



மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகம்  
**MANONMANIAM SUNDARANAR UNIVERSITY**

**SYLLABUS FOR DIPLOMA IN AQUACULTURE TECHNOLOGY PROGRAM  
OFFERED THROUGH DIRECTORATE OF VOCATIONAL EDUCATION  
(COMMUNITY COLLEGES AND VOCATIONAL SKILL DEVELOPMENT CENTRES)  
FROM 2019 - 2020**



கல்விசார் நிலைக்குழுக் கூட்டம்

**MEETING OF THE STANDING COMMITTEE ON  
ACADEMIC AFFAIRS HELD ON WEDNESDAY  
THE 22<sup>nd</sup> JANUARY 2020**

**DIPLOMA IN AQUACULTURE TECHNOLOGY**

மீன்வளாப்புத் தொழில்நுட்பத்தில் பட்டயம்

**SCHEME OF EXAMINATION**

Subject code	Title of the Course	Credit	Hours	Passing Minimum
<b>Semester I</b>				
C19AQ11/E19AQ01	Introduction to Aquaculture Technology	6	90	40/100
C19AQ12/E19AQ02	Fresh water Aquaculture	6	90	40/100
C19AQ13/E19AQ03	Mariculture	6	90	40/100
C19CE10/E19CE10	Communicative English	6	90	40/100
C19AQP1/E19AQP1	Practical I - Covering first 3 Courses	4	120	40/100
<b>Semester II</b>				
C19AQ21/E19AQ04	Hatchery Technology	6	90	40/100
C19AQ22/E19AQ05	Fish Pathology and Health Management	6	90	40/100
C19LS23/E19LS05	Life skill	6	90	40/100
C19AQ24/E19AQ06	Live feed and Artificial feed Technology	6	90	40/100
C19AQP2/E19AQP2	Practical II - Covering first 3 Courses and Internship	8	120	40/100

**Eligibility for admission:** Pass in 10<sup>th</sup>std examination conducted by the Govt. of Tamil Nadu Board of Secondary Education, Government of Tamil Nadu or any other equivalent examination.

**Examination:** Passing Minimum for each Course is 40%. Classification will be done on the basis of percentage marks of the total marks obtained in all the Courses and as given below:

- 40 % but less than 50 % - Third class  
 50 % but less than 60 % - Second class  
 60 % and above - First class

**Syllabus**

**First Semester:-**

- Course I - Introduction to Aquaculture Technology  
 Course II - Fresh water Aquaculture  
 Course III - Mariculture  
 Course IV - Communicative English  
 Course V - Practical I- Covering first 3 Courses

**Second Semester:-**

- Course VI - Hatchery Technology  
 Course VII - Fish Pathology and Health Management  
 Course VIII - Life Skill  
 Course IX - Live feed and Artificial feed Technology  
 Course X - Practical II-Covering first 3 Courses and Internship

**\*(Semester Pattern for Community College Only)**

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## **Semester I**

### **Course I**

#### **(C19AQ11/E19AQ01)Introduction to Aquaculture Technology**

**Unit I:** **18 Hrs**

What is Aquaculture? - Objectives of Aquaculture- History of Aquaculture, Scope, Present status & Characteristics Aquaculture.

**Unit II:** **18 Hrs**

Type of Culture system: Traditional, Extensive, Modified extensive, Semi intensive, Intensive & Super intensive & their management.

**Unit III:** **18 Hrs**

Different kinds of Aquaculture- Pond culture (Fresh water & Brackish water ponds) - Running water culture- Re circulation culture- Culture in rice fields- Culture in race ways, Cages, Pens & Enclosures.

**Unit IV:** **18 Hrs**

Finfish culture- Mono Culture- Poly culture- Integrated culture system.

**Unit V:** **18 Hrs**

Types of Ponds- Hatching, Nursery, Rearing, Stocking, Brood stock ponds and their Maintenance & Management.

**References:**

1. Pillary TVR & M.A Dill. Advance in Aquaculture. Fishing news (Books) Ltd. England 1979.
2. Stickney R. R. Principles of warm water Aquaculture. John wiley& Sons Inc.1979.
3. Helpher B & Y. Prugim. Commercial Fish Farming. Jhonwilley & Sons Inc. 1981.

## Course II

### (C19AQ12/E19AQ02)Fresh water Aquaculture

**Unit I:** **18 Hrs**

Fresh water Aquaculture Resources- Ponds, Tanks, Lakes, reservoirs- Carrying capacity of ponds.

**Unit II:** **18 Hrs**

Nursery Rearing, Growout ponds preparation & Management- Control of Aquatic weeds, Algal blooms, Predatory fishes& Weed fishes.

