



ANNUAL REPORT 2018-2019

KERALA UNIVERSITY OF FISHERIES AND OCEAN STUDIES

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KUFOS Annual Report 2018-2019

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Registrar, Kerala University of Fisheries and Ocean Studies, Kochi

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KUFOS Annual report is an In-house publication.

This is a report of activities of KUFOS during 2018-2019 period

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UNIVERSITY LOGO



This emblem signifies the mission, goals and motto of Kerala University of Fisheries and Ocean Studies. It symbolizes the co-existence of all forms of aquatic life and our responsibility to preserve the ecology and conserve the bio-diversity by judicious exploitation of aquatic resources for sustainable development.

The deep and light blue colours respectively represent the ocean and sky. The waves in the sea represent the dynamic nature of the sea with all its mystery and music. “All deep things are music” (Carlyle). The ocean is our planet's life belt. The very survival of the human species depends upon the maintenance of an ocean, clean and alive.

“For the sea lies all about us.... The continents themselves dissolve and pass to the sea.... In its mysterious past, it encompasses all the dim origins of life.... And receives in the end... the dead husks of that same life. For all at last return.... To Oceanus, the ocean river, like the ever-flowing stream of time, the beginning and the end” (Rachel L. Carson- The Sea Around Us, 1951).

Fiat piscis:

Let there be fish. This is the literal translation of the Latin words “*FIAT PISCIS*”. The idea is to grow more fish with a view to ensuring food and nutritional security. As Lao-tsu, the Chinese philosopher, rightly said centuries ago: “Give a man a fish and you feed him for a day. Teach him how to fish, and you feed him for a lifetime”.

Chinese net:

It is a passive gear operated by a group and it represents team work and co-operation, symbolizing the aspirations of the traditional fisheries sector.

Ship:

Used for exploring and exploiting oceanic resources, this fully equipped vessel symbolizes the modern sector, with its sophisticated technology.

Nansen bottle:

Operated through a pulley and attached to the ship, it represents the concern for maintaining water quality and the need to contain water pollution.

Shrimp:

As a foreign exchange earner, this crustacean has tremendous importance in the fishery economy of Kerala.

Pearl spot:

'Karimeen' (*Etroplus suratensis*), the State fish of Kerala, represents the dainty delicacy of the State.

Conch:

A mollusc, the shell with its mathematical patterns, used for carrying holy water during rituals, is a sublime symbol with spiritual, aesthetic, artistic, rejuvenating and medicinal values.

Open book:

It symbolizes knowledge and it signifies disinterested search for truth by research and learning.

FROM VICE CHANCELLOR'S DESK

Prof. Dr. A. Ramachandran
Vice Chancellor



Fisheries sector in the country is now preparing for a cheerful leap with the Central Government's decision to constitute a separate ministry for animal husbandry, dairy and fisheries. India is the second-largest fish producing country in the world, with total fish production of 10.07 million tones, and earned foreign exchange of Rs. 45,106.89 crore in 2017-18. This accounts for around 10 per cent of the total exports of the country and nearly 20 per cent of the agricultural exports. But till date, stakeholders of fisheries sector in the country, which contributes 1.1 per cent to GDP and 5.15 per cent to agricultural GDP felt difficulty in getting things done in the bigger Ministry of Agriculture where fisheries is of least priority. Currently, the sector is interlinked with various ministries such as environment, commerce etc as far as various project proposals are concerned. The setting up of a separate fisheries department is like a dream coming true for over 14.5 million fishermen and several thousand people engaged in the supply chain of fish products. After all, a Fisheries Mantralaya is a long pending demand of fishermen too as they face a host of issues, right from CRZ rules in the backwaters to selling of their catches. An independent department for fisheries with a separate secretary at the helm of affairs is expected to rejuvenate the sector with more and more development projects getting cleared at faster rate. Hereafter one would also expect better budget allocation for new investments and establishment of infrastructure like cold chain facility in the supply chain of seafood products.

I am happy to inform that the Center of Excellence in Food Processing Technology of Kerala University of Fisheries and Ocean Studies (KUFOS) has developed a variety of value-added products such as fibre-rich biscuits, Bilimbi Syrup, osmotically dehydrated pineapple, ready to eat tomato curry in the see-through pouch. The Centre standardized the fortified and nutritious fish noodles and pasta for fighting malnutrition. The value-added products developed by this Centre will be a novel turning point in its economic utilization and waste management and soon will be commercialized. This centre took the study with multiplex PCR for detection of virulent factors in E.coli from seafood and developed a specific method for its identification using the multiplex PCR. The effect of seaweed as an immunostimulant and as disease resistant in cultured shrimps and tilapia has shown that seaweed enriched diet improved the growth and survival rate in tilapia and enhanced disease resistance in shrimps

The Centre for Advanced Studies in Research and Entrepreneurship of KUFOS has organized five training programmes and workshops during 2018-19 on entrepreneurship development, skill development and value-added products for those who are aspiring to become successful entrepreneurs.

I am also pleased to inform that we have established an Aqua-clinic, the only clinic in the South of Kerala, offering facility to farmers to test their seeds for viruses before stocking in the shrimp grow out farms.

In terms of infrastructure, I am immensely happy to mention, the Seminar hall construction is almost nearing completion with few finishing works. Of the total six phases for the Construction of Academic block in KUFOS headquarters, five phases of the construction were completed using the Plan fund and the final phase of the construction is in progress using the NABARD fund. The Ladies hostel third floor for UG Students was constructed and 78 students were admitted in the new block. Part of the PG ladies' hostel was also completed and 64 students were accommodated. Similarly, construction of the ground floor of PG hostel for boys was completed and 53 students were accommodated. The remaining work is in progress.

The Multi-species hatchery at Puthuvype Campus, Flat complex for senior officers (Twin type), construction of an indoor substation and sheet roofing and side protection of the existing swimming pool is completed. The Renovation of three brackish water ponds and two freshwater ponds for fish farming are also completed.

More than fifty percent of the construction of the Physical Amenity Centre and Research complex has been completed and is in usable condition. Construction of a building for the Marine school at Puthuvypu with a plinth area of 1224 sq.metre, the first phase of construction is completed and now in working condition. The remaining area of about 500 sq.metre will be completed within a month.

The construction of the International Hostel cum Staff quarters with a plinth area of 1651.86 sq. metres is in progress. Similarly, the first phase of the work for up-gradation of Playground has been completed and the second phase which includes site clearance is in progress and development of campus road is in progress. The compound wall in front side of the Western campus under phase 1 is completed and the construction of the compound wall for staff quarter's area at the Eastern campus is now in progress.

Brackish water seed production of cultivable species such as Pearl spot, Mullet, Milkfish and Tilapia are now being carried out at Fisheries station at Puduveypu. During the current year, this station has generated an annual income of Rs.7, 02,743/-through the various activities such as fish sale (Rs. 5, 43,926/-), fish seed (Rs. 33,929/-), Mangrove seedling/sapling sale (Rs. 40,635/-) vegetable and perennial crop farming (Rs. 77,003/-) and training and other activities (Rs.7, 250/-). This Centre as

offered Skill Development Programme in Diploma in brackish water and Marine Aquaculture for +2 qualified persons in the field of Aquaculture with an intake of 20 students. Under the Centre of Excellence in Aquaculture and Animal Health Management, a new Finfish Hatchery will be operated to cater to the high demand for fish seeds from the Aquaculture sector.

I am also happy to inform that Kannur Regional Centre of KUFOS, which started functioning in October 2019 has conducted various extension activities pertaining to cage fish farming, pen culture, and brackish water culture during this year. Our Kannur Regional center is monitoring regularly the fish catch of Kavayi backwaters. Fifty-seven species of fin and shellfishes were identified and a chart has been prepared by the center.

Under extension activities, KUFOS plays a vital role not only in conducting many need-based training programmes but also developed successful entrepreneurs in the fishery sector. During the period under report, 13 outreach programmes on Production and Marketing of value-added products, ornamental fish culture, and hygienic preparation of pickled products, freshwater fish farming were organised to fish farmers and for entrepreneurs. Under the National Surveillance Programme on aquatic animal diseases, training on freshwater fish culture and emerging disease was given to entrepreneurs of Kannur, Thrissur, and Kottayam districts

With technical support of the KUFOS, the fish farmers of Puthenvelikara in Ernakulam district have achieved a bumper massive crop and harvested as much as 1700kg of fish comprising of Pearlsport, Seabass and Trevally. The programme was conducted as Village Adoption for Empowerment and Capacity-building ensuring the livelihood of fisher in Central Kerala. Under this project, Seabass was cultivated in pens constructed in Thiruthipuram backwaters. This is for the very first time that Seabass is cultivated in Kerala in pen and it had witnessed a survival rate of as much as 96 percent with the maximum size of 2.330 kgs. and fishes were sold at a selling price of Rs 450 per Kg. By giving intensive training in cage and pen farming, 45 and 7 were the beneficiaries respectively and have started culturing Seabass, carangids Etroplus, etc.

Under Village adoption, KUFOS has adopted two more villages during 2018-19 in addition to 8 Villages in previous years.



**OUR HONOURABLE
CHANCELLOR**

SHRI. JUSTICE P. SATHASIVAM
HON'BLE GOVERNOR OF KERALA



**OUR HONOURABLE
PRO-CHANCELLOR**

Smt J MERCYKUTTY AMMA
Hon'ble Minister for Fisheries,
Harbour Engineering & Cashew Industry
Government of Kerala



The Kerala University of Fisheries and Ocean studies (KUFOS) is an autonomous public funded institution established on 20th November 2010. The first Fisheries University in the country, KUFOS with its enchanting blue building stands in harmony with the greenery at Panangad, 12 km away from Kochi city, along the National Highway-66. It provides high quality instructional programmes in fisheries, ocean sciences and allied subjects. The University now has a sprawling campus of 75 acres in the headquarters at Panangad, brackish water and marine aquaculture area spanning 50 acres at Fisheries research station, Puduveypu and extensive 10 acres at Thiruvallom near Vizhinjam.

