sup>3,4</sup>Conceicao, L.E.C., Yufera, M., Markridis, P., Morais, S. and Dinis, M.T. (2010). Live Feeds for early life stages of fish rearing. *Aquaculture Research*, 41:613-640.

<sup>4</sup>Delince, G.A., Campbell, D., Janssen, J.A.L. and Kutty, M.N. (1987). Seed Production. 114p.

<sup>5</sup>Gupta, S.K. and Gupta, P.C. (2010). General and Applied Ichthyology (Fish and Fisheries). S. Chand & Co. Ltd., 7361, Ram Nagar, New Delhi-110 055. 1133p.

<sup>1</sup>Lavens, P. and Sorgeloos, P. (1996). Manual on the production and use of live foods in Aquaculture. FAO Fisheries Technical Paper, 361 Food and Agriculture Organization of the United Nations, Rome. 267p.

<sup>1,2</sup>Pillay, T.V.R. and Kutty, M.N. (2005). *Aquaculture Principles and Practices*. Second Edition. Blackwell Publishing Ltd. UK. 624p.

### ***Legend***

- 1- Available in the University Library
- 2- Available in Departmental/School Libraries
- 3- Available on the Internet.
- 4- Available as Personal Collection
- 5- Available in local bookshops.

## COURSE OUTLINE

Week	Topic	Remarks
1	Introduction to larval cultivation of fin fish and shellfish and the necessity to produce live food.	During this first class, the anticipation of the students from the course will also be documented. Students will be introduced to the importance of live food fish larviculture.
2	Environmental conditions for cultivating marine and freshwater finfish and shellfish larval.	This will involve highlighting the various environmental conditions for the production of finfish larval.
3 & 4	Production methods for marine and freshwater finfish and shellfish larval.	Practical exercise will involve production and cultivation of fish larval.
5	Principles and practices of larval food production	This will involve explanation on basic principles and practices of larval food production.
6 & 7	Plankton aquaculture : <ul style="list-style-type: none"> <li>• <i>Chlorophycota</i>,</li> <li>• <i>Bacillariopyta</i>,</li> <li>• <i>Cyanophycota</i>,</li> <li>• <i>Rhodophyta</i></li> <li>• <i>Chrysophyta</i>.</li> </ul>	Students will be taught on the importance of plankton in aquaculture and the differences between <i>Chlorophycota</i> , <i>Bacillariopyta</i> , <i>Cyanophycota</i> , <i>Rhodophyta</i> <i>Chrysophyta</i>
		<b>MID-SEMESTER TEST</b>
8 & 9	Rotifer, copepods and micro algae culture parameters and production level reliability.	Practical demonstration will be carried out by the lecturer/Technologist.

10	Current advances in commercial-scale production of live feeds for larvae of finfish and shellfish.	Students will be divided into groups and given tanks to culture <i>Daphnia</i> and <i>Moina spp.</i>
11 & 12	Artemia biology and ecology; Applications in aquaculture. Intensive cultivation of Artemia.	Students will be taught the biology and ecology of artemia and feeding and enrichment for artemia .
13&14	Preparation, culture and feeding of micro algae, rotifers and brine shrimp artemia.	Students will prepare and culture their own micro-algae and used the micro-algae to feed their rotifers.
15	REVISION	This is the week before the final examination. At this time, assessment will be done to evaluate how far the students' expectations for the course have been met.