ANNAMALAI UNIVERSITY

FACULTY OF MARINE SCIENCES
CENTRE OF ADVANCED STUDY IN MARINE BIOLOGY

SELF STUDY REPORT (SSR)
(For B.F.Sc., Programme Accreditation)

Submitted to

NATIONAL AGRICULTURAL EDUCATION ACCREDITATION BOARD
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6.4. Self-Study Report for the Programme (SSR)

Undergraduate Degree Programme - B.F.Sc.,-Bachelor of Fisheries Science

Name of the programme and year of start: B.F.Sc.,-Bachelor of Fisheries Science
(Nomenclature as per ICAR V Dean's Committee)

Year of Start: 2015

6.4.1. Brief History of the Degree Programme

Annamalai University, one of the largest unitary, teaching and residential universities in South Asia, is located in a rural setup at Chidambaram in the coastal district of Cuddalore, Tamil Nadu. In the early 1920s, noble- hearted philanthropist and patron of letters Rajah Sir S.R.M. Annamalai Chettiar founded Sri Minakshi College, Sri Minakshi Tamil College and Sri Minakshi Sanskrit College at Chidambaram. In 1928, Rajah Sir S.R.M. Annamalai Chettiar agreed with the local government to handover the above said institutions to create a university. Thus, on 01.01.1929 Annamalai University was established as state university as per Annamalai University Act, 1928 (Tamil Nadu Act 1 of 1929), which was repealed and replaced by the enactment of the Annamalai University Act, 2013 (Tamil Nadu Act 20 of 2013). The University is included in the list of universities under section 2 (f) and 12 (b) of the UGC Act 1956.

A full-fledged four year degree programme Bachelor of Fisheries Science (B.F.Sc) was introduced by Faculty of Marine Sciences in Annamalai University during the academic year 2015-16. The Faculty of Marine Sciences of Annamalai University is the second seat of higher learning of Fisheries in Tamil Nadu next to the Fisheries College and Research Institute, Thoothukudi, Tamil Nadu (TNJFU). In fact the graduates of this Centre, were the first two staff members appointed in the Fisheries College and Research Institute to develop this from scratch. Subsequently during its formative years, many graduates of this centre with Ph.D. joined the college TNJFU and rose to the levels of Dean and Director of the institution. If this Fisheries College and Research Institute has blossomed as the Fisheries University in the Tamil Nadu, their toil and solid contributions are also responsible.

The genesis of Department of Fisheries Science is given chronologically here under:

1957	Establishment of Marine Biological Station (Annamalai University)
1961	Establishment of Department of Marine Biology (Annamalai University)
1963	Developed as Centre of Advanced Study in Marine Biology (UGC)
2015	Establishment of Department of Fisheries Science
2019	First batch of B.F.Sc., students graduated

Vision and Mission

Vision

- To achieve the status of a world class centre for fisheries that addresses the societal needs through innovative research, learning, teaching and extension

Mission

- To achieve excellence in academic and research pursuits in fisheries
- To develop expertise and skilled manpower in culture and capture fisheries
- To meet the challenges in the realm of fisheries at local, regional and global levels

Teaching

For an agrarian country like India, development of strong, skilful, efficient manpower to disseminate to handle newer fisheries technologies are very much essential. Considering this, Faculty of Marine Sciences of Annamalai University has tailored a broad based curriculum to impart the required knowledge, skills and attitude at UG level. Utmost care is being taken to provide the best learning process through qualified and experienced staff besides imparting practical training to the taught. Being a part of the residential University, the services of experts from allied faculties are also being utilized to expand the horizon of learning. The Faculty of Marine Sciences of Annamalai University being the pioneer institute in the country but also has produced many renowned Marine biologists. A few among them who serving in the faculty are teaching fisheries science now. The services of others who serve in various premier institutions are being made use from time to time.

The faculty has 38 well-qualified staff to teach the subjects of fisheries to UG students. To teach allied subjects such as language, statistics, computer science, physical education, yoga, fisheries engineering, fisheries business management, etc. the teaching staff and infrastructure facilities available in the respective faculties in the University campus are utilized. The institute has lecture halls with audio visual aids, library, computer centre and UG laboratories with latest equipment for conducting practical classes.The library consists of 7626 books, 601 reference books, 3140 journals in different branches of fisheries. Apart from the classroom learning, the students are being given hands-on experiences and exposures through the programmes such as RAWE, experiential learning, project work and study tour.

Research

In order to meet the emerging challenges of the farming community and to act as a nodal agency to establishing tie-up with eminent institutes and universities, need based research works are given top most priority. The teaching staff members are involved both research as well as teaching. The research programmes are regularly monitored and reviewed by Research Advisory Committee, Director of Research and funding agencies. The faculty of Marine Sciences is actively participating in various Research initiatives funded by ISRO-SAC, MOES-INCOIS, DST(BDA-HSRS), MoEF&CC, NRSC-ISRO, NIOT, WAPCOS Ltd., Water Resource Department –PWD, MOES- NCCR, WAPCOS Limited, M/S TANGEDCO, Chennai ,UGC, CSIR, DST-SERB, DST SEED, IITM-MoES, DST-SERB-ECR, CMLRE, National Fisheries Development Board (NFDB), DBT and private funding agencies. The major areas of research consist of fisheries improvement, up-scaling the fish production, EIA studies on marine ecosystem, rejuvenation and restoration of mangroves, livelihood enhancement of tribal fisher women through Crab fattening, utilization of fishery resources, land and water management. This is the only Marine institute in India which has produced 725 PhDs in Marine Biology and other allied subjects as on date. Moreover many of these theses are in fisheries science and related aspects.

This is also the only Centre recognized by UGC as Centre of Advanced Study for Marine Biology in the country.

The institute is involved in dedicated research in the frontier areas of Fisheries especially fish seed production, fisheries production practices and allied socioeconomic aspects.

Extension

Faculty of Marine Sciences plays a leading role in developing technologies to the needy besides concentrating on emerging areas of research in fisheries science. In an effort to reach the unreached, the Faculty of Marine Sciences in partnership with the State Department of Fisheries, periodically conducts farmer-scientist meets, workshops, capacity building programmes for fisherwomen and Self-help groups. The Faculty of Marine Sciences, over the past 60 years, has been catering to the needs and challenges of Indian Fisheries and tries to deliver need based technologies and human resource as per the demands of the Nation and the fisheries sector. Besides these, hands-on trainings are given to the unemployed youth, farmers and Self-help groups through programmes conducted throughout the year on seaweed cultivation, ornamental fish culture, sea ranching of marine organisms, immune molecular techniques, mushroom cultivation, value added fishery products, fish sampling techniques, marine bio-resources, biodiesel from marine algae, molecular level identification of marine fish larvae for effective management of bioresources, analytical instruments(CHNS/O and FTIR) for analysis of compounds from various bioresources, microalgae culture for large scale production, bioprospecting potential of marine ascidians, bioprocess techniques related to microbes, shrimp culture techniques, gene cloning and expression in prokaryotes.

6.4.2 Faculty Strength

The faculty of Marine Sciences has the required number of teaching staff with Fisheries background. At present, 38 staff members are serving in this faculty. Among them, 13 are Assistant Professors, 13 Associate Professors and 12 are Professors including staff for allied subjects such as fisheries engineering, basic science and humanities (rural sociology and psychology, communication skills and computer science). For teaching, statistics business management, physical education and yoga, experts are drawn from the respective Departments from the University.

S.No.	Sanctioned Faculty	Faculty in Place	Vacant Position	Faculty recommended by ICAR/UGC/VCI/ other regulatory bodies
1	**Professor**	**10+2***	**---**	**12**
2	**Associate Professor**	**11+2***	**---**	**13**
3	**Assistant Professor**	**9+4***	**---**	**13**

*Two Professor, two Associate Professor, four Assistant Professor are the faculties drawn from other departments for supportive courses.

The division-wise strength of teaching staff

S.No.	Divisions	Professor	Assoc. Prof.	Asst. Prof.	Total
1.	Aquaculture	2	2	-	**4**
2.	Fisheries Resource Management	1	2	1	**4**
3.	Aquatic Animal Health Management	2	2	1	**5**
4.	Aquatic Environment Management	1	2	2	**5**
5.	Fish Processing Technology	1	-	3	**4**
6.	Fish Engineering	2*	2*	3*	**7**
7.	Fisheries Extension, Economics and Statistics	2**	2**	2**	**6**
8.	Fish Genetics and Biotechnology	1	1	1	**3**
	Total	**12**	**13**	**13**	**38**

*One Professor, one Associate Professor and two Assistant Professors drawn from other department for fish engineering. The Engineering faculty members holding M.E., Ph.D. (Civil), M.E., Ph.D. (Mechanical) and M.E., Ph.D. (Electrical) degrees are being engaged to teach papers concerned with engineering aspects.

**One Professor, one Associate Professor and two Assistant Professors drawn from other department for Fisheries Extension, Economics and Statistics respectively.

6.4.3. Technical and Supporting staff

A total of 19 administrative and 32 technical staff are positioned to support various activities of different divisions. Apart from technical staff, 19 permanent unskilled mazdoors (PUSMs) are available to assist the faculty in teaching, lab works and research activities.

The details of administrative, technical, and supporting staff in the faculty are given below:

Divisions	Number of Staff			
	Assistant staff	Technical staff	Ministerial Staff	Clerk
Dean's office	1	2	2	2
University pond(Dean control)	1	2	2	2
Aquaculture	2	2	2	2
Fisheries Resource Management	2	3	3	3
Aquatic Animal Health Management	1	1	1	1
Aquatic Environment Management	1	1	1	1
Fish Processing Technology	1	1	1	1
Fish Engineering	1	3	3	3
Fisheries Extension, Economics and statistics	1	1	1	1
Fish Genetics and Biotechnology	2	3	3	3
Total	**13**	**19**	**19**	**19**
Grand Total				**70**

11. Floor Space Requirement

A. Central Facilities

S. No.	Details	Number of Rooms	Dimension (ft)
1	Dean Office	1	40 x 20
2	PA room	1	20 x 12
3	Committee room with video conferencing facility	1	40 x 20
4	Administrative Officer room	1	20 x 12
5	Admin. Staff rooms	3	20 X 12
6	Examination Cell	1	25 X 14
7	Evaluation room	1	80 x 60 (Centralized facility at University main campus)
8	Faculty room	1	20 X 12
9	Placement Cell	1	40 x 20
10	Smart Lecture rooms	8	40 X 20
11	Auditorium (optional)	1	80 x 50
12	Library / Book bank	1	94 x 66
13	Examination hall (optional)	1	70 X 20
14	Multipurpose room	1	20 X 12
15	Laboratories	25	20 X 12
16	Hostels	2hostels	16 X17 PER ROOM-29 Rooms 16X17 PER ROOM- 30 Rooms
17	Generator shed	1	74X34
18	Toxic Chemical waste storage / disposal unit	1	60 X30
19	Canteen	1	20X14
20	Toilets		20X12
21	Parking space	2	90X12 , 182X12
22	Vehicle: Office car, staff car / Jeep Bus/pickup van	3	70X40

* Including the supporting staff of hostels, library, sports, yoga and other centralized services.

The technical and ministerial staff are being engaged to maintain the laboratories, demonstration ponds, fish museum, hatchery, meteorological observatory, post-harvest laboratory.

Further, the clerks play a key role in monitoring the attendance, maintenance of database, preparation of academic calendar, allotment of halls, vehicles, machineries and maintenance of records etc.

The assistant staff supporting the technical staff who manage the pond, hatchery and algal unit .They are also engaged in maintaining the indoor facilities, and also supporting the conduct of practicals and experiments.

6.4.4. Classrooms and Laboratories

An exclusive block with 4 spacious halls is allotted for teaching theory classes. Each class room has the capacity to accommodate about sixty students. For imparting practical training, the registered students are divided into 2 batches. The students are allowed to have exposure and hands on training through fish farm management starting from pond preparation to harvest and marketing. For the practicals there are 16 instructional units including 3 fish ponds (Brackish water demonstration fish pond, Freshwater Demonstration fish pond and Rain fed fish pond), 2 fish hatcheries (Ornamental fish hatchery, Finfish and Shellfish Hatchery) are available. There are 28 supporting units are also used for practical demonstrations. Engineering, Agriculture, Business Management departments in main campus provide practical exposure on survey, hydraulics, meteorology, Fish business management, pond machinery and post-harvest technology.

Name of the Classrooms	Dimensions (Sq. ft.)
B.F.Sc.,-First year	20′×40′
B.F.Sc.,-Second year	69′×18′
B.F.Sc.,-Third year	41′×19′
B.F.Sc.,-Fourth year	19′×39′
Total (Sq. ft.)	**3562**

Instructional and Supporting Units in Various Divisions for UG Teaching in the Faculty

Divisions	Name of the Instructional Units	Name of the Supporting Units
Aquaculture	1) Brackish water Demonstration fish pond (1Ha) 2) Rain fed fish pond (1 Ha) 3) Ornamental fish hatchery with outdoor facilities (0.5 Ha) 4) Fin and Shellfish hatchery with nursery facilities (0.5 Ha) 5) Brackish water model / modern / demo pond of Tamil Nadu Fisheries Department which is located just adjoining to our faculty (6 Ha) 6) Totally 22 Ha within the campus and 7 Ha of freshwater pond located in the main campus of our Administrative Head Quarters (Annamalai Nagar, Chidambaram)	1) Planktology Lab 2) Benthos Culture Facility 3) Live Feed Culture Facility
Fisheries Resource Management	7) Fish Anatomy and Biology Lab 8) Fish Physiology and Biochemistry Lab 9) Fish Museum&Taxonomy Lab 10) Geographical Information System(GIS) Lab	4) Malacology Lab 5) Marine Botanical lab 6) Mangrove Lab 7) Mangrove Nursery
Aquatic Animal Health Management	11) Fish Parasitological Lab	8) Mycology Lab 9) Fish Immunology Lab 10) Fish Pathology Lab 11) Toxicology Lab 12) Fish Virology Lab
Aquatic Environment Management	12) Environmental Information System	13) Prochordates Lab 14) Environmental Science Lab 15) Marine Pollution Lab 16) Water and Sediment Quality Analysis Lab 17) Coastal and Ocean Management System

Divisions	Name of the Instructional Units	Name of the Supporting Units
Fish Processing Technology	12) Fish Processing and Packaging Lab 13) Instrumentation Lab	18) Fish Microbiology &Quality control Lab
Fish Engineering	14) Fishing Technology Lab	19) Physical Oceanography Lab 20) Navigation Lab 21) Seamanship Facility 22) Aquaculture Engineering Lab
Fisheries Extension, Economics and statistics	15) Demonstration Unit/Placement hall	23) Display Hall 24) Auditorium 25) Browsing Centre
Fish Genetics and Biotechnology	16) Fish Proteomics Lab	26) Fish Genetics Lab 27) National Facility for Marine Natural Products and Drug Discovery 28) Fish Biotechnology Lab

Facilities/Infrastructure in Divisions

Sl. No.	Divisions	Staff Room		Laboratory/Seminar hall		Total (Sq. ft.)
		No.	Size (Sq. ft.)	No.	Size (Sq. ft.)	
1.	**AQUACULTURE (AQC)**	4	10′x19′ 12′x19′ 20′×20′ 10′x19′	7	10′x19′-Planktonology Lab 10′x19′ 27′x19′	**250383**
	Benthos Culture Facility	-	-	-	62′×13′	
	Ornamental Fish Hatchery	-	-	-	99′×20′	
	Brackish water Demonstration fish pond	-	-	-	243′×136′	
	Fresh water Demonstration fish Pond(Main Campus)	-	-	-	451′×122′	
	Finfish and Shellfish Hatchery	-	-	-	37′×69′	
	Live Feed Culture Lab	-	-	-	16′×39′	
	Rain fed fish pond	-	-	-	393′×393′	

Sl. No.	Divisions	Staff Room		Laboratory/Seminar hall		Total (Sq. ft.)
		No.	Size (Sq. ft.)	No.	Size (Sq. ft.)	
2.	**FISHERIES RESOURCE MANAGEMENT (FRM)**	4	14′×11′ 16′×6′ 12′×19′ 10′ ×4′	9	14′×17′-Malacology Lab 27′×19′-Marine Botanical lab 16′×6′-Mangrove Lab 10′ ×4′	**16453**
	Fish Anatomy and Biology Lab	-	-	-	19′×39′	
	Fish Physiology and Biochemistry Lab	-	-	-	39′× 19′	
	Fish Museum& Taxonomy lab	-	-	-	79′×19′	
	Mangrove Nursery	-	-	-	80′×149′	
	Geographical Information System(GIS) Lab	-	-	-	40′×23′	

Sl. No.	Divisions	Staff Room		Laboratory/Seminar hall		Total (Sq. ft.)
		No.	Size (Sq. ft.)	No.	Size (Sq. ft.)	
3.	**AQUATIC ANIMAL HEALTH MANAGEMENT (AAHM)**	5	10′x19′ 14′×11′ 19′×19′ 19′ ×9′ 10′x19′	9	10′x19′ 12′ ×9′ 19′ ×29′ 10′ ×18′	**3465**
	Mycology Lab	-	-	-	26′×18′	
	Fish Parasitological Lab	-	-	-	9′ ×10′	
	Fish Pathology Lab	-	-	-	10′x19′	
	Fish Immunology Lab	-	-	-	29′ ×9′	
	Toxicology Lab	-	-	-	19′×19′	

Sl. No.	Divisions	Staff Room		Laboratory/Seminar hall		Total (Sq. ft.)
		No.	Size (Sq. ft.)	No.	Size (Sq. ft.)	
4.	**AQUATIC ENVIRONMENT MANAGEMENT (AEM)**	5	10′x19′ 10′x19′ 15′×11′ 11′×15′ 15′×19′	8	10′x19′-Prochordates Lab 15′×9′-Environmental Science Lab 10′x19′ 38′×11′	**3128**
	Water and Sediment Quality Analysis Lab	-	-	-	15′×11′	
	Marine Pollution Lab	-	-	-	12′×15′	
	Coastal and Ocean Management System	-	-	-	23′×30′	
	Environmental Information System	-	-	-	33′×22′	

Sl. No.	Divisions	Staff Room		Laboratory/Seminar hall		Total (Sq. ft.)
		No.	Size (Sq. ft.)	No.	Size (Sq. ft.)	
5.	**FISH PROCESSING TECHNOLOGY (FPT)**	3	30′×10′ 9′ ×10′ 8′×7′	6	9′×10′ 8′ ×7′	**3552**
	Fish Microbiology and Quality Control Lab	-	-	-	30′×29′	
	Fish Processing and Packaging Lab	-	-	-	15′×19′	
	Instrumentation Lab	-	-	-	70′×19′	
6.	**FISH ENGINEERING (FE)**	3	10′×29′ 14′×19′ 15′×9′	6	15′×9′- Physical Oceanography Lab 10′×29′-Navigation Lab 44′×19′	**3593**
	Fishing Technology Lab	-	-	-	19′×39′	
	Aquaculture Engineering Lab	-	-	-	19′×9′	
	Seamanship Facility	-	-	-	27′×27′	

Sl. No.	Divisions	Staff Room		Laboratory/Seminar hall		Total (Sq. ft.)
		No.	Size (Sq. ft.)	No.	Size (Sq. ft.)	
7.	**FISHERIES EXTENSION, ECONOMICS ANDSTATISTICS (FEES)**	3	15′×12′ 10′×23′ 16′ ×15′	8	15′×13′ 19′×3″ 26′×15′	**4999**
	Browsing Center	-	-	-	18′×25′	
	Auditorium	-	-	-	71′×25′	
	Display Hall	-	-	-	39′×19′	
	Demonstration Unit/placement hall	-	-	-	39′×19′	
8.	**FISH GENETICS AND BIOTECHNOLOGY (FGB)**	3	14′×10′ 10′×23′ 12′x19′	3		**3478**
	Fish Biotechnology Lab	-	-	-	30′×29′	
	Fish Genetics Lab	-	-	-	27′x19′	
	National Facility for Marine Natural Products and Drug Discovery	-	-	-	39′ ×23′	
	Fish Proteomics Lab	-	-	-	19′×29′	

The details of instruments available in various divisions of instructional units and specialized units are summarized below:

S. No.	Name of the major Equipment	Housed in
	Division of Aquaculture (AQC)	
1.	UV/Vis -Spectrophotometer, Double distillation unit, Light microscope (3 Nos), Laminar Air flow, Sieve Shaker, Laboratory Centrifuge, Incubator, Quick Freezer, Autoclave, Digital Weighing Balance, Electric Aerator Unit, Millipore unit, pH pen, Refractometer	Benthos Culture Facility
	Refractometer, pH Meter, Canister filter, UV/Vis –Spectrophotometer, Protein Skimmer, Autoclave, Hot Air Oven, Incubator, Laminar Air flow, Quarantine tank, Live Feed Culture tank, Larval Rearing tank, Water Quality Analyzing kit	Ornamental fish Hatchery
	Laminar Air flow, Autoclave (2 Nos), BOD Incubator, Incubator, Distillation unit, Hot Air Oven, Weighing Balance, Centrifuge, Hot Air Plate, Magnetic Stirrer, Rotary Evaporator, Cooling Centrifuge, UV/Vis - Spectrophotometer, Light Microscope, Water Bath, Binocular Microscope	Planktonology Lab
	Cemented tanks (14 Nos), FRP tanks (21 Nos)	Finfish and Shellfish Hatchery

S. No.	Name of the major Equipment	Housed in
	Division of Fisheries Resource Management (FRM)	
2.	Incubator, Hot air Oven (2 Nos), Laminar air flow (2 Nos), Centrifuge (2 Nos), Water Bath, Autoclave (2 Nos), Hot Plate (2Nos), Compound Microscope (25 Nos), Student Microscope (30 Nos)	Fish Anatomy and Biology Lab
	Lyophilizer, UV/Vis - Spectrophotometer, Weighing Balance, Gel Documentation, Electrophoresis Unit, Laminar Air flow, Fraction Collector, Hot Air Oven, Incubator, Cooling Centrifuge, Light Microscope	Malacology Lab
	Cooling Centrifuge, Freeze Dryer, PCR, Gel Documentation, Autoclave, Light Microscope	Marine Botanical Lab
	PCR, Autoclave, Incubator, Hot Air Oven, Laminar Air flow, Centrifuge, Digital Balance, Digital Plethysmometer, UV/Vis-Spectrophotometer, Actophotometer, Soxhlet Apparatus, Microscope, Water Sampling Devices, Sediment Sampling Devices	Mangrove Lab
	Single Distillation Unit , Stainless Steel and Glass, Double Distillation Unit, Centrifuge, Weighing Balance, Hot Plate (2Nos), Nansen Water Sampler, Niskin Water Sampler, Universal Water Sampler, Bacteriological Water Sampler, Meyer's Water Sampler, Horizontal Water Sampler, Gravity Corer, Ekman's dredge, Eco Sounder, Peterson Grab, Thermometer, Reversing Thermometer, Towing Surface Thermometer, Current Meter, Bathythermograph, Mud Snapper, Compound Microscope (25 Nos), Student Microscope (30 Nos)	Fish Physiology and Biochemistry Lab
	Computer (40Nos) with Internet, Software Package -SPSS, FISAT	Geographical Information System(GIS) Lab

S. No.	Name of the major Equipment	Housed in
Division of Aquatic Animal Health Management (AAHM)		
3.	Weighing Balance, Compound Microscope, Rotary Microtome, Incubator, Freezer, Dissection Microscope, Hot Plate, Light Microscope, Stereo Microscope, Vernier Caliper, Laminar Air flow, Autoclave, Electrophoresis Unit	Fish Pathology Lab
	Incubator, Hot air Oven, Water Bath, Shaking Incubator, Autoclave (2 Nos), Laminar air flow, Rotary Evaporator, Deep Freezer, Microscope	Mycology Lab
	Vertical Deep Freezer, Laminar Air flow, Autoclave, Hot air Oven, Rotary Evaporator, Double Distillation Unit, Microwave Oven, Compound Microscope (2Nos), Algae Culture Unit, Weighing balance, pH Pen, Dialysis Separator, Actophotometer, Analgesic Meter, Rotorod, Electro Cardio Gram (ECG), Edema Inflammation Measuring Equipment	Toxicology Lab
	Deep Freezer, Hammer Mill, Incubator, Autoclave, Hot air Oven, Shaking Water Bath, Shaking Incubator, Rotary microtome, Laminar Air flow, Cryostat microtome (Leica 1835), Microscope with Camera, Light Microscope, ELISA Washer, ELISA Reader, Spinner, Gel Rocker, pH meter, PCR, Electrophoresis Unit, UV-Spectrophotometer, Spinix-Vortex Shaker, Weighing Balance, Slide warming table, Cooling Centrifuge	Fish Immunology Lab
	PCR, Freezer, Centrifuge (2Nos), Laminar airflow, Gel Documentation System, Dry Bath	Fish Virology Lab
	Autoclave, Centrifuge, Speed Vacuum Concentrator Centrifuge, Water Bath, Hot air Oven, Incubator, Light Microscope, Hot Plate, Gel Documentation System, Weighing Balance, Compound Microscope, Laminar Air flow, Sonicator	Fish Parasitological Lab

S. No.	Name of the major Equipment	Housed in
	Division of Aquatic Environment Management (AEM)	
4.	Trinocular Microscope, Laminar air flow, Centrifuge, Incubator, Water Bath, Weighing Balance, Autoclave, Hot air Oven, Dissection Microscope	Prochordates Lab
	Scalar, MilliQ unit, Distillation unit, Mercury Analyzer, Digital Turbidity Meter, Flame Photometer, Filtering Unit, Hot Air Oven, Microbial Incubator, Laminar Air flow, Water Bath , Lyophilizer, Light Microscope (4Nos), Stereo Microscope (2Nos), Weighing Balance (3Nos), UV-Spectrophotometer, pH Meter, Nansen Sampler, Peterson Grab Sampler, Plankton Net, Refractometer	Water and Sediment Quality Analysis Lab
	pH pen, Light Microscope, Inverted Microscope, Flame Spectrophotometer, UV/Vis –Spectrophotometer, Weighing Balance, Autoclave, Conductivity Meter, Laminar Air flow, Incubator, Soxhlet Extractor, Double Distillation Unit	Environmental Science Lab
	CH analyzer, TOC Analyzer, Fluorescence Confocal Microscope, LICOR –CO_2 Sensor	Marine Pollution Lab

S. No.	Name of the major Equipment	Housed in
	Division of Fish Processing Technology (FPT)	
5.	Anaerobic Chamber, Laminar Air flow, Incubator (bacteriological), Hot air Oven, Sonicator, Lyophilizer, Luminometer, Light Microscope, Autoclave, Weighing balance, Tensiometer ,Fermentor (large size)	Fish Microbiology& Quality control Lab
	Cold storage unit vertical (-20̊ C, - 40̊ C), Hot air oven, Incubator (2Nos), Laminar air flow, Weighing Balance, Autoclave, Can Seamer, Water bath	Fish Processing& Packaging lab
	Centrifuge (2 Nos), Cooling Centrifuge (2 Nos), Microwave Sample Preparation System, Inverted Microscope, Oven, UV/Vis –Spectrophotometer (3Nos), GCMS Gas Chromatograph-Mass Spectrophotometer, GC-Microbial Identification System, Micro beta Trilux Liquid Scintillation Counter, Inductively Coupled Plasma –Optical Emission Spectrophotometer (ICP-OES), CHNS/O – Analyzer, Lyophilizer, pH meter (2Nos), Fluorescence Spectrophotometer, Fluorescent Microscope, Lyophilizer, Polari meter (Alpha unit), Weighing balance (mg), ELISA Plate Reader, Travelling Microscope, Refractometer, pH Pen, digital Lux meter (LX-101), Gel Documentation System	Instrumentation lab

S. No.	Name of the major Equipment	Housed in
	Division of Fish Engineering (FE)	
6.	Total Alkalinity Meter, UV/Vis-Spectrophotometer (2 Nos),Horizontal Shaker, Cooling Centrifuge, Deep Freezer, Hot air oven, Autoclave, Light Microscope, CO_2 Gas analyzer, Multi-Sensor, Micro wave oven, Distillation Unit, Water bath, Laminar air flow, Weighing balance, Compound Microscope, Inverted Microscope, CTD, Nitrite Sonar, Sun photometer, Filtration unit, Anemometer, pH meter, Plankton Net, Flow Meter, Tissue Culture Unit, GPS, Liquid Nitrogen Cylinder, Liquid Scintillation Counter, Fourier Transform Infra-Red Spectroscopy, Aneroid Barometer, Wind Vane, Anemometer, Rain Gauge, Hygrometer	Navigation Lab
	Directional Wave Recorder, Current Meter, Eco-Sounder, RT-PCR, Centrifuge, Niskin Water Sampler, Nansen Water Sampler, Peterson Grab Sampler	Physical Oceanography Lab
	Single Kayaks (15 Nos), Double Kayaks (10 Nos), Canoes (10 Nos), Kayak Paddles (35 Nos), Canoe Paddles (20 Nos), Life Jackets (35 Nos), SCUBA Diving (9 Sets), Breathing Air Compressor, GPS (2 Nos), Submersible pressure gauge& dive computers, Under water camera,25hp engines (4 Nos)	Seamanship Facility
	Ranging Rod (15Nos),Cross Staff (15Nos), Gunter's Chain (10Nos),Arrows (25Nos), Tape- 30m (10Nos),50m (15Nos), Prismatic Compass (10Nos), Dumpy Level (25Nos), Dump Leveling Staff (25Nos), Theodolite (10Nos), Pegs (20Nos), Offset Bar (25Nos)	Aquaculture Engineering lab

S. No.	Name of the major Equipment	Housed in
Division of Fisheries Extension, Economics and Statistics (FEES)		
7.	Computer (12Nos) with Internet facility	Browsing Center
	Projectors, Speakers, Microphone, 65"LED Interactive Touch Panel, Electronic Podium, HD Digital Visualiser, Miniature Interactive Display, Sony LCD, Lecture Capture Camera, Computer	Demonstration Unit/ Placement Hall
	Sony LCD, Computer, Interactive Smart Touch Multimedia Board	Display Hall
	Sony LCD (2Nos), Computer, Audio Amplifier and Speaker system	Auditorium

S. No.	Name of the major Equipment	Housed in
	Division of Fish Genetics and Biotechnology(FGB)	
8.	MALDI -TOFF, Flow Cam meter	Fish Proteomics Lab
	Weighing Balance, Mini Centrifuge, Table Top Centrifuge, Water bath, Magnetic Stirrer, Agarose Gel Electrophoresis apparatus, UV-Transilluminator, ELISA reader, PCR (20 Well,96 Well) thermo cycler, Laminar air flow, Gel Documentation, Gel Rocker, Microwave oven, Light Microscope (Binocular),Mini Fermentor (3 L), Cell Culture Unit	Fish Genetics Lab
	Fast Protein Liquid Chromatography (FPLC), UV-Spectrophotometer, PCR, Cooling Centrifuge, Laminar Air flow (3Nos): Vertical (1 No) and Horizontal (2Nos), Gel documentation System, SDS-PAGE apparatus, Agarose gel electrophoresis unit, Western Blotting Set up, Weighing balance, Gel Rocker, Double Distillation Unit, Rotary Evaporator, Microwave oven, Dry Bath, Hot Plate with Magnetic Stirrer, Spinix-Vortex Shaker, Binocular Microscope, Trinocular Microscope, Trinocular Inverted Fluorescence Microscope, CO_2 Incubator (2Nos), pH meter, pH pen, Bench Top Centrifuge, Micro Centrifuge,8 Channel Pipette, Liquid Nitrogen Container (2Nos),Vortex, Incubator, Shaking Incubator (Ambient Temperature), Shaking Incubator (Low Temperature), Deep Freezer (- 40℃), Ultra Centrifuge, Autoclave (2Nos - Vertical and Portable), Canister filter (10 Nos)	Fish Biotechnology Lab
	HPLC-High Performance Liquid Chromatography (Analytical Preparatory), HPTLC- High Performance Thin Layer Chromatography, LCMS/MS – Liquid Chromatography- Mass Spectrometry, Sonicator, ELISA reader, Rotary Evaporator, Lyophilizer (3kg), Incubator, Centrifuge,Distillationunit,Weighingbalance,Spectrophotometer,StereoMicroscope,Laminar air flow, Autoclave, Light Microscope, Rotary Vacuum Evaporator, SDS-PAGE apparatus, Agarose Gel Electrophoresis apparatus, Gel Documentation System, Deep Freezer (-20℃),Light Microscope, Hot Plate with Magnetic Stirrer, Milli Pore, Shaking Incubator	National Facility for Marine Natural Products and Drug Discovery

6.4.5. Conduct of Practical and Hands-on-Training

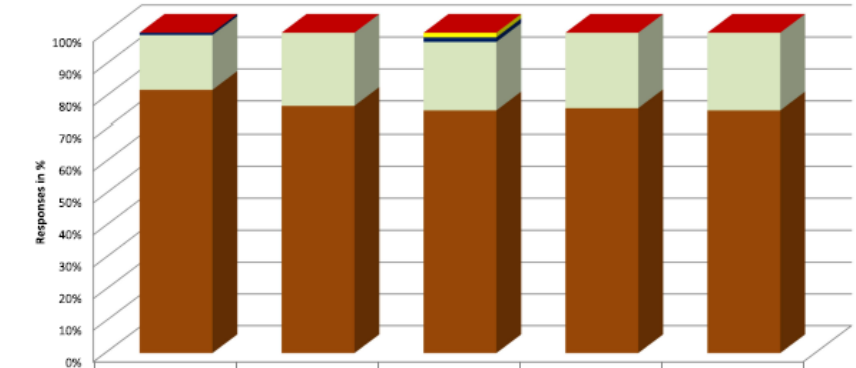
Considering the number of labs available in each department and the nature of the practicals, the classes are scheduled to engage all the laboratories throughout the day from 10.00 a.m. to 5.00 p.m., accommodating batches of practical in a day. During practicals, the students undertake field inventory, collection, identification, dissection and preservation of fishes, data analysis, reporting the observations, estimation of water and soil quality parameters, and isolation of microorganisms from fishes and environment. Fishery by-products preparation, live feed culture, sampling, feeding, harvesting, post-harvest processing and handling of equipment related to fisheries and aquaculture.

The faculty has the provision to take students to nearby farming units, exposure to new fisheries and aquaculture technologies, extension strategies and economical aspects of fish business. Besides, the students are also exposed to field level shell and fin fish breeding demonstrations and participatory experiments. Hands-on trainings are given in the areas of specialization such as Fish pathology, Fish diagnostic, Fish pharmacology, Fish toxicology, Fish nutrition, Fish immunology, Fish genetics and breeding, Ornamental fish production, Genomics in Aquaculture, Fish stock assessment, Aquatic pollution, Fish value addition, Fish nutrition, Fish processing waste management, Quality control and quality assurance, Fish products and by-products etc . Students are trained in preparation of research project plan and the same is presented before the committee appointed by the Dean of the faculty. Each student allotted one mentor, who guides the student in completion of proposed research plan. The students are allotted for preparation of the project and its presentation as a seminar. This exercise helps the students to prepare for higher studies. There are many private owned sophisticated commercially important fish seed production hatcheries, bio-floc based farms, freshwater and brackish water fish farms, crab fattening, net mending , fish processing, industries around the institution are utilized by the students for RAWE and training programmes.

6.4.6. Supervision of students in PG/ PhD programmes – Not applicable

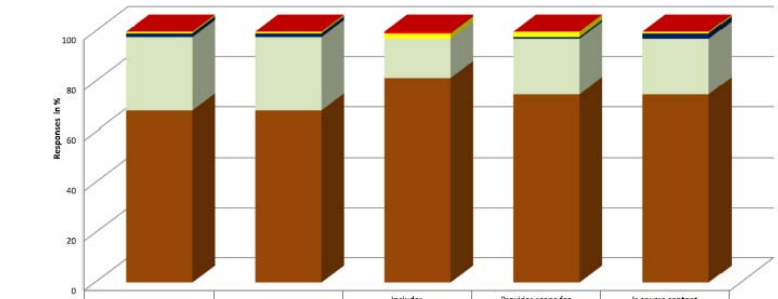
6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers, etc.)

Feedback is regularly obtained from the students at the end of each semester and based on the feedback, necessary improvement and corrective measures are being taken in the subsequent semesters. Representatives of industries, employers, and other stakeholders who are nominated to serve in various academic bodies and board of studies provide their inputs for fine-tuning the curriculum and also to offer valuable suggestions for student centric education to improve overall quality of teaching and learning. In addition to this, informal feedback is obtained from our alumni when they visit campus during reunion meet besides from all stakeholders such as fishermen, fish farmers, industries, NGOs during exposure visits, RAWE, trainings, etc.



	The course objectives are well defined	The course modules are logically structured	Emphasis is on both fundamentals as well as latest developments	Includes both theory and applied aspects of the course	Recommended text books are appropriate and up-to-date
Strongly disagree	0	0	0	0	0
Disagree	0	0	1	0	0
Not sure	1	0	1	0	0
Agree	17	23	21	24	24
Strongly agree	82	77	76	76	76

Student feedback on Curricular Aspects of B.F.Sc.



	Feed back from the Parents (Subject teachers)	Feed back from the industries/ employers/farmers	Includes project/dissertation/in-plant training/industrial visit/field visit	Provides scope for acquiring employable skills	Is course content periodically revised/updated
Strongly disagree	0	0	1	0	0
Disagree	1	1	2	2	1
Not sure	1	1	0	1	2
Agree	29	29	16	22	22
Strongly agree	69	69	81	75	75

Feedback from the Industries / Employers / Farmers

6.4.8. Student intake and attrition in the programme for last five years

Year-wise information on sanctioned strength, actual intake and attrition in the last five years of the degree programme is given below.

Name of the Degree programme	Actual students admitted in last five years					Attrition (%)				
B.F.Sc., (Fisheries Science)	Y_1	Y_2	Y_3	Y_4	Y_5 (Current Year)	Y_1	Y_2	Y_3	Y_4	Y_5 (Current Year)
	2015-16	2016-17	2017-18	2018-19	2019-20	2015-16	2016-17	2017-18	2018-19	2019-20
	17	43	49	56	55	-	-	-	-	-

Sl. No.	Year	Male	Female	Students admitted	Sanctioned strength	Attrition (%)
1	2015-16*	10	7	17	30	-
2	2016-17	22	21	43	60	-
3	2017-18	27	22	49	60	-
4	2018-19	26	30	56	60	-
5	2019-20	33	22	55	60	-

*The moment we got the go-ahead signal from our university authorities to start the B.F.Sc. course, we swung into action to call for the applications and to enrol candidates. However due to the circumstances we were in, it could not be advertised in time and therefore the response was less in terms of the number of applications. The total intake for the first batch was 30 and we received only 21 applications. Following the Reservation Policy of Government of Tamil Nadu, 17 students were admitted in the first batch. From the Second batch onwards, the total intake was increased to 60 numbers as the number of applicants increased tremendously. Last year the number of applications received was 850.

Self Study Report –B.F.Sc. Fisheries Science

6.4.9. ICT Application in Curricula Delivery

The teaching staff educate the students on open source e-learning materials available from internet and also from various web Apps which provide animation-based learning of difficult concepts like equations, calculations and physiological processes. Students are encouraged to register and download self-learning materials on various courses provided by ICAR. Three smart classrooms are available in the faculty to cater to the need of teaching and practical content to UG students. In addition to this, all the departments of study under Faculty of Marine Sciences have audio-visual equipped class rooms and laboratory with smart TV to support learning activities and content delivery. Students are also trained to use ICT tools like use of TNAU Agritech portal, Google classroom App both in Android and iOS, ICAR online and offline courses, e-library, e-books, e-notes, videos and PowerPoint making, assignment and presentations.

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the **Dean Prof.M.Srinivasan** hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college and degree awarding University.

20/04/2021

Signature of Dean of the College with Date & Seal

Dean
Faculty of Marine Sciences
Annamalai University
Parangipettai - 608 502.

FACULTY OF MARINE SCIENCES
ANNAMALAI UNIVERSITY
PARANGIPETTAI - 608 502

ANNEXURE (PHOTOS)

LABORATORIES

WATER AND SEDIMENT QUALITY ANALYSIS LAB.

BENTHOS FACILITY LAB.

PLANKTOLOGY LAB.

LIVE FEED CULTURE LAB.

PROCHORDATES LAB.

MARINE BOTANICAL LAB.

LABORATORIES

FISH GENETICS LAB.

FISH PATHOLOGY LAB.

MICROBIOLOGY AND QUALITY CONTROL LAB.

FISH PROTEOMICS LAB.

FISH PARASITOLOGY LAB.

ENVIRONMENTAL SCIENCE LAB.

LABORATORIES

FISH PROCESSING AND PACKAGING LAB.

COLD STORAGE LAB.

GEOGRAPHICAL INFORAMTION SYSTEM

FISH PHYSIOLOGY AND BIOCHEMISTRY LAB.

INSTRUMENTATION LAB.

FISH ANATOMY AND BIOLOGY LAB.

LABORATORIES

FISH BIOTECHNOLOGY LAB.

MARINE POLLUTION LAB.

MALACOLOGY LAB.

MYCOLOGY LAB.

FISH IMMUNOLOGY LAB..

NATIONAL FACILITY FOR MARINE NATURAL PRODUCTS AND DRUG DISCOVERY

FACULTY OF MARINE SCIENCES

AUDITORIUM

LIBRARY

BROWSING CENTRE

ENVIRONMENTAL INFORMATION SYSTEM CENTRE

DEMONSTRATION UNIT/PLACEMENT HALL

DISPLAY HALL

FACULTY OF MARINE SCIENCES

RAIN FED FISH POND

BRACKISHWATER DEMONSTRATION FISH POND

ORNAMENTAL FISH HATCHERY

FINFISH AND SHELLFISH HATCHERY

FISH MUSEUM AND TAXONOMY LAB.

MANGROVE NURSERY

FACULTY OF MARINE SCIENCES

DOLPHIN FOUNTAIN

FRESHWATER FISHES AQUARIUM

MARINE FISHES AQUARIUM

MANGROVE ECOSYSTEM

OUT PATIENTS WARD

WATER SPORTS FACILITY

KAYAKING

UNDERWATER DIVING

SCUBA DIVING EQUIPMENTS

LIFE SAFETY APPLIANCES

SCUBA DIVING

COLLECTION OF DATA UNDER THE SEA

EDUCATIONAL TOUR (B.F.Sc., 2018-2021 BATCH)

CENTRAL INSTITUTE OF FISHERIES EDUCATION, MUMBAI (20/01/2020)

FISHERY SURVEY OF INDIA, MUMBAI (21/01/2020)

COLLEGE OF FISHERIES, RATNAGIRI (23/01/2020)

NATIONAL INSTITUTE OF OCEANOGRAPHY, GOA (24/01/2020)

NATIONAL CENTRE FOR POLAR AND OCEAN RESEARCH, GOA (24/01/2010)

EDUCATIONAL TOUR (B.F.Sc., 2018-2021 BATCH)

COLLEGE OF FISHERIES, MANGALORE (27/01/2020)

NATIONAL INSTITUTE OF FISHERIES POSTHARVEST TECHNOLOGY AND TRAINING, KERALA (28/01/2020)

CENTRAL INSTITUTE OF FISHERIES NAUTICAL AND ENGINEERING TRAINING, KERALA (28/01/2020)

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE, KERALA (29/01/2020)

CENTRAL INSTITUTE OF FISHERIES TECHNOLOGY, KERALA (30/01/2020)


ANNAMALAI UNIVERSITY
FACULTY OF MARINE SCIENCES
CENTRE OF ADVANCED STUDY IN MARINE BIOLOGY
ANNAMALAI UNIVERSITY
C-A-S IN MARINE BIOLOGY