The College of Fisheries, Panangad under the Kerala Agricultural University was the only institution in the fisheries sector in the State imparting undergraduate professional degree programme. Kerala University of

Fisheries and Ocean Studies was established in November, 2010 by an Act of the Kerala State Legislative Assembly by delinking the College of Fisheries from the Kerala Agriculture University and started functioning on 01.04.2011. KUFOS was established for the development of manpower in fisheries and ocean studies and for ensuring proper and systematic instruction, teaching, training and research and extension exclusively in fisheries and ocean studies in the State of Kerala. This is the primary and principal institution of Kerala State for providing human resources with skills and technology required for sustainable developments as a Centre of Excellence for human resource development in Fisheries and Ocean Studies. It is the nodal agency to establish relationship with institutions at international level

KUFOS imparts quality education comparable with world class

standards and giving significance to research oriented studies with effective meaningful and rewarding extension activities. With a view to producing technocrats of high calibre we provide highly qualified faculty, full fledged infrastructure facility and good linkages with reputed national and international institutes. The academic excellence is intended to be attained by undertaking graduate and post graduate teaching and research programmes in emerging disciplines of fisheries science. With a view to meeting the requirement of state and national priorities, we are introducing specialized courses in the needy areas thereby creating professionals and experts. Results of research emerging various disciplines leading to successful technologies need to be disseminated to the end users at the grass root level.

UNIVERSITY STATUTORY OFFICERS



VICE CHANCELLOR, Prof. (Dr.) A. RAMACHANDRAN



REGISTRAR
Dr. V.M. VICTOR GEORGE



UNIVERSITY ENGINEER
Jayakrishnan P.S



FINANCE OFFICER
Shri. Joby George P.



CONTROLLER OF EXAMINATIONS
(In-charge)
Dr. K.P.Subhashchandran



DIRECTOR OF RESEARCH
Dr.T.V.Sankar



DIRECTOR OF EXTENSION (I/C)
Dr. Daisy C. Kappen

THE UNIVERSITY

Kerala University of Fisheries and Ocean Studies (KUFOS) is an autonomous public funded institution established on 20th November 2010, and governed by the Kerala University of Fisheries and Ocean Studies Act, 2010. As per the Notification No.19540/Leg.II/2010/Law Dated 28.01.2011, the Government of Kerala have promulgated Act 5 of 2011 forming Kerala University of Fisheries and Ocean Studies (KUFOS).

KUFOS is the first Fisheries University formed in India and it comes under the Ministry of Fisheries. As per G.O. (P) No. 510/F & PD dated 10.05.2011 the Government of Kerala disaffiliated College of Fisheries, Panangad and Fisheries Station, Puduveyppu from Kerala Agricultural University and these institutions became the part and parcel of the newly formed Kerala University of Fisheries and Ocean Studies w.e.f. 01.04.2011. The territorial jurisdiction of the University extended to the whole of the State of Kerala and the Headquarters of the University is at Kochi in Ernakulam District.

The Panangad campus, which is the Headquarters of the University, is 12 km away from Kochi city, along the NH 47 and sprawls in area of 85 acres. Fisheries Station, Puduveyppu having an area of 50 acres is situated in Vypeen Island (90 58 – 100 N lat. and 760 10-760 12' E long.) on the North-Western bank of Cochin bar mouth, Cochin taluk. It is at a distance of about 2 km from Vypeen-Pallippuram Road. The Arabian Sea on the West and the Cochin barmouth on the South. Besides these campuses, the Govt. have allotted 10 acres of land at Thiruvallam, near Thiruvananthapuram for setting up a Regional Station.

Kerala University of Fisheries and Ocean Studies is the primary and principal instrumentality of Kerala State in providing human resources, skills and technology required for the sustainable development of Fisheries and Ocean Studies. It acts as a centre of excellence for human resource development in Fisheries and Ocean Studies and the nodal agency to establish relationship with institutions and universities functioning at National and International level. The mission of the University is to serve as a flagship University of higher learning through demonstrated and growing excellence in teaching, research, extension, training, scholarship and creative work in Fisheries and Ocean Studies, comparable with global standards that will benefit the country and the world at large.

His Excellency, the Governor of Kerala, is the Chancellor and the Hon'ble Minister for Fisheries is the Pro-Chancellor of the University. The chief executive body of the University is the University Governing Council. The Vice Chancellor is the principal executive officer who is assisted by the Pro-Vice Chancellor, Registrar, Deans of Faculties, Controller of Examinations, Director of Research, Director of Extension, Directors of Schools, Heads of Departments, and Finance Officer.

MISSION, VISION AND GOALS

MISSION

The mission of the university is to serve as a flagship university of higher learning through demonstrated and growing excellence in teaching, research, extension, scholarship and creative work in fisheries and ocean studies, comparable with global standards that will benefit the country and the world at large.

VISION

- To produce professionally and technically competent manpower in Fisheries and Ocean studies to cater the needs of the fast developing sector.
- Develop entrepreneurship among the fisheries graduates by imparting hands on training and give opportunities to develop management skills through Fisheries Work Experience Programme.
- Undertake research and extension activities in the field of Fisheries and Ocean studies by undertaking research in frontier areas and by promoting interdisciplinary/ inter-departmental/ inter-institutional co-operation.

- Provide employment opportunities for the people especially fisher folk by imparting trainings on modern techniques of fishing, primary handling, preservation, production of value added fishery products, ornamental fish culture, hatchery production of seeds of various cultivable fin and shell fishes and their farming.
- Provide consultancy services so as to put into practice the technologies developed among the entrepreneurs and generate income for the institution.
- Achieve the mission and goals laid down by the University.
- Develop infrastructure facilities and inter-institutional co-operative programmes in order to make the campus the nucleus of the Fisheries and Ocean studies in the world.

GOALS

- To further the advancement in learning and conduct research in fisheries, ocean studies and allied subjects .
- Impart education in fisheries and ocean studies and allied subjects.
- Formulate new courses and curriculum in fisheries and ocean studies sector in accordance with the technical advances in the respective fields
- Act as a nodal agency to establish relationship with institutions and universities functioning at national and international levels
- Act as a centre of excellence having leading role for HRD in Fisheries and Ocean studies
- Foster and encourage entrepreneurship in Fisheries and Ocean studies.

Objectives of the University

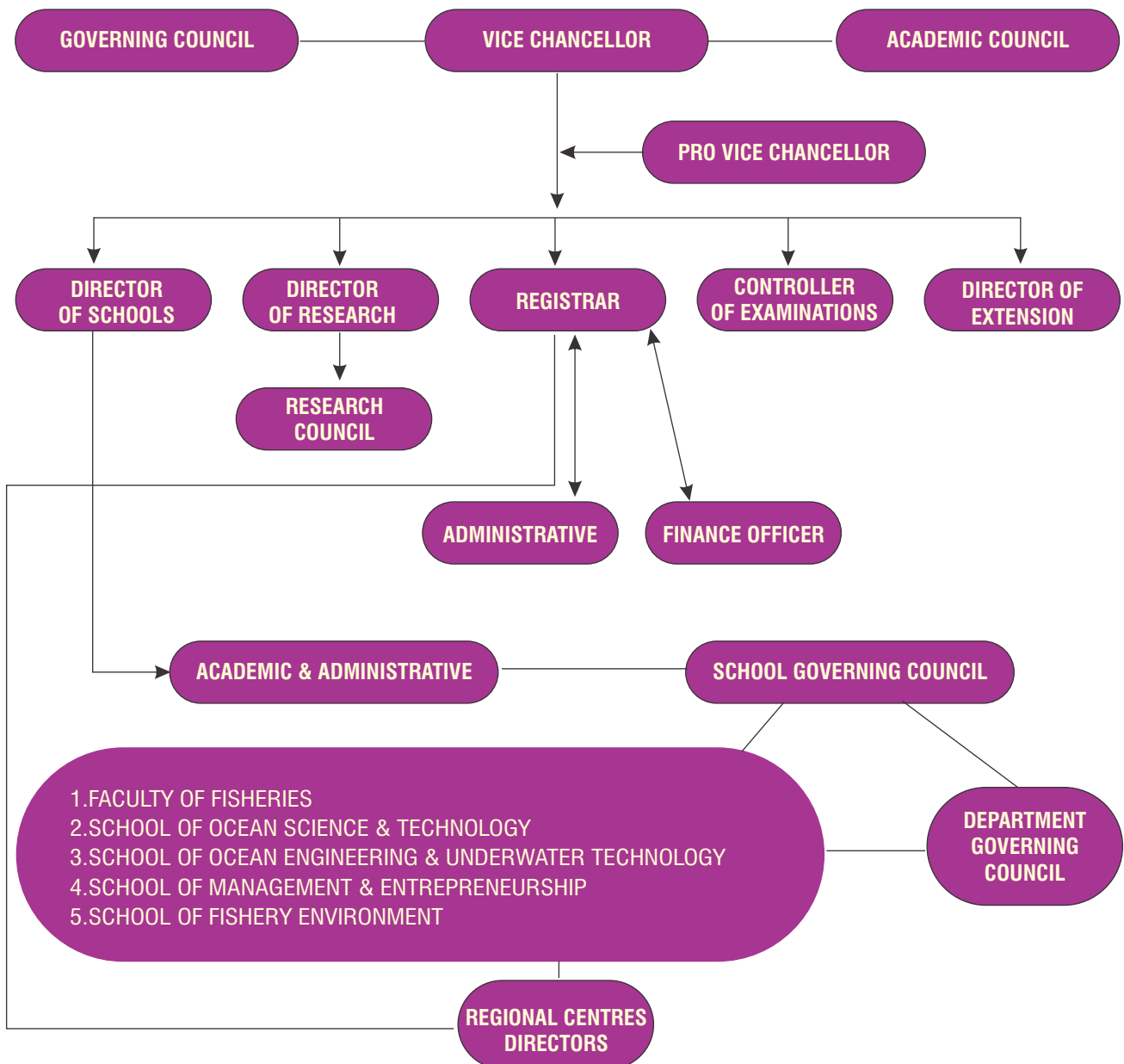
- (i) making provisions for imparting education in fisheries, ocean studies and other allied branches of learning and research scholarship;
- (ii) furthering the advancement of learning and conduct of research in fisheries, ocean studies and allied subjects;
- (iii) undertaking extension education programmes;
- (iv) to formulate new courses and curriculum in Fisheries and Ocean Studies sector in accordance with the technical advances in the respective fields;
- (v) to act as nodal agency to establish relationship with Institutions and Universities functioning in national and international level;
- (vi) to act as a centre of excellence having leading role for Human Resources Development in Fisheries and Ocean Studies sectors;
- (vii) to foster and encourage entrepreneurship in fisheries and ocean studies sector;
- (viii) to develop breeds and hybrids of ornamental fishes, prawns and oysters having features like production capacity, resisting power and good quality suitable to the environment of Kerala;
- (ix) to develop farming practices, fish feeds, fish disease control, resistant and vigilant steps suitable to the sustainable farming of ornamental fishes;
- (x) to preserve the fish bio-diversity of Kerala, to establish their intellectual property right to develop and utilize the possibilities of new technology like bio-technology;
- (xi) to conduct study and to record and preserve the study results relating to traditional fish technology, traditional knowledge, sustainable fish protection and to foster development;
- (xii) to strengthen research on fishing and related habitat and the relevant environmental factors; and
- (xiii) such other purposes as the University may deem necessary from time to time.