**Unit III:** **18 Hrs**

Pond preparation, Liming fertilization/Manuring, use of Biofertilizers, Supplementary feeding- Selection, transportation and accumulation of seed & Water quality management.

**Unit IV:** **18 Hrs**

Traits of important cultivable Finfish & Shell fish and their culture methods- Indian major Carps, Exotic carps, air breathing fishes, Cold water fishes, Fresh water prawn & Mussels.

**Unit V:** **18 Hrs**

Use of Agro industrial waste & Biofertilizers in Fresh water aquaculture- Composite fish culture system of major Carps. Economics of different culture practices.

**References:**

1. Rath. A. K. Fresh water aquaculture.
2. Sattavamet *al.*, Manual of Fresh water aquaculture.
3. Huet M, text book of Aquaculture.

## **Course III**

### **(C19AQ13/E19AQ03)Mariculture**

**Unit I:** **18 Hrs**

Resources for shore based Aquaculture & Sea farming in India – Traits of important cultivable Fish & Shellfish (Seabass, Mullet, Milk fish, Grouper, Snappers, Pearl Spot, Tiger Shrimp, White Shrimp, Mud Crab, Mussels, Clams, Oysters, and Seaweed etc).

**Unit II:** **18 Hrs**

Shore based Aquaculture system- Traditional type (Paddy cum fish culture), Semi intensive and Intensive Aquaculture practice of commercially important species of Finfish & shellfish.

**Unit III:** **18 Hrs**

Methods of Aquaculture- Rafts, Racks, Cages, Poles & Ropes- Seed resources and Seed collection methods.

**Unit IV:** **18 Hrs**

Site selection & Construction of Marine ponds- Preparation of ponds, Pond productivity and Water & Soil quality management.

**Unit V:** **18 Hrs**

Estimation of growth & Survival of cultivable organisms-Seaweed culture, Pearl culture, Sea-ranching.

### **References**

1. Pillary T V R – aquaculture Principle & Practice.
2. Cheg L C – Aquaculture in Taiwan.
3. Milne P H – Fin & Shellfish farming in coastal water.
4. Ivensan E S – Farming the edge of the sea.

## Course IV

### (C19CE10/E19CE10)COMMUNICATIVE ENGLISH

#### 1. **Basic Grammar:**

- a. Review of grammar
- b. Remedial study of grammar
- c. Simple sentence
- d. Word passive voice etc.

#### 2. **Bubbling Vocabulary:**

- a. Synonyms
- b. Antonyms
- c. One – work Institution

#### 3. **Reading and Understanding English**

- a. Comprehension passage
- b. Précis – writing
- c. Developing a story from hints.

#### 4. **Writing English**

- a. Writing Business letters.
- b. Paragraph writing
- c. Essay writing
- d. Dialogue writing

#### 5. **Speaking English**

- a. Expressions used under different circumstances
- b. Phonetics

**Reference :** 1. V.H.Baskaran – “English Made Easy”

2. V.H.Baskaran – “English Composition Made Easy”

(Shakespeare Institute of English Studies, Chennai)

3. N.Krishnaswamy – “Teaching English Grammar”

(T.R.Publication, Chennai)

4. “Life Skill” – P.Ravi, S.Prabakar and T.Tamzil Chelvam,

M.S.University, Tirunelveli.

## **Course V**

### **(C19AQP1/E19AQP1)Practical- I**

#### **(Covering the first three Courses)**

1. Identification of cultivable fresh water Finfish & Shell fish
2. Collection and identification of Aquatic weeds, Insects & Predatory Fish
3. Eggs & Larval forms of Fish and Shrimp
4. Estimation of Planktons
5. Identification of cultivable Brackish water/ Marine Finfish & Shell fish
6. Collection & Identification of commercially important Seeds of Finfish and Shell fish
7. Estimation of pH and Temperature of pond water
8. Estimation of salinity of pond water
9. Estimation of Dissolved oxygen in pond water

## **Semester II Course VI**

### **(C19AQ21/E19AQ04)Hatchery Technology**

#### **Unit I:**

**18 Hrs**

Hatchery management & Seed production of Carps – Hypophysation- Pitutary gland Collection & Preservation – brood stock management – Dosage & Injection of Pitutary gland – Nursery rearing of Carp seeds.

#### **Unit II:**

**18 Hrs**

Transportation of Fish seeds – Methods of transportation, Use of Anaesthetics, Bund breeding techniques and its type.

#### **Unit III:**

**18 Hrs**

Seed production and Nursery rearing of Trout, Air breathing Fishes, Mulletts, Tilapia, Sea bass etc.

**Unit IV:****18 Hrs**

Seed production & Nursery rearing of Penaeid shrimp and Fresh water Prawn – Eye stalk ablation technique – Hatchery operation of Oysters, Clams, Crabs and Lobsters.

**Unit V:****18 Hrs**

Culture of Fish food organism – Microalgal culture, Artemia culture, rotifer culture – Disease management in Hatcheries – Quality assessment of seeds.

**Reference**

1. Chodar S L – Hypophysation in Indian major Carps
2. Hatchery operation of Penaeid Shrimps – CMFRI publication
3. Sea Fishes – MPEDA publication
4. Boney A. D. – Phytoplankton
5. Harvey B J & Hoar W S – Principle & Practices of induced Fish breeding



## Course VII

### (C19AQ22/E19AQ05)Fish pathology and Health management

**Unit I:** **18 Hrs**

Introduction to fish diseases – Pathology & Parasitology, Categories of diseases – Protozoan diseases in Finfish and Shell fish.

**Unit II:** **18 Hrs**

Fungal diseases in Finfish and Shell fish – Viral diseases in Fin fish and shell fish.

**Unit III:** **18 Hrs**

Nutritional pathology – Deficiency diseases due to Vitamins and Minerals – Aflotoxins and Din flagellates – Genetically and Environmentally induced diseases.

**Unit IV:** **18 Hrs**

General Preventive methods and Prophylaxis against the disease – Good pond management practices – Eco friendly & Sustainable aquaculture practices.

**Unit V:** **18 Hrs**

Methods of Pathological examination of Fish and Infectious diseases. Production of disease free seeds. Good feed management.

#### **References**

1. R. Ramachandran Nair – Encyclopedia of Fish disease.
2. K. P. Biswas – Prevention and Control of Fish and Prawn disease.
3. B. K. Mishra *et al.*, - Disease management in Fresh water Fish culture.
4. R. J. Roberts – Fish pathology.

**Course VIII**  
**(C19LS23/E19LS05) Life Skill**

I Life Coping or adjustment

- (a) External and internal influence in one's life
- (b) Process of coping or adjustment
- (c) Coping with physical change and sexuality
- (d) Coping with stress, shyness, fear, anger far live and criticism.

II Attitude

- (a) Attitude
- (b) Self acceptance, self – esteem and self actualization
- (c) Positive thinking

III Problem Solving

- (a) Goal Setting
- (b) Decision Making
- (c) Time Management and stress Management.

IV Computers

- (a) Introduction to Computers
- (b) M.S.Office
- (c) Power Point

V Internet

- (a) Introduction to internet
- (b) E – mail
- (c) Browsing

References:

- 1) Life Skill Programme course I & II by Dr. Xavier Alphona MCRDCE Publications. R.K.Mutt Road, Chennai – 28
- 2) ஆளுமை பண்பு வளர்த்தல் மற்றும் தகவல் தொடர்பு by M.Selvaraj Community College,Palayamkottai
- 3) “Life Skill” –P.Ravi, S.Prabahar & T.Tamil Chelvam, M.S. University, Tirunelveli

## **Course IX**

### **(C19AQ24/E19AQ06) Live feed and Artificial feed Technology**

**Unit I:** **18 Hrs**

Natural foods and its importance in Aquaculture, Nutritional quality of commonly used fish food organism.

**Unit II:** **18 Hrs**

Fish food organisms – Phytoplankton and Zooplakton and their role in larval nutrition.

**Unit III:** **18 Hrs**

Mass culture technique – Method of collection, Maintenance and Rearing fish food organisms – Culture of Micro algae, Rotifers, Artemia, Copepods, Nematodes etc.

**Unit IV:** **18 Hrs**

Formulations and Preparations of artificial feeds for larval rearing and Micro particulate diets.

**Unit V:** **18 Hrs**

Formulation and Preparations of Artificial feeds for Grow out system, Feed ingredients – Supplementary feed, Feeding practices & Feed storage.

**References:**

1. Borey A. D. – Phytoplankton
2. Live feed organisms – MPEDA publication.

## **Course X**

### **(C19AQP2/E19AQP2)Practical- II (Covering the first three Courses) and Internship**

1. Identification of Maturity stages of Shrimp / Fish
2. Collection of Pituitary gland
3. Identification of eggs and larval stages of Shrimp
4. Analysis of Artificial feed ingredients
5. Preparation of Artificial feed
6. Identification of Live feed organism
7. Hatching of Artemia
8. Identification of diseased Fish / Shrimp
9. Collection & Identification of Parasites

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