

SELF-STUDY REPORT

for the Undergraduate (B.F.Sc.) Programme



Submitted to
National Agricultural Education Accreditation Board



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CONTENT

Sl. No.	Particulars	Page No.
6.4. Self-Study Report for the Undergraduate (B.F.Sc.) Programme		
6.4.1.	Brief history of the degree programme	1
6.4.2.	Faculty strength	4
6.4.3.	Technical and supporting staff	4
6.4.4.	Classrooms and laboratories	6
6.4.5.	Conduct of practical and hands-on training	16
6.4.6.	Supervision of students in PG/Ph.D.	17
6.4.7.	Feedback of stakeholders (Students, parents, industries, employers, farmers etc.)	17
6.4.8.	Student intake and attrition in the programme for the last five years	17
6.4.9.	ICT application in curricula delivery	17
	Certificate	18
	Annexure – I: Feedback in Visitors Book	

6.4. Self-Study Report for the Undergraduate (B.F.Sc.) Programme

The four-year undergraduate programme i.e., Bachelor of Fisheries Science (B.F.Sc.) is offered by the College of Fisheries, CAU, Tripura. The programme comprises of ICAR-approved common course curriculum, syllabi, Student READY programme, Experiential Learning Programme (ELP), and other recommendations of the ICAR Fifth Deans' Committee. The programme is being implemented as per the guidelines issued by the ICAR from time to time with the due approval of the Board of Studies and Academic Council of the University. As per the stipulated guidelines, the details of the self-study report in respect of the B. F. Sc. programme are given below:

6.4.1. Brief history of the degree programme

The fisheries degree programme is being offered by the Central Agricultural University (CAU) in one of the constituent Colleges at Lembucherra, Tripura. Since Tripura has rich traditions and greater potentialities of fisheries as compared to all other North-Eastern states under its jurisdiction, the CAU, Imphal decided to establish the College of Fisheries in the state of Tripura. As per the CAU Ordinance/Statute/Act. 1992, No. 40 dated 26th December 1992, the College of Fisheries started functioning from 3rd October, 1998 at SIPARD Building, Camper Bazar, Agartala and became the 12th Fisheries College of the country established under the Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers' Welfare, Govt. of India. The college was shifted to its campus at Lembucherra in September 2001. The present campus of the college at Lembucherra has a total area of 54.72 acres and is about 10 km from Agartala International Airport and 15 km from the Agartala Railway Station. The college has been imparting quality education, research, and extension activities in different disciplines of fisheries and aquaculture as envisaged by the agricultural education system.

For admission to the B.F.Sc. course, the candidate should pass 10+2 examination with 50 % marks for UR and 40 % marks for ST/SC in PCB, should be a permanent resident or domicile of any one of the seven North East State of India namely Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura. As per the allotted seats, different NE states send their nominee based on marks/common entrance examination conducted by the concerned NE states. Fifteen percent (15%) of the approved number of seats is filled up by the candidates nominated by ICAR, selected based on the All-India Entrance Test (AIET) conducted by the ICAR, or as amended from time to time by ICAR. In addition, another ten (10) seats for the B.F.Sc. programme is higher fee payment seats open to Indians and selected based on mark basis.

Objective of the degree programme

- To produce globally competitive graduates and post-graduates in fisheries sciences.
- To promote the advancement of learning and persuasion of research in fisheries sciences.
- To make the graduates competent to impart extension services to the stakeholders.
- To meet the requirement of well-trained skilled manpower in the North-Eastern states.
- To facilitate the startups, aqua-entrepreneurship, and also to undertake such other activities as it may deem fit from time to time.

Accomplishments

The College, which started with just five (5) students as the first batch with nine (9) faculties on deputation from the Department of Fisheries, Government of Tripura in 1998, has emerged as one of the best fisheries colleges of the country within a relatively short period, as evident by large numbers of its graduates topping/cracking ICAR-JRF examination and securing PG admission in one of the premier fisheries institutions, ICAR-CIFE, Mumbai and in other colleges/Universities as well. A large number of alumni (UG – 37; PG – 4; Total 41 nos.) of this college have also joined the highly competitive Agricultural Research Services (ARS) of the country besides occupying important positions in the developmental organizations. The college has steadfastly been catering to the diverse research needs of sustainable fisheries and aquaculture, and allied fields including value addition, value chain analysis, and socio-economic upliftment of farmers. The research efforts have resulted in the development and/or improvement of several technologies and packages of practices for improving yield and enhancing the farmers' income. On the other hand, the thematic framework of outreach



components of the college has effectively contributed to the social empowerment, economic empowerment, multi-institutional partnership mode intervention, and policy advisory for addressing various issues of fisheries and aquaculture in the region.

Placement of Students Who Graduated from this College (2002 - 2020)

Batch	Scientist (ARS)	Assoc. Prof./ Dy. Director/ DFDO/Asst. Director	Asst. Prof.	KVK-SMS	ATMA	Banking	Superintendent of Fisheries/ Fishery Officer/ Technical Staff	Ph.D./ PDF/ Project Scholar	PG Scholar	Pvt. Jobs/ Entrepreneurs/ Misc.	Total
1998-02	1	1					1			2	5
1999-03	1	1	1	2		1	3			1	10
2000-04	1		3	2		4	3	1			14
2001-05	3		1	1		5		1			11
2002-06	2		1				3	2		1	9
2003-07	4	1	3		1	1	2	1			13
2004-08	4		2	1	1		2			1	11
2005-09	4		1		1		10	2		1	19
2006-10	7					1	6			4	18
2007-11	6		1	1			7	2		2	19
2008-12	3			2			16	4		8	33
2009-13	1		2	1		1	12	2		3	22
2010-14			2		1		14	3		4	24
2011-15				1			9	6		8	24
2012-16		1	1	1			7	9		5	24
2013-17							5	9		11	24
2014-18							1	2	20	2	23
2015-19						1			18	6	25
2016-20									22		22
Total	37	4	18	12	4	14	101	44	60	60	350

6.4.2. Faculty strength

As per faculty recommended by ICAR Fifth Deans' Committee the faculty strength of College of Fisheries, Lembucherra is sufficient for academic requirement of the college.

S. No.	Sanctioned faculty	Faculty in place	Vacant position	Faculty recommended by the ICAR/UGC/ VCI/ other regulatory bodies
1	Professor	5	2	7
2	Associate Professor	9	7*	11
3	Assistant Professor	22	18	20
Total		36	27	38

*2 promoted as Professor under CAS

6.4.3. Technical and supporting staff

The technical staff and other supporting staff of College of Fisheries, Lembucherra are attached with the Dean's office for administrative, convenience and are being allotted to other departments as per requirements. Other than these staffs Skilled and Unskilled labours are hired on contractual basis. The administrative and accounts staff are centralized in the college and are operating under the direct control of the Dean as part of Dean's office.

S. No.	Name of the Post	Sanctioned	In Position	Vacant
Group - A				
1	Assistant Registrar (Academics)	1	-	1
2	Assistant Registrar (Establishment)	1	1	-
3	Assistant Comptroller	1	-	1
4	Assistant Estate Officer/ Assistant Engineer (Civil)	1	1	-
5	Technical Officer	1	-	1
6	Student Welfare Officer	1	-	1
7	Medical Officer	1	1	-
8	Librarian	1	-	1
Sub-Total		8	3	5
Group - B				
9	Junior Engineer (Civil/Elect)	2	1 (Civil)	1
10	Sr. Stenographer/PA	1	-	1
11	Head Assistant	1	1	-
12	Accountant	1	1	-
13	Sr. Library Assistant	1	-	1
14	Horticulture Assistant	1	1	-
15	Computer Operator	1	1	-
Sub-Total		8	5	3
Group - C				
16	Assistant	1	-	1
17	Account Assistant/ Cashier	2	2	-
18	Electrician	1	1	-
19	Compounder / Dresser	1	1	-

20	Library Assistant	3	3	-
21	Livestock Assistant /Farm Assistant	5	4	1
22	Field-cum-Lab Assistant	16	13	3
23	UDC/ LDC	14	10	4
24	Driver (including Tractor driver)	5	3	2
25	Plumber	1	1	-
26	Carpenter	1	1	-
27	Health Worker (Male/Female)	3	3	-
28	Security Guard	2	2	-
29	Multi-Tasking Staff	36	29	7
Sub-Total		91	73	18
Grand Total		107	81	26

6.4.4. Classrooms and laboratories

Classrooms:

Four (04) ICT-enabled class rooms with a sitting capacity of 50 each are available for conducting regular theory classes. The classrooms are equipped with white board/green board, overhead projectors, computer, LCD projectors, large-screen computer display system. Besides, one (01) smart classroom (with a seating capacity of 64) has recently been developed with all modern ICT-enabled facilities including digital podium, interactive touch panel, two movable cameras, lecture platform and CCTV.



ICT-enabled UG Class Room



Smart Classroom

Laboratories:

A total of **38** functional laboratories/units are available in the college. All the academic departments have their own laboratories for conducting practical classes. The list of major equipment, laboratories, farm facilities, workshops and other instructional units are given below:

S. No.	Name of the Lab / Facility	Major Equipment available/Particulars
1	UG Laboratory (6 nos.) Water and Soil Chemistry Laboratory Disease Microbiology Laboratory Quality Control Microbiology Laboratory Biochemistry Laboratory Fish Processing and Engineering Laboratory (4 nos.)	<ul style="list-style-type: none">• Inorganic nutrient flow-analyzer• UV-VIS Lux-meter• Analytical Balance• Moisture meter• Muffle furnace• Bomb calorimeter• Multimode spectrophotometer• Laminar Flow Bench• CO₂ incubator• Multi Parameter Water Analyser• Refrigerator• Nitrogen evaporator• Solid phase extraction unit• Flame Photometer• pH Meter• S-T-C Meter• BOD incubator• Deep freeze -20°C• Bacteriological Incubator• Auto Blood Analyzer• Dark field Microscope• Inverted Microscope• Realtime PCR• PCR• Refrigerated centrifuge• Tissue Homogenizer• Ice-flacking machine• TS Extruder• Muscle Texture Analyzer• Silent cutter• Complete canning line• Air-blast Freezer• Ellab thermal validation system• Overpressure retort• Rotary vac. Evaporator• Micromanipulator
2	Central Instrumental Facility	<ul style="list-style-type: none">• HPLC• AAS• GC-MS• Histopathology unit with Automatic Tissue processing,• Tissue embedder• Semi-automatic microtome• Inverted microscopy with image capturing system

		<ul style="list-style-type: none"> • Fluorescent microscope with image capturing system • Deep freezer -80°C • Auto Fiber analyzer • Auto Nitrogen analyzer • Water purification system
3	Central Molecular Biology laboratory under Centre of Excellence in Fisheries & Aquaculture Biotechnology (COE-FAB)	<ul style="list-style-type: none"> • Electrophoresis Unit, • Deep freezer -20°C • Ultra-freezer -80°C • Gene sequencer • Water purification system • Multi chamber Water bath • Hybridization Oven • Phase Contrast Microscopes with image capturing system • Stereo zoom Microscope with image capturing system • Sonicator • Refrigerated Centrifuge • Western Blot • Gradient PCR • Gel-Doc system • Nanodrop • Colour analyzer • Nutrient Auto Analyser • PCR cabinet • UV-cross linker • Rotary vac. Evapourator • Incubator
4	Biotech Hub	<ul style="list-style-type: none"> • Molecular spectrophotometer • Electrophoresis apparatus • Gel doc • PCR machine • Cooling centrifuge • pH meter, incubator • Micropipettes • Realtime PCR • Blotting apparatus • Microinjector • Water bath • Laminar flow
5	Aquacultural Engineering workshop	<ul style="list-style-type: none"> • Centrifugal Pumps • Submersible Pumps • Engineering Tools • Different parts of Refrigerator • Different parts of 2 stroke engine and 4 stroke engines • Single wheel Paddle aerators • Double wheel paddle aerators etc.
6	Aqua Wet Laboratory <ul style="list-style-type: none"> • Ornamental fish breeding Unit • Nutrition 	<ul style="list-style-type: none"> • FRP Tank (1000 L) – 60 nos. • FRP Tank (500 L) – 55 nos. • Glass Aquariums – 260 nos. of different sizes • Aeration Facility

		<ul style="list-style-type: none"> • 100-liter Plastic Tanks with Lid
7	Aquatic Animal Health Wet Lab	<ul style="list-style-type: none"> • Glass Aquariums • Aeration facility • FRP Tanks
8	Freshwater Fish Farm	<ul style="list-style-type: none"> • Twenty-six (26) Earthen Ponds of different sizes with total water area of 2.1 ha • Paddle Wheel Aerators • FRP boat • Integrated Fish Farming Models with Pig and Poultry sheds • Water pump sets • Nets etc.
9	Carp Hatchery Complex	<ul style="list-style-type: none"> • Overhead Tanks – 80,000 liters • Breeding Pools –2 nos • Hatching Pool – 6 nos • Egg/spawn collection Chamber
10	Freshwater Prawn Hatchery	<ul style="list-style-type: none"> • Larval rearing Tank – 12 Circular • Larval rearing Tank – 8 Rectangular • Biofilter unit • Aeration unit • Artemia Hatching facility
11	Outdoor Cement tank Facility	<ul style="list-style-type: none"> • Cement Tanks (20 sq. m) – 54 nos. • Cement tank (10-15 sq. m) –21 nos. • Cement Tanks (2-3 sq. m) – 30 nos. • FRP Tank (200 L) – 30 nos.
12	Feed Mill (150 kg/hr)	<ul style="list-style-type: none"> • Twin-Screw Extruder • Grinder • Mixer • Dryer • Oil Sprayer • Drum Roller etc.
13	Biofloc Demonstration Unit	<ul style="list-style-type: none"> • 10,000-liter tank • Aeration Unit
14	Pabda Broodstock Unit	<ul style="list-style-type: none"> • Cemented Pools (10,000 L) – 3 nos. • FRP Tanks (500 L) – 12 nos.
15	Simulated poly-house breeding Unit	<ul style="list-style-type: none"> • Flow-through lotic simulated riverine system, • Incubation pool housed in plastic poly-house
16	Bioinformatics Lab with AC	<ul style="list-style-type: none"> • 12 no. of Desktop • Server - 2 • 5 KVA UPS • Scanner • Photocopier • Application software (SPSS-22, R software) • ASFA Database • Bioinformatics Software • Seating facilities for 20 students • High-speed internet connectivity
17	Computer Lab with AC	<ul style="list-style-type: none"> • 15 no. of Desktop • 5 KVA UPS • Seating facilities for 30 students • High-speed internet connectivity

18	Language Lab with AC	<ul style="list-style-type: none"> • 30 no. of Desktop • 10 KVA UPS • Language Software • Microphone • Computer Table and Chair with Seating capacity of 30 students • High-speed internet connectivity
19	ATIC	<ul style="list-style-type: none"> • Information cum Reception counter • Product sale counter • Technology display • Conference Room with all facilities • Training Hall • Bar coded Fish Museum • Fish Aquarium • Faculty rooms • Staff room • High speed internet connectivity
20	Fish Museum including a barcoded fish museum	<ul style="list-style-type: none"> • The fish museum has 326 finfish and shellfish species • Displayed with scientific information. • The barcode museum contains 297 fish species.
21	Mobile Fish Clinic	<ul style="list-style-type: none"> • A dedicated vehicle fully furnished with water & soil quality analysis as well as disease diagnosis tools for field/mobile monitoring
22	Automatic Weather Station	<ul style="list-style-type: none"> • Automatic Weather Station with Digital Monitor
23	Incubation Room	<ul style="list-style-type: none"> • Fully furnished with audio-visual aids, • Conference public address system • Seating capacity of 32



Fig. Microscopy Facilities



Fig. Central Laboratory and Central Molecular Biology Laboratory



Fig. Gene Sequencer in Central Molecular Biology Laboratory



Fig. UG Laboratories - Dept. of Fish Processing Technology & Dept. of Aquaculture



Fig. Carp & Prawn Hatcheries



Fig. Aqua Wet Laboratory



Fig. Freshwater Fish Farm



Fig. Cemented Tanks Facility



Fig. Feed Mill



Fig. Biofloc Demonstration Unit



Fig. Language Laboratory under IDP



Fig. Incubation Room under IDP



Fig. Library



Fig. ATIC & MTTC Building



Fig. Mobile Fish Clinic



Fig. Automatic Weather Station



Fig. Fish Museum



Fig. Computer Lab

6.4.5. Conduct of practical and hands-on training

All the department has well established laboratories equipped with instruments and other facilities to conduct practical classes and imparting hands-on training. Besides the designated UG laboratories, several other specific laboratories available with the departments are effectively utilized for imparting hands-on practical exposure to the UG students. Additionally, one central laboratory and laboratory facilities under the Centre of Excellence (COE) project supports hands-on practical exposure to the students. Under the compulsory course work allotted, the students are trained on various need-based and curriculum oriented hands-on practical on various aspects. To assist the practical classes, all the department have laboratory assistants in place. The Student READY Programme for B.F.Sc. final year students comprised In-plant attachment, Rural Fisheries Work Experience Programme, All India Study Tour, Skill Development component as well as Experiential Learning Programme (ELP) under three departments and Project work.



Fig. ELP in Fish Processing



Fig. ELP in Fish Feed Mill



Fig. ELP in Semi-Intensive Fish Farming

6.4.6. Supervision of students in PG/Ph.D.

Not applicable

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

The students give their feedbacks about the course, the quality and other attributes of the faculty at the end of the semester. The alumni of the college have expressed their satisfaction regarding various theoretical as well as practical knowledge they have gained during their degree programme. Besides student, parents also sometimes express their happiness, particularly the way their wards have been trained. The students have been well received by the professional experts during the interview for selection of positions in the developmental organizations. Additionally, the faculties of the department impart training and conduct awareness programmes for the farmers who give feedbacks after completion of the programme. The feedbacks taken from them are critically examined and necessary measures are taken to address the issues. Some of the feedback received from visiting dignitaries is enclosed as Annexure – I.


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

Name of the degree programme	Actual student admitted in the last five years					Attrition (%)				
	2016-17	2017-18	2018-19	2019-20	2020-21	2016-17	2017-18	2018-19	2019-20	2020-21
B.F.Sc.	31	40	45	44	48	9.67%	15%	11.11%	9.09%	18.75%

6.4.9. ICT application in curricula delivery

Different pedagogical approaches are followed in the teaching and learning process. All the classrooms are equipped with computer with internet connectivity and presentations/videos are delivered to the students. Computer-aided methods like PowerPoint Presentation are used as per need of the topic and for interactive teaching. Sometimes multimedia aids are also used to make things more plausible to the students, particularly short animation films depicting a scientific process are shown to the students. LMS (Learning Management System) like Google Classroom are used for sharing information and study materials (ppt/notes/videos) to the students. Students are exposed to different educational videos on different aspects of fisheries. Students are encouraged to explore and enroll in different MOOC (Massive Open Online Courses) platforms (eg: swayam). Different cloud based collaborative educational tools, Open Educational Resources (OER) and online Platforms (Google Meet/ Skype/Zoom) are used and encouraged for promoting blended learning among the students.

I, **Prof. Ratan Kumar Saha** the Dean, **College of Fisheries, Lembucherra**, 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.


Dean
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Signature of Dean of the College with Date & Seal