ORGANIZATION AND GOVERNANCE

ORGANIZATIONAL CHART

The University is headed by the Vice Chancellor. The other officers of the University are the Pro Vice Chancellor, Registrar, Finance Officer, Controller of Examinations, Director of Research, Director of Extension, School Directors, University Engineer and University Librarian. The Governing Council is the supreme authority of the University, and the members of the Council are nominated by the Chancellor for a period of three years.

THE ORGANIZATIONAL CHART GIVEN BELOW GIVES AN OVERALL PICTURE OF THE SET UP



FUNCTIONING

The process involved in decision making starts at the level of the Department Governing Council. All permanent teachers of the concerned department are the members of the department governing council.

The Department Government Council shall design the syllabus and make proposal regarding the courses of study in the Department to the School Governing Council.

The Department Governing Council shall meet at least once in a month or as and when required to review the academic activities and to suggest need based curricular changes.

The School Governing Council functions above the Department Governing Council.

The Director shall carry out the decisions of the School Governing Council and co-ordinate the functions of the departments in the best interest of the School and the University.

The School Governing Council shall prescribe the qualifications of the examiners and approve the panel of examiners for external examinations.

The Director shall propose examiners for the conduct of external examinations.

The School Governing Council shall meet at least once in three months or as and when required to review the academic activities and to take decisions on need based curricular activities.

The School Governing Council shall have adequate financial powers for the functioning of the various departments under the School including power for strengthening the infrastructure, improving the teaching and research facilities and for maintaining and operating research vessel, if any.

Without prejudice to the provisions in sub-clauses mentioned above, the School Governing Council shall have the following additional powers, namely:-

- a) to propose the courses of studies in the institutions maintained by the University;
- b) to propose the qualifications of teachers in Schools and other institutions maintained by the University;
- c) to propose the qualifications of students for admission to the various courses of studies and to the examinations and the conditions under which exemptions may be granted;
- d) to make proposal for instruction and training in such branches of learning as it may think fit;
- e) to make proposal for the institution of Professorships, Readerships, Lectureships and other teaching and research posts required by the University;
- f) to propose schemes for the constitution or reconstitution of departments for teaching, research and extension education based on the proposals received from the Department Governing Council;
- g) to exercise such other powers and perform such other functions as may be conferred or imposed on it by the Act and Statutes, Ordinances and Regulations made thereunder.

The Research Council: Research Council shall consist of the following members, namely:

- (i) Director of Research who shall be the Chairman of the Council.
- (ii) Directors of all Schools;
- (iii) One senior faculty member who is a recognized guide from each School nominated by the Vice Chancellor;
- (iv) Director of each Regional Centre;

- (v) One representative of Indian Council of Agriculture Research;
 - (vi) One representative of MOES;
 - (vii) One representative of fishery industry nominated by the Vice Chancellor; and
 - (viii) The Vice Chairman of the Planning Board, Government of Kerala or representative of the Board nominated by him.
- (2) Research Council shall be responsible for formulating research policies, identifying thrust areas, advising possible funding agencies and monitoring and reporting the progress and quality of research to the Vice Chancellor from time to time.

The Academic Council

Subject to the provisions of this Act and Statutes, the Academic Council shall have the following powers, duties and functions.

- (a) To advise the University Governing Council on all academic matters;
- (b) Make regulations and to amend or repeal the same;
- (c) Approve the courses of studies in the institutions maintained by the University;
- (d) Approve the qualifications of teachers in schools and other institutions maintained by the University;
- (e) Approve the qualifications of students for admission to the various courses of studies and to formulate conditions under which exemptions may be granted;
- (f) Consider and approve proposals for the instruction and training in such branches of learning as it may think fit;
- (g) Consider and approve proposals for the institution of post of Professors, Associate Professors, Assistant Professors, Readers, Lectures and other teaching and research posts, required by the University;
- (h) Approve proposals for determining the degrees, diplomas and other academic distinctions that shall be granted by the University;
- (i) Decide which examinations of other Universities may be accepted as equivalent to those of the University and to negotiate with other Universities for the recognition of the examinations of the University;
- (j) Approve, modify or revise schemes for the constitution or reconstitution of departments for teaching, research and extension education based on the proposals received from the School Governing Council;
- (k) Maintain standards regarding post graduate teaching, research and extension education;
- (l) Give advice to the University in all academic matters and to submit feasibility report before the Governing Council regarding the academic programmes as recommended by the Senate in its annual meeting;
- (m) Exercise such other powers and perform such other functions as may be conferred or imposed on it by the Act and Statutes, Ordinances and Regulations made there under.

The GC and the Senate are the supreme decision making bodies in the University

4.1. CAMPUSES OF KUFOS



The campus at Panangad lies on the western side and eastern side of the National Highway .The total area of this campus is 87.73 acres.It includes the already developed area in which the administrative building, academic block, the quarters, hostels etc are located. Major portion of the campus is occupied by fish ponds and natural mangrovevegetation. The campus is bordered on the western side by the Vemband backwater system.

4.1.2.FISHERIES STATION, PUDUVEYPU



The Fisheries Station is situated in Puthuveypu in the Vypeen island on the north-western bank of Cochin barmouth, It is at a distance of about 2 km from Vypeen-Pallippuram road and about 15 km away from the main campus. The Arabian sea on the west, the Cochin barmouth on the south and a canal emerging from the barmouth in the east form its main boundaries. On the northern side, the station joins the land proper of the main island. The Typical mangrove associations are characteristic of the area. This low lying area is subjected to the tidal influence of Cochin barmouth. The unique geographical position bestows on the station to embark on different aspects of fisheries research to open up new vistas. Major activities of this Station are teaching, research and extension. This Station also gives practical training in brackish water fish farming to B.F.Sc. and M.F.Sc. students of the University. The farm area is marshy, being daily inundated by saline and brackish water intrusions. Approved research programmes on commercially important fishes, shrimps and ornamental fish are being implemented. In addition, many awareness programmes are also given to entrepreneurs. The Station is also a centre for various varieties of mangrove and associated vegetation. The campus is covered by natural mangrove vegetation comprising about 18 acres and ponds. Administrative block, laboratory, hatchery etc. are located near the entry point of the campus.

4.1.3 Kannur Regional Centre , Payyanur

The University decided to start two regional centres one at north Kerala and another in the south Kerala. Accordingly university submitted plan proposals for the establishment of Fisheries Training, Extension and Research Centre at Kollam and Establishment of Aquaculture Training, Extension and Research Centre at Kannur during the year 2017-18. An amount of Rs 100 lakhs was allotted for each centre by the Government. On the basis of the request from Shri C. Krishnan, respected Member of Legislative Assembly representing Payyanur in the Kerala Assembly and Shri T.Purushothaman, President, kerala Aquafarmers Federation the Univeristy constituted a high level committee consisting of Dr K.Padma kumar, Pro Vice Chancellor, KUFOS as Chariman, Dr Suresh Kumar, GC Member, Shri Joby George, Finance Officer and Shri Jayakrishnan, University Engineer as members to inspect various places at Payyanur for the establishment of the Centre. The committee visited various locations in and around Payyanur and recommended establishment of the centre at Kandankali near Payyanur, The Univeristy requested the government to acquire the necessary land for the purpose.. Dr K.Padmakumar, Pro VC who was appointed as the special officer for the regional centre was relived from duties on 30/12/2017. The 50th Governing Council meeting held on 22nd December 2017 decided to appoint Dr.B.Manoj kumar, Associate Professor as the special officer. The committee for the centre was reconstituted with Dr S,Suresh kumar, Director, SOST, Shri Joby George, Finance Officer, Shri Jayakrishnan P.S, University and Dr B.Manoj kumar, Special Officer. This committee was authorized to make visits to suitable sites and also to identify suitable buildings for functioning of the Centre. An individual offered 10 acres of land free of cost for the establishment of the Centre at Payyanur. A committee consisting of Shri A.M,Shamseer, MLA and GC, Member, Dr S.Suresh Kumar, Professor and GC member, Dr S.M..Raffy, Assistant Professor and GC member and Shri Jayakrishnan P.S. University Engineer as convenor was constituted by the Vice Chancellor for inspecting the land. The committee inspected the land and found it unsuitable as it is a wet land and full of mangroves and the University will not be able to take up construction activity in that area. The Centre started functioning from **01/03/2018** in a rented building at Payyanur.

4.1.4. REGIONAL STATION, KOLLAM

The proposal for establishment of KUFOS Regional center at Kollam to the fund of Rs.100Lakh was approved by the Governing Council of the University under annual plan 2017-18.The main aim of the center is to extent academic, research and extension activities of KUFOS to the Southern Districts of Kerala.

During the years 2018-19 & 2019-20 Survey was conducted for locating suitable land for the purpose and two sites were identified. The site now under the occupance of ALIND, Kundara and the site under the possession of KSITIL were found preliminarily suitable for establishing the Kollam regional center. Several meetings and discussions were conducted with the said authorities for transferring the land to the University. The Hon. Fisheries Minister and Industries Minister Convened meetings with the head officers of KSITIL, ALIND, Revenue department, Survey department etc and finally the Government issued orders for transferring 10 acres of land under the custody of KSITIL to KUFOS for setting up the regional center of the University. A team of experts from the University constituted by the Vice Chancellor has visited the said site and approved the proposed building plan.

The land was then surveyed jointly by the Revenue and Survey department and the sketch of the proposed land was forwarded by the L. R Thahasildar, Kollam. The procedure for transferring the ownership is under way at present.

The civil works of the regional center were entrusted with the KSCADC and they have already invited tender for construction of the building.

In addition, a project of cage culture under KUFOS in Ashtamudi Lake of Manroe Island is also being implemented this year. The beneficiary groups were selected with the participation of the local body and the project is successfully going on under the technical and financial support of KUFOS.

5. ADMINISTRATION

The Vice-Chancellor is the Chief Executive Officer and the Registrar is the administrative head of the university. The Governing Council is the supreme authority of the University and that is supported by the Senate, Academic Council, Research Council, School Governing Council and Department Governing Councils. The day-to-day administration is carried out by the office of the Registrar under whom the Finance Officer, responsible for the financial management of the University functions. On the research side, the Directorate of Research, and on the extension side the Directorate of Extension coordinate the respective activities. Conduct and evaluation of examination and allied activities are vested with the Controller of Examinations. Academic activities related to the different Schools are controlled by the School Directors under whom the various Departments with the Heads of Departments function.

- KUFOS started functioning on 01.04.2011 with its Head Quarters at Panangad.
- The logo of KUFOS was released by Sri. K. Babu, the then Minister of Fisheries, Port & Excise, Govt. of Kerala, in a function organised at KUFOS on 20.06.2011.
- Two day National Consultative Workshop for Preparation of Vision Document and Strategic Plan of KUFOS was inaugurated by Sri. K. C. Venugopal, the then Union Minister of State for Power at International Hotel, Ernakulam on 28.07.2011. Dr. E. G. Silas, Former Vice Chancellor of Kerala Agricultural University launched the new website of the University during the function.
- The first Governing Council meeting of KUFOS was held on 28.03. 2012 at Thycaud Guest House, Thiruvananthapuram.
- The Certificate distribution function to distribute Provisional B F Sc Degree Certificates to the 2007 batch students, were held during the function. Sri. K. Babu, the then Hon'ble Minister of Fisheries & Ports had distributed the certificates.

5.3.1 STATUTORY OFFICERS

Prof.(Dr.) A.Ramachandran	Vice Chancellor
Prof. (Dr.) K Padmakumar	Pro Vice Chancellor
Dr V M Victor George	Registrar
Dr.K.P.Subhashchandran	Controller of Examinations (In-charge)
Dr. K Gopakumar	Dean, Faculty of Fisheries
Dr M.R.Boopendranath	Dean, Faculty of Ocean Science and Technology
Dr.K. Vasudevan	Dean, Faculty of Ocean Engineering
Prof. (Dr.) N.R.Menon,	Dean, Faculty of Climate Variability and Aquatic Ecosystem
Dr.S.Harikumar	Dean, Faculty of Management, Humanities and Social Sciences
Sri Joby George P	Dean, Faculty of Fisheries
Dr.T.V.Sankar	Finance Officer.
Dr. Daisy C Kappen	Director of Research
Sri. P.S.Jayakrishnan	Director of Extension (i/c)
	University Engineer

AUTHORITIES OF THE UNIVERSITY

The following are the authorities of the University

1. the Senate
2. the University Governing Council

3. the Academic Council
4. the Research Council
5. the School Governing Councils
6. the Department Governing Councils
7. the Faculties; and such other bodies as may specified by the Statutes.

Senate

The Kerala Government constituted the first Senate of the University as per Section 76 of KUFOS Act 5 of 2011. As per Section 10 of KUFOS Act, the Senate consists of Ex-officio Members (10 Nos.), Nominated Members (24 Nos.) and Elected Members (13 Nos.). The term of the Senate is five years from the date of its constitution by the Chancellor and the Chancellor shall reconstitute the Senate on expiry of its term. Senate shall meet at least twice a year on dates to be fixed by the Vice Chancellor and one of such meetings shall be called the annual meeting.

Members of Senate

- 1 The Principal Secretary to the Governor of Kerala, Kerala Raj Bhavan Thiruvananthapuram
- 2 Private Secretary to the Minister Fisheries and Harbor Engineering Room No: 532, 3rd Floor, South Sandwich Block Secretariat, Thiruvananthapuram
- 3 Adv. M. Swaraj MLA Tripunithura Assembly Constituency Tripunithura
- 4 Secretary to Govt. Fisheries Department Govt. Secretariat Thiruvananthapuram
- 5 Secretary to Govt. Higher Education Department Govt. Secretariat Thiruvananthapuram
- 6 Secretary to Govt. Finance Department Govt. Secretariat Thiruvananthapuram
- 7 Law Secretary to Govt. of Kerala Govt. Secretariat Thiruvananthapuram
- 8 Director of Fisheries Government of Kerala Vikas Bhavan Govt. Secretariat Thiruvananthapuram
- 9 Dr. K. Gopakumar Dean, Faculty of Ocean Science and Technology
- 10 Dr. K. Vasudevan Dean, Faculty of Ocean Engineering B1015, Satellite Township Kakkanadu, Kochi 682030
- 11 Dr. M. R. Bhoopendranath Dean, Faculty of Fisheries 18/1990-B "Manjusha", No. 10, 2nd Lane, Pratheeksha Nagar, Thoppumpady, Cochin-682005, Kerala
- 12 Dr. Devika Pillai Dept. of Aquatic Animal Health Management
- 13 Dr. K. Dinesh Dept. of Aquaculture
- 14 Dr. M. K. Sajeevan Dept. of Fisheries Resource Management
- 15 Dr. K. Ranjeet Dept. of Aquatic Environment Management
- 16 Sri. Mathew Sebastian Dept. of Fisheries Extension and Statistics
- 17 Dr. C. D. Suriyakala, Director School of Ocean Engineering and Underwater Technology
- 18 Sri. Arun Kumar M. S. Mannathumpattu House, Kallinmel P. O., Mavelikkara, Alappuzha
- 19 Sri. P. Vasudevan Arupathunazhi House, Vakirim Sulthanbathery, W
- 20 Adv. P. K. Khaleemuddeen Fathima Bhavan, Ponnani, Malappuram
- 21 Dr. V. Gabriel V. M. bhavan, Puthiyathura, Pulluvila PO Thiruvananthapuram- 695526
- 22 Smt. Vanaja K. Sreelekshmi, Elambichi, Thrikkariapur, Kasargode
- 23* Sri. T. Peter Udayam, Valkiya Veli PO, Thiruvananthapuram
- 24 Sri. T. Manoharan Manappattu, Neendakara PO, Chavara, Kollam
- 25 Sri. Sudheer M. P. Nayarassery House, Edavanakkad PO, Ernakulam
- 26 Adv. M. K. Uthaman Manappurathu House, Manappuram PO, Cherthala
- 27 Sri. B. Sathyan, MLA Boys Land, ANRA 21A, Mattada, Thiruvananthapuram
- 28 Sri. K. Dasan MLA Nikunjam, Muchukunnu PO, Kozhikode

Governing Council

As per letter No. GS 5-957/2011 dated 19.03.2012 of His Excellency the Governor of Kerala and Chancellor of KUFOS, the first University Governing Council was formed in accordance with the provisions contained in Section 76 of KUFOS Act 5 of 2011. The Governing Council is the supreme authority of the university and comprises of 23 members from among the category of Ex-officio Members (11 Nos.), Elected Members (4 Nos.) and Nominated Members (8 Nos.). At the outset, the Govt. have formed the KUFOS Governing Council by nominating 16 members. The University Governing Council shall be reconstituted every four years. The Governing Council shall meet at least once in a month on dates to be fixed by the Vice Chancellor after giving due notice to all members.

Members of the Governing Council (2016-2017)

The Vice Chancellor, KUFOS

Prof.(Dr.) A Ramachandran

0484 2703781 (Direct),
2700598, 2700964 ,
Fax:-91 484 2700337
vc@kufos.ac.in

Pro Vice Chancellor,
KUFOS

Prof.(Dr.) K Padmakumar

0484 2700596
pvc@kufos.ac.in

Secretary to Govt. of Kerala,
Fisheries Department, Govt. Secretariat,
Thiruvananthapuram

0471-2321129
0471-2333115 (Fax)
Prlsececy.port@kerala.gov.in

The Secretary to Govt. of Kerala
Higher Education Department,
Govt. Secretariat Thiruvananthapuram

(Mobile)
Fax – 0471-2332245
sec.higheredu.kerala@gmail.com

The Secretary to Govt. of Kerala
Finance Department
Govt. Secretariat Thiruvananthapuram

Tel.0471-2518292, 2327586
Fax 0471-2326990
prlsececy.fin@kerala.gov.in

The Law Secretary to Govt. of Kerala
Govt. Secretariat Thiruvananthapuram

Telephone – 0471-2518383
Fax-0471-2332955
secy@law.kerala.gov.in

The Vice President of
KeralaState Council for Science and
Technology and Environment
Sastra Bhavan, Pattom, Thiruvananthapuram.

Tel.No. 0471- 2548200, 0471-2540085
mailto@kscste.org

Adv A.M.Shamseer MLA
Ameenass, PO Paral
Thalassery-670671`

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E.T.Taison MLA
Kaipamangalam. ElanjikalKannathupadikkal
Kera PO, Kodungallur

Tel No-9846958317
Taisonthomas74@gmail.com

Dr. A.Gopalakrishnan
Director
CMFRI, Kochi

Tel No 0484 2394867
director@cmfri.org.in

Dr.N.R.Menon
Dean, Faculty of Climate
Vaiability and Aquatic Ecosystem, KUFOS

Tel No : 9847064322

Dr.M.R.Boopendranath
Dean, Faculty of Ocean Science and Technology
KUFOS

Tel No: 9447665875

Dr.M.S.Raju
Director, MSE, KUFOS

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msraju01@yahoo.com

Dr.S.Sureshkumar
Professor,
School of Ocean Science & Technology, KUFOS
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Dr.|Anu Gopinath
Asst Professor, School of Fisheries Resource
Management & Harvest Technology, KUFOS

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anugowri@hotmail.com

Dr.S.M.Raffi
Asst Professor, School of Fisheries Resource
Management & Harvest Technolgy, KUFOS

Tel No : 9497393516

C.D.Suriyakala
Director, School of Ocean Engineering and
Under Water Technology, KUFOS

Tel No : 8281326577
dr_soeut@kufos.ac.in

Sri K.K.Raghuraj
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Njarakkal,Ernakulam

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reghuraj42@gmail.com

Sri Vidhu Rajan R
BFSC 2014 Batch Student, KUFOS

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vidhurajan5721@gmail.com

Dr.S.S.C.Shenoi
Director, INCOIS, Hyderabad-500090

Tel No : 9441013377
director@incois.gov.in

Sri Manu C Pulikkal
Vayalar P.O.
Cherthala- 688536

Tel No : 9447473349
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Sri Basillal
Shalom, Convent Road
Thankassery, Kollam

Tel No : 9446488320
Basillalhubert23@gmail.com

Sri Abraham John Tharakan
Shibumi, 11/814
Elphinistin Road
Fort Kochi

ajt@amalgamfoods.in

10 meetings of the Governing Council were held during 2017-18 Financial Year

Major Decisions of the Governing Council during the period

Academic Council

The Academic Council shall have general control over the academic matters of the University and be responsible for the maintenance of standards of instruction, education and examinations within the University and shall exercise such other powers and perform such other functions as may be conferred or imposed upon it by the Statutes. The Academic Council consists of 24 members from various realms. The Govt. constituted the first Academic Council. The following are the academic council members. 11 meetings have been conducted so far.

ACADEMIC COUNCIL MEMBERS

The Vice Chancellor, Chairperson	Prof.(Dr.) A.Ramachandran	0484 2703781 (Direct), Fax:-91 484 2700337
Director of Fisheries		0471-2303160 0471-2304355(Fax)
Director of CMFRI		0484-2394798
Director of CIFT		0484-2666880
Director of CMLRE		0484-2427790
Director of NIO		0484-2390814
Director of School of Fishery Environment & Head of Aquatic Animal Health Management	Dr. Devika Pillai	9446111033
Associate Professor and Head of Department of Processing Technology	Dr B.Manojkumar	9447525232
Director of School of Mgt. & Entrepreneurship	Dr. M.S. Raju	0484-2700598(Extn)30
Director of School of Ocean Engineering and Underwater Technology	Dr. C.D.Suriyakala	8281326577
Asst Professor, Department of Aquaculture	Dr.Binu Varghese	9447501644
Associate Professor and Head, Department of Aquaculture	Dr. K. Dinesh	9446032977
Associate Professor and Head, Department of Fisheries Resource Management	Dr.M.K.Sajeevan	9969651349
Asst Professor, Department of Aquatic Food Product and Technology	Dr.Safeena M.P	9995203185

Associate Professor, School of Management and Entrepreneurship	Smt.Alph Korath	9497793911
Associate Professor and Head, Department of Fisheries	Shri Mathew Sebastian	9495395305
Extension & Statistics Students representatives	Akshaya Vijayan (FRM-2017)	9746429259
	Ignatious Joseph (OST-2017)	7736460636

Research Council

The Research Council is responsible formulating research policies, identifying thrust areas, advising possible funding agencies and monitoring and reporting the progress and quality of research to the Vice Chancellor from time to time. The Research Council shall meet at least once in six months. Research Council has not yet been constituted during the reporting period.

OFFICERS OF THE UNIVERSITY

As per Section 30 of KUFOS Act 5 of 2011, the following shall be the Officers of the University.

- i) the Chancellor
- ii) the Pro-Chancellor
- iii) the Vice Chancellor
- iv) the Pro Vice Chancellor
- v) the Deans
- vi) the Registrar
- vii) the Finance Officer
- viii) the University Engineer
- ix) the Librarian
- x) the Director of Research
- xi) the Director of Extension
- xii) the Controller of Examinations
- xiii) the Directors of Schools
- xiv) Heads of Departments

And such officers in service of the University as may be prescribed in the Statutes.

Faculties

There are five Faculties established in the University. The Faculties shall be the principal academic co-ordination authorities of the University in respect of studies and research in the subjects included on the Faculty and also in respect of studies and research in multi-disciplinary faculties. KUFOS has five Faculties and each Faculty comprises of the Dean, the Chairpersons of all Boards of Studies comprised in the Faculty, one member of each Board of Studies to be elected by the members of Boards of studies from among themselves out of whom at least one shall be a Post Graduate teacher and two subject experts preferably from outside the State, nominated by the Vice-Chancellor. The Dean shall be the Chairman of the Faculty. Various faculties were constituted as per the university order No.GA6/2265/15 dated 01.12.2015



I Faculty of Fisheries

Dean - Dr.K.Gopakumar, DDG (Fisheries) Rtd., ICAR, Professor of Eminence, KUFOS

Chairperson of all Board of studies comprised in the Faculty

1. Chairperson of Board of Studies of Dept. of Aquaculture and Biotechnology — Member
2. Chairperson of Board of Studies in Aquaculture Nutrition and Feed Technology - - Member
3. Chairperson of Board of Studies in Aquatic Animal Health Management Member
4. Chairperson of Board of Studies in Fisheries Resource Management –Member
5. Chairperson of Board of Studies in Fishery Hydrography - Member
6. Chairperson of Board of Studies in Preservation & Packing Technology – Member
7. Dr.T.V.Sankar, Director of Research, KUFOS
8. Dr.Suresh Kumar, Professor, Fishery Hydrography, KUFOS (Board of Studies Nutrition and Feed Technology) - Member
9. Dr.Mohamed Hatha, Professor and Head, Dept. of Marine Biology, CUSAT (Board of Studies : Aquatic Animal Health Management) - Member
10. Dr.K.Madhu, Principal Scientist, CMFRI, Kochi (Board of Studies ; Aquaculture & Biotechnology) - Member
11. Dr.K.Mohankumar Prof. Dept.of Meterology, CUSAT, Kochi (Board of Studies: Fishery Hydrography) - Member
12. Dr.Shivananda Murthy, Professor and Head, Dept. of Aquaculture, College of Fisheries, Mangalore - Member



II Faculty of Ocean Science and Technology

Dean – Dr.M.R.Boopendranath ,Principal Scientist (Rtd), CIFT ,

Chairperson of all Board of studies comprised in the faculty

1. Chairperson of Board of Studies in Applied Geo Science Member
2. Chairperson of Board of Studies in Biological Oceanography Member
3. Chairperson of Board of Studies in Physical Oceanography and Ocean Modeling –Member
4. Chairperson of Board of Studies in Food Science & Technology Member
5. Chairperson of Board of Studies in Marine Microbiology - Member
6. Chairperson of Board of Studies in Biotechnology and Bioinformatics - Member
7. Dr.T.V.Sankar, Director of Research, KUFOS
8. Dr.Kamalakashan, Kokkal, Joint Director, KSCSTE, Sasthra Bhavan (Board of Studies Geoscience) - Member
9. Dr.L.Harenduprakash, Director (Board of Studies in Physical Oeanography and Ocean Modeling)- Member
10. Dr.S.Girija, Director NIFPHATT, Kochi 17 (Board of Studies Food Science and Technology) - Member
11. Dr.K.V.Lalitha, Principal Scientist, CIFT, Kochi (Board of Studies Marine Microbiology) - Member

12. Dr.C.Justin David, Academic Consultant, Dept.of Biotechnology and Bioinformatics, KUFOS (Board of Studies Biotechnology and Bioinformatics) - Member
13. 14. Dr.Baban Ingole, Scientist F., NIO, Goa - Member



III Faculty of Ocean Engineering

Dean – Dr. K.Vasudevan, Emeritus Professor, Dept of Electronics, CUSAT

Chairperson of all Board of studies comprised in the faculty

1. Chairperson of Board of Studies of Remote Sensing Technology & GIS – Member
2. Prof.Sasikumar, Course Professor and Co-ordinator of PG Programme, K.M., School of Marine Engineering, CUSAT Cochin – 22 - Member
3. Prof.V.Sundar, Dept.of Ocean Engineering, IIT, Chennai - Member



IV Faculty of Climate Variability and Aquatic Ecosystem

Dean - Prof.N.R.Menon, Professor Emeritus, Dept. of Marine Biology, Microbiology and Biochemistry, CUSAT, Kochi -16 - Chairman

Chairperson of all Board of studies comprised in the faculty

1. Chairperson of Board of Studies in Coastal Zone Management - Member
2. Chairperson of Board of Studies in Disaster Management - Member
4. Dr.Ramesh, Director, National Centre for Sustainable Coastal Management, Koodal Building, Anna University, Chennai -25 - Member
5. Dr.K.V.Thomas, Scientist F & Head of Marine Science (Rtd.), National Centre for Earth Science Studies, Thiruvananthapuram - Member



V Faculty of Management, Humanities and Social Sciences

Dean S.HARIKUMAR, Professor and Head, Department of Applied Economics, CUSAT

Chairperson of all Board of studies comprised in the faculty

1. Chairperson of Board of Studies in Economics & Statistics Member
2. Chairperson of Board of Studies in Legal Studies - Member
3. Chairperson of Board of Studies in Business Administration & Management - Member
4. Prof.K.R.Muraleedharan Nair, Former Dean, Faculty of Statistics, Cochin University of Science and Technology (Board of Studies ; Economic and Statistics) - Member
5. Dr.K.B.Balakrishnan, Associate Professor, NUALS, Kochi (Board of Studies ; Legal Studies) - Member
6. Prof. P. Sudarsanan Pillai, former Dean (CUSAT) (Board of Studies ; Business Administration and Management) - Member
7. Dr.P.T.Sreenivasan, Former Head, Dept. of Management Studies University of Madras - Member

ACADEMIC PROGRAMMES

KUFOS offers two under Graduate Programmes-B.F.Sc and B.Tch-Food Technology , 34 Post Graduate Programmes in various subjects and Ph.D Programmes in subjects related to Fisheries, Ocean Studies and Management under

- I. Faculty of Fisheries**
- ii. School of Management and Entrepreneurship**
- iii. School of Ocean Science and Technology**
- iv. School of Fishery Environment and**
- v. School of Ocean Engineering**

Courses Offered

B.F.Sc

M.F.Sc

- a) M.F.Sc. Aquaculture
- b) M.F.Sc. Aquatic Animal Health Management
- c) M.F.Sc. Aquatic Environment Management
- d) M.F.Sc. Fish Nutrition and Feed Technology
- e) M.F.Sc. Fish Processing Technology
- f) M.F.Sc. Fisheries Engineering and Technology
- g) M.F.Sc. Fisheries Resource Management

MSc

- a) M.Sc. Biotechnology
- b) M.Sc. Climate Science
- c) M.Sc. Disaster Management
- d) M.Sc. Earth Sciences
- e) M.Sc. Environmental Sciences
- f) M.Sc. Food Science and Technology
- g) M.Sc. Marine Biology
- h) M.Sc. Marine Chemistry
- I) M.Sc. Marine Microbiology
- j) M.Sc. Physical Oceanography
- k) M.Sc. Remote Sensing and GIS
- l) M.Sc. Statistics

MBA

- a) MBA dual specialisation (Finance/ Marketing/ Human Resource Management/ Rural Management / Fisheries Business Management)
- b) MBA Energy Management

M.Tech.

- a) M.Tech. Integrated Coastal Zone Management
- b) M.Tech. Ocean and Coastal Safety Engineering
- c) M.Tech. Coastal and Harbour Engineering

B.Tech- Food Technology

LLM

- a) LLM (Maritime Law)

Diploma

- a) PG Diploma in Aquarium Science and Technology
- b) PG Diploma in Industrial Aquaculture
- c) Diploma in Brackish water and Marine Aquaculture

Ph.D. Programmes

Doctoral degree programmes leading to Ph.D. are being offered by the five Faculties. The Faculties are

- a) Faculty of Fisheries
- b) Faculty of Ocean Science and Technology
- c) Faculty of Ocean Engineering
- d) Faculty of Climate Variability and Aquatic Ecosystem
- e) Faculty of Management, Humanities and Social Sciences

Post Doctoral Fellowship (PDF) Programmes

Offered by the five faculties. The faculties are

- a) Faculty of Fisheries
- b) Faculty of Ocean Science and Technology
- c) Faculty of Ocean Engineering
- d) Faculty of Climate Variability and Aquatic Ecosystem
- e) Faculty of Management, Humanities and Social Sciences

Degree Programmes (Admitted through NEET/KEAM)

- a) Bachelor of Fisheries Science (BFSc.)
- b) B.Tech. (Food Technology)

10. Certificate Programme

- a) Certificate course on Computer Aided Designing and Drafting (CADD)
- b) Certification Programme on Entrepreneurship Development

DIRECTORS OF VARIOUS SCHOOLS

Sl.No.	Name	School
1.	Dr.Devika Pillai (i/c)	School of Fishery Environment
2.	Dr.S.Suresh Kumar, Professor& Director (i/c)	Ocean Science & Technology
3.	Dr.M.S.Raju	Management and Entrepreneurship
4.	Dr.C.D.Suriyakala	School of Ocean Engineering and Underwater Technology

Staff Details

- a. Section wise details of
(I) Teaching staff (Regular, Academic Consultants, Professor of Eminence, Contract & Guest)

Heads of Departments

Sl. No.	Name & Designation	Department
1.	Dr.K.Dinesh, Associate Professor	Dept.of Aquaculture
2.	Dr.B.Manojkumar, Associate Professor	Dept.of Fish Processing Technology
3.	Dr.Devika Pillai, Professor	Dept.of Aquatic Animal Health & Mgt.
4.	Dr.M.K.Sajeevan, Associate Professor	Dept.of Fisheries Resource Management
5.	Dr.V.K.Venkitaramani, Academic Consultant	Dept.of Biological Oceanography and Biodiversity
6.	Dr.V.K.Venkitaramani, Academic Consultant	Dept.of Biotechnology
7.	Dr.V.K.Venkitaramani, Academic Consultant	Dept.of Coastal Zone Management
8.	Dr.Prasada Rao, Academic Consultant.	Dept.of Physical Oceanography and Ocean Modeling .
9.	Dr.S.Rajendran, Academic Consultant.	Dept.of Applied Geoscience
10.	Dr.S.Rajendran, Academic Consultant.	Dept.of Remote Sensing Tech.&GIS
11.	Dr.S.Rajendran, Academic Consultant.	Dept.of Disaster Mgt.
12.	Dr.K.Gopakumar, Prof.of Eminence	Dept.of Food Science & Technology
13.	Dr.V.Ambilikumar, Associate Professor	Dept.of Business Administration and Management

Regular Teachers working in various Departments

Sl. No.	Name & Designation	Discipline	School
1	Dr. M.S. Raju Prof. & Director of School	Economics	Management Studies and Entrepreneurship
2	Dr. S. Shyama, Professor	Aquaculture	School of Aquaculture and Biotechnology
3	Dr.V. Ambilikumar Asso Professor	Business Management	Management Studies and Entrepreneurship
4	Dr.S. Suresh Kumar Professor	Biological Oceanography	Fisheries Resource Management and Harvest Technology
5	Dr. Devika Pillai, Associate Professor	Aquaculture	School of Aquaculture and Biotechnology
6	Dr.B. Manoj Kumar Associate Professor	Fishing Technology	Fisheries Resource Management and Harvest Technology

7	Dr. Daisy C. Kappan Associate Professor	Fishery Extension	Management Studies and Entrepreneurship
8	Sri.Mathew Sebastian Associate Professor	Statistics	Management Studies and Entrepreneurship
9	Smt. V. Malika Associate Professor	Statistics	Management Studies and Entrepreneurship
10	Smt. Alphy Korath Associate Professor	Fishery Statistic	Management Studies and Entrepreneurship
11	Dr. K. Dinesh Assoc. Professor	Aquaculture	Fisheries Resource Management and Harvest Technology
12	Dr. Ranjeet K. Associate Professor	Biological Oceanography	Fisheries Resource Management and Harvest Technology
13	Dr M. K. Sajeevan Associate Professor	Fishery Biology	Fisheries Resource Management and Harvest Technology
14	Dr. K.R.Salin Assistant Professor	Aquaculture	Fisheries Resource Management and Harvest Technology
15	Dr. Anu Gopinath Assistant Professor	Chemical Oceanography	Fisheries Resource Management and Harvest Technology
16	Smt. Safeena M.P. Assistant Professor	Microbiology	Aquatic Food Products and Technology
17	Dr. Blossom K.L. Assistant Professor	Food Science & Nutrition	Aquatic Food Products and Technology
18	Dr. Prabhakaran M.P. Assistant Professor	Fisheries Oceanography	Fisheries Resource Management and Harvest Technology
19	Dr. Chiranjiv Pradhan Assistant Professor	Fish Nutrition	School of Aquaculture and Biotechnology
20	Dr. Punnedath Preetham Assistant Professor	Biochemistry	Aquatic Food Products and Technology
21	Dr. S.M. Rafi Assistant Professor	Biological Oceanography	Fisheries Resource Management and Harvest Technology
22	Dr. K Jayalakshmi Assistant Professor	Fish Biology	Fisheries Resource Management and Harvest Technology
23	Dr. Rajeev Raghavan Assistant Professor	Fish Taxonomy	Fisheries Resource Management and Harvest Technology
24	Dr. Linoy Libini Assistant Professor	Aquaculture	School of Aquaculture and Biotechnology
25	Dr. Abhilash Sasidharan Assistant Professor	Fish Processing	Aquatic Food Products and Technology
26	Dr. Binu Varghese Assistant Professor	Fish Breeding	School of Aquaculture and Biotechnology
27	Dr. Rejish Kumar Assistant Professor	Aquaculture	School of Aquaculture and Biotechnology
28	Dr. Swapna P. Antony Assistant Professor	Fish Pathology	School of Aquaculture and Biotechnology
29	Dr. Pramila S. Assistant Professor	Fishery Biology	Fisheries Resource Management and Harvest Technology
30	Dr. Anwar Ali P.H. Assistant Professor	Fishery Biology	Fisheries Resource Management and Harvest Technology
31	Dr. Mithun Sukumaran Assistant Professor	Aquaculture	School of Aquaculture and Biotechnology

Academic Consultants

Sl. No.	Name & Designation	Department	School
1	Dr. V.K. Venkataramani	Biological Oceanography	Ocean Science and Technology
2	Dr. G Sadasivan Nair	Maritime Law	School of Management and Entrepreneurship
3	Prof. S. Rajendran	Applied GeoScience	Ocean Science and Technology
4	Dr. C.V. K. Prasada Rao	Physical Oceanography	Ocean Science and Technology
5	Dr. Justin David	Biotechnology	Ocean Science and Technology
6	Dr. N. Rajendran	Microbiology	Ocean Science and Technology
7	Dr. Benny N. Peter	Coastal Zone Management	School of Ocean Engineering
8	P.T. Lakshmanan	Marine Chemistry	Ocean Science and Technology
9	Dr. K.V. Thomas	Disaster Management	School of Ocean Engineering

Professor of Eminence

Sl. No.	Name & Designation	Department	School
1	Dr. K. Gopakumar	Food Science & Technology	Ocean Science and Technology
2	Dr. K.S. Purushan	Pandit Karuppan Chair	School of Management and Entrepreneurship
3	Dr.D.D. Namboothiri	Food Science & Technology	Ocean Science and Technology

Teachers on contract basis

Sl. No.	Name & Designation	Department	School
1	Dr. Mariya T. Cheeran	Rural Management	Management Studies and Entrepreneurship
2	Dr.Sneha Susan Simon	Food Technology	Aquatic Food Products & Technology
3	Sri. Hamid Hussain. V	Fisheires	Fishery Environment
4	Dr. Suresh P.R.	Economics	Management Studies and Entrepreneurship
5	Sri. Mahesh J	Geosciences	Ocean Science and Technology
6	Dr.Rachanamol S.	Microbiology	Ocean Science and Technology
7	Dr.Raghul Subin. S.	Microbiology	Ocean Science and Technology
8	Sri.Sarath Prasanth S.V.	Geosciences	Ocean Science and Technology
9	Arun Kumar V.S.	Ocean Engineering	Ocean Engg. & Technology
10	Sri.Sreenal Sreedhar	Remote Sensing	„
11	Smt. Ashamol V.		Management Studies and Entrepreneurship
12	Mary Jisha Francis	Physical Oceanography	Ocean Sciences and Technology
13	Sandhya Lekshmi	Aquaculture	Aquaculture and Biotechnology
14	Sri. George Joseph	Human Resource Management	Management Studies and Entrepreneurship
15	Sri. Rajeeve G.K.	Marketing Management	Management Studies and Entrepreneurship
16	Sri. Shajeera K.A.	General Management	„School of Management and Enterprenuership
17	Smt. Sanu Jacob	Agricultural Post Harvesting Technology	„Faculty of Fisheries
18	Dr.Rachel Fernadez	Aquaculture	Faculty of Fisheries

Guest Lecturers

Sl. No.	Name	
1.	Anju K. Joshi	9.
2.	Praveen Kurian Thomas	10.
3.	George Basil	11.
4.	Dr. K.M. Mathew, Professor (Rtd.)	12.
5.	Sri. Sudhir	13.
6.	Dr. Rachel Fernandez	14.
7.	Dr. Sanu Jacob	15.
8.	Sri. Ankur Nagori	16.
		17.
		18.

	Nellengol Kavitha Karunakaran
	Saranya P.
	Renjith T.A.
	Adv. Jayaprakash
	Dr. V.N. Sanjeevan
	Sruthy Baby
	Adv. Syam Kumar
	Adv. Smitha Chathanarambath
	Dr. V.S. Sebastian
	Dr. Benjamin P.V.

(I) Non - teaching staff

Name & Designation

Section

GENERAL ADMINISTRATION

Sri.K.M. Mohammed, Deputy Registrar & P.S. to Vice Chancellor	Vice Chancellor's Office
Shri Cleetus P.J, Assistant Registrar	Administration,,
Sri. P.R.Sreekumar, Assistant Registrar	„Academic and Examination
Smt. Meera. T. M., Section Officer (FC& D)	Administration
Sri.Shaheer, Asst. Section Officer	„ Administration
Sri.Vijayshine. K. V, Asst. Section Officer	„Finance
Sri.K.K. Faizal, Asst. Section Officer	„ Administration
Sri.Muhammed Shanar, Asst. Section Officer	„ Administration
Smt. Ajitha T.C, O.S. (Hr. Gr.)	Administration
Smt. Litty Fernandez, Office Supdt.	Administration
Sr. T.M. Devassy, Asst. Section Officer	Fisheries Station, Puduveypu
Sri. Raju Kurian. M, Asst. Section Officer	„Finance
Smt. Vinu C.V., Asst. Section Officer	„ Administration
Smt. Deepthi. V., Asst. Section Officer	„ Administration
Sri.Ajith Kumar K.L., Asst. Section Officer	„ Administration
Ms.Chandana Chandrasekharan, Assistant	Administration
Shri Akhil V.S.Assistant	Academic & Examination
Sri.Anu S, Assistant	Finance
Smt.Anusha P.V, Assistant	Academic & Examination
Smt. Dhanya, Typist Sr. Gr	„ Administration
Sri. C. Pradeep, Deputy Registrar	Finance
Sri.T.K. Deleep, Section Officer	„ Administration
Smt. Elizabeth Edward, Asst. Section Officer	„ Administration
Smt. Thressiamma John, Office Superintendent	Administration

Smt. Seema M.C., Sel. Gr. Computer Assistant	Academic
Smt. Dhanya, Sel. Gr. Computer Assistant	Administration
Smt. Priya M, Asst. Section Officer	„Administration
Sri. A.V. Thomas, Sel. Gr. Computer Assistant	„Registrar Office
Sri. Vijayan Office Superintendent	Office of Pro Vice Chancellor
Sri. N.B. Sudheer, Section Officer &PA to Registrar	Office of Registrar
Smt. Tessy K. Thomas, Computer Programmer	Computer Lab
Sri.Kunjumammed. V. S., Assistant Librarian	Library
Smt. P. V. Vijayalakshmi, Reference Assistant	Library
Smt. Ramya Raveendran, Technical Assistant	„
Smt. Padma Narayanapillai, Farm Superintendent	Farm Staff
Sri. K.K. Reghuraj, Farm Manager Gr. I	„
Smt. Bindumol Abraham, Farm Officer Sel. Gr.	„
Sri.K.K. Sreekumar, Pump Operator	
Sri. P. M Beneesh	Lab Assistant
Smt. P. S. Surya	„
Smt. Rajamma K.M.	„
Sri. K. Surendran, HDV Driver	Transportation Wing
Sri. N.C., Jose, LDV Driver	
Sri. A.T. Gheevarghese, LDV Driver	
Smt.Girijamma G., Matron Sel. Gr.	Hostel
Sri.K.J. Jose, Dupli. Machine Operator Sr.Gr.	Office
Sri.Lineesh K.R.	Office Attendant
Sri. Arun K.J.	„
Sri. Renjith.A.R.	„
Smt.Sindhu Devi (On deputation)	„

Director of Public Relations and Publication – Shir Raju E Raphael (on contract)

(I) Contract staff –	External Aided Project / Plan Project		
1. Sri. Rajeeesh P.M.	Research Fellow	10. Smt. Syamala V.K.	„
2. Smt. Mekha Bose	Tech. Assistant	11. Smt. Remya L. Sundar	Research Fellow
3. Sri. Sanju K.	Research Fellow	12. Sri. S. Thiruvarasu	„
4. Smt. Resmi M.R.	Field Assistant	13. Smt. Maneeja Murali	„
5. Smt. Shiny Peter	„	14. Sri. Sreenath V.R.	Senior Research Fellow
6. Smt. Anju M.S.	„	15. Smt. Divya V. Haridas	„
7. Smt. Salini N.S.	„	16 Smt. Anu Remanan	Research Fellow
8. Smt. Henamol A.A.	„	17. Smt. Gilgi M.G.	Nursery Attendant
9. Smt. Hema A.A.	„	18. Smt. Surya A.B.	SRF
		19. Smt. Sreeja P.V.	Field Assistant

20. Sri. Vineeth kumar	„	Accountant
21. Smt. Gayathri P.V.	Project Scientist	
22. Smt. Fejila Agnes	SRF	
23. Smt. Sreeparvathy	SRF	
24. Sri. Sam Peter	SRF	
25. Sri. Vipin Das P.V.	SRF	
26. Sri. Silesh M.S.	SRF	
27. Sri. Viji V.	SRF	
28. Sri. Harish K.C.	SRF	
29. Sri. Akhil P.B.	SRF	
30. Smt. Divya A.S.	Tech. Asst.	
31 Smt. Rekha K.R.	Office Asst-cum-	
32. Smt. Geeji M.T.	SRF	
33. Smt.Sneha K.G.	SRF	
34. Sri. RakeshC.G.	SRF	
35. Smt. Neenu Prakash	SRF	
36. Smt. Aswathy	SRF	
37. Dr. Elizabeth Carolin	Project Scientist	
38. Smt. Devi.	SRF	
39. Sri.Arjunan	SRF	
40. Sri.Renjith	SRF	
41 Sri. Hareesh V.N.	Fieldman (F)	

(I) Daily wage staff

1	Sri. Babu Paul	Assistant, Academic
2	Smt. Reshma V.S.	„
3	Smt. Simi Sajeevkumar	„
4	Smt. Sunila M.	Assistant, Administration
5	Smt. Shamila P.H.	„
6	Smt. Sajila V.L.	„
7	Smt. Praveena A.P.	Assistant, Finance
8	Smt. Preetha V.N.	„
9	Smt. Sajila V.L.	„
10	Smt. Meharunnisa A.	„
11	Smt. Praveen C. Prasad	Assistant, Management Studies
12	Smt. Salini T.S.	Assistant, Processing Dept.
13	Smt. Bindhu P.P.	Assistant, SOST
14	Smt. Shabeera	Assistant, Directorate of Research
15	Smt. Sheela M.T.	Computer Assistant, Acad.
16	Smt. Sindhu K.S.	Class IV
17	Smt. Sreedevi Bijumon	„
18	Smt. Omana N.K.	„
19	Sri. Ramesh A.K	Driver cum Office Attended
20	Sri. Bijumon K.K.	„
21	Sri. Anoop G. Menon	„
22	Sri. Harikrishnan V.M.	„
23	Sri. Jayapalan K.P.	Bus Attendant
24	Smt. Swathylakshmi	Field Assistant, F.S.Puduveypu
25		Lab Assistant
26	Sri. Saneer N.S.	Field Assistant
27	Sri. Nazeer T.K.	Pump Operator
28	Sri. Sasidharan Pillai	Security Guard.



SCHOOL OF OCEAN SCIENCE AND TECHNOLOGY

Staff strength

Teaching

- | | |
|-------------------------------|---------------------------------|
| 1. Dr. S Suresh Kumar, | Professor & Director |
| 2. Dr. K Gopakumar, | Professor of Eminence |
| 3. Dr. V K Venkataramani, | Adjunct Professor |
| 4. Dr. S Rajendran, | Adjunct Professor |
| 5. Dr. D D Namboodiri, | Adjunct Professor |
| 6. Dr. P T Mathew, | Adjunct Professor |
| 7. Dr. M V Joseph, | Adjunct Professor |
| 8. Dr. Basil Mathew, | Adjunct Professor |
| 9. Dr. Jenny Ann John, | Assistant Professor |
| 10. Dr. S Sugunan, | Adjunct Faculty |
| 11. Dr. P V Joseph, | Adjunct Faculty |
| 12. Dr. Benny N Peter | Adjunct Faculty |
| 13. Dr. CVK Prasada Rao | Adjunct Faculty |
| 14. Dr. Justin David, | Assistant Professor on contract |
| 15. Dr. Prathibha, | Assistant Professor on contract |
| 16. Dr. Sirajudheen T K, | Assistant Professor on contract |
| 17. Dr. Sruthi Thalayappil RS | Assistant Professor on contract |
| 18. Ms. Sara Baker Fenn | Guest Lecturer |
| 19. Ms. Nikita PT | Guest Lecturer |
| 20. Ms. Vrindha P K | Guest Lecturer |
| 21. Ms. Megha Dixon | Guest Lecturer |
| 22. Ms. Haritha Y S | Guest Lecturer |
| 23. Dr. Jincy Ann Jomy | Guest Lecturer |
| 24. Dr. Sreena Raj | Postdoctoral Fellow |
| 25. Dr. Divya KR | Postdoctoral Fellow |
| 26. Dr. Elizabeth Mary John | Postdoctoral Fellow |
| 27. Dr. Adithya V. S | Guest Lecturer |
| 28. Dr. Honey H Das | Guest Lecturer |

Non Teaching Staff

1. Mr. Shaheer S, Section Officer
2. Mrs. Sheena, Assistant on contract
3. Mr. Babu Paul, Assistant on contract
4. Ms. Neethumol K K, Tech. Asst. on contract
5. Ms. Aarathi S., Lab Assistant
6. Ms. Athira T Rameshan., Lab Assistant

7. Ms. Rakhi O., Lab Assistant
8. Ms. Sheena S., Computer Lab Assistant.

Student strength

	Programme	I Year.	II Year	Total
1	Marine Biology	30	30	60
2	Physical Oceanography	11	9	20
3	Food Science and Technology	35	32	67
4	Marine Microbiology	24	18	42
5	Biotechnology	19	19	38
6	Earth Sciences	09	10	19
7	Marine Chemistry	20	16	36
8	Ph.D.			85

Plan for the current academic period

- Procurement of state-of-the-art food processing and analytical equipments to facilitate training for graduate, postgraduate and research students
- The equipment will be utilized by the students as part of the 'Earn while you learn' program
- Conduct Industrial Advisory Board Meeting to upgrade and improve the syllabus. Also, to bridge the gap between industry and academia
- Conduct Industrial Visits/ R & D labs for students to get first-hand knowledge
- Conduct HACCP and other relevant training programmes
- Earth Science Laboratory has to be developed further. More specimens for the Geological Museum have to be acquired. Equipments like Proton Precession Magnetometer (PPM) have to be procured for imparting practical knowledge in the geophysical field surveys. The geological training imparted by the Geological Survey of India has to be utilized thoroughly by sending the M. Sc Earth Science students every semester for a period of not less than 10 days. To have better collaboration with the National Centre for Earth Sciences Studies (NCESS), Trivandrum as KUFOS has MoU with NCESS.

Conference/Seminar/Workshop/Invited lectures organized by the Department

1. Internationally renowned malacologist Dr. Graham Oliver from the National Museum, Wales visited KUFOS and delivered a talk on '**Planning and executing taxonomic research**' during 22nd February, 2019 for the benefit of postgraduate and doctoral students of marine science and fisheries.
2. Prof. Peter K L Ng, Director of the Lee Kong Chian Museum of Biodiversity at the National University of Singapore delivered a talk on the '**Importance of publications and citations in academia**' for the students and faculty of KUFOS on 11th March, 2019.
3. **FoSTaC Special training on Milk and milk products:** FoSTaC Level 3 (special) training on milk and milk products was organized by the Department of Food Science and Technology and AFST(I) Cochin Chapter at the Conference Hall, KUFOS Headquarters on 13th and 14th August, 2018. 37 participants attended the programme.
4. Second batch of **FoSTaC training** was held on 15th and 16th September, 2018 at same venue. 36 participants actively participated in the programme.
5. **HACCP Certification:** A training programme for certification of the students in HACCP was held in KUFOS from 5-9th November, 2018. The certification was conducted under the Department of Food Science & Technology by Synergy Systems and Food Quality Laboratory and Research Centre, Kochi, an internationally accepted company, to grant certification of HACCP in food analysis. It was a level 3 course of 5 days duration. 24 candidates of 4th batch MSc Food Science and Technology students participated in the course. They have passed the programme successfully and have been awarded certificates of HACCP.

Student Progression

- Parvathy. from M.Sc. Biotechnology, has qualified for DST INSPIRE fellowship (2019) and will be joining Department of Biotechnology, CUSAT and registering for her Ph.D. program

- **Ms. Haritha Y S**, student of MSc Marine chemistry batch 2017-2019 was selected for **Ocean Society of India** (OSI) Meritorious PG Dissertation award in Marine Sciences for the year 2018-2019 on 28th June 2019. She will be conferred with a cash award and citation during the OSICON to be held at the Centre for Marine Living Resources & Ecology (CMLRE) Cochin, during 12-14 December 2019.
- Miss Meenakshi Sreejith and Anagha KS, M.Sc. Physical Oceanography Students passed CSIR NET
- Mr. Saravana Perumal and Ms. T. Sreejaya batch (2016-2018) have cleared NET (LS) and have registered for their Ph.D. program in premier institutes like Sree Chitra Tirunal Institute of Medical Sciences, Trivandrum and Christian Medical College, Vellore.
- 2 students of previous batch (2016-2018) M.Sc. Earth Sciences, have succeeded in getting admission for their Ph.D program in Canada (Ms. Meenu and Ms. Sowmya Menon).
- Swetha Sanjeev from MSc Biotechnology (2017-2019) has joined the leading biotech industry BCIL program conducted by - BioCon Research Academy as a Trainee
- Rejitha Raju from MSc Biotechnology (2017-2019) has joined as teacher in Bodhi residential Schools for teaching Biology
- 4 students have cleared Eligibility tests for selection to Industrial Training program conducted by DBT, New Delhi and are waiting for their slots to join industrial training programs offered by premier educational institutions and industries.
- All the students of MSc Biotechnology (2018-2020) batch are currently pursuing their dissertation projects in premium research institutions like IGIB (New Delhi), IICT (Hyderabad), ACTREC (Pune), CIFTRI (Mysore) and Malabar Cancer Center (MCC), Kannur.
- Educational Tour conducted to visit various premier institutes like NIOT, CIBA, and NCSM, Anna University in Chennai and CAS in Marine Biology (Parangipettai) etc.

- 3 students from previous batches (2017, 2018 batch) have completed BCIL, BITP Training program offered by Department of Biotechnology, New Delhi in leading Biotech industries.
- The students participated in the National Seminar conducted by the Centre for Geotechnology, Manonmaniam Sundaranar University, Tirunelveli 627012 during the month of September 2018. All the students received certificates to that effect.
- The students of M.Sc. Earth Sciences, carried out a study tour to Salem, Thiruchenkode and Yercaud in Tamil Nadu during the month of September 2018.
- The students of M.Sc. Earth Sciences participated in the National Seminar, Present Day Advancements in Geoscience (PAGE 2019) during 17-18 January 2019 in the Cochin University of Science & Technology, Cochin.
- The 2017 and 2018 Batch students of M.Sc. Earth Sciences went to Goa for a Study Tour cum Field Work in the month of August 2018. Under the aegis of this Study Tour, they visited laboratories like National Institute of Oceanography, Dona Paula, Goa, NCPOR, Goa and Goa University
- The 2017 Batch students of M.Sc Earth Sciences carried out their project works during their Semester IV (2018-19 period) in the following research institutes viz. National Institute of Oceanography (NIO), Goa; Wadia Institute of Himalayan Geology (WIHG), Dehradun; National Geophysical Research Institute (NGRI), Hyderabad and the Marine Geology Wing of Geological Survey of India (GSI), Kochi for a period of 4 months.
- The following are the Industrial Visits conducted for the M.Sc. Food science and Technology students for a practical exposure to the syllabus curriculum:
 - a) Krishnan Food Processors (Cashew processing plant), Kollam on 10 Jan, 2018
 - b) Nirapara Rice Mill, Okkal on 31 Jan, 2018
 - c) Milma, Eranakulam Dairy, Thripunithura on 17 Feb, 2018

- d) Food Tech Exhibition, Kerala (8th Edition) at Rajiv Gandhi Indoor stadium, Kochi on 27 Jan, 2018
 - e) Food Tech Exhibition, Bolgatty, Kochi - 24th January 2019.
 - f) Central Products Dairy, Alappuzha Milma (Kerala Cooperative Milk Marketing Federation - KCMMF), Punnapra, Alappuzha - 15th February 2019.
 - g) Meat Products of India, Koothattukulam - 26th February 2019.
 - h) Modern Bread, Mamangalam, Edappally, Ernakulam - 27th February 2019.
 - i) India Sea Foods, Kannamaly, Kochi - 13th March 2019.
- **Mr. Sanyo**, student of MSc Marine chemistry batch 2017-19 got selected as project assistant at National institute of Oceanography, Visakhapatnam.
 - Students of MSc Marine chemistry 2017-19 batch **Ms. Keerthana** and **Ms. Swapna** got selected as Technical Assistant at National Institute of Technology, Calicut.
 - **Mr. Midhun K T**, student of MSc Marine chemistry batch 2016-18, got selected as Project Assistant at National Institute of Oceanography regional centre, Cochin.
 - **Ms. Krishnendhu P**, student of MSc Marine chemistry batch 2016-18, got selected as Project Assistant at National Institute of Oceanography, Goa.
 - **Ms. Aflah T**, student of MSc Marine chemistry batch 2016-18, got selected as Project Fellow at Centre for Water Resources Development and Management, Calicut.
 - **Ms. Jyothilekshmi**, student of MSc Marine chemistry batch 2016-18, got selected for the prestigious INSPIRE Fellowship.
 - Students of MSc Marine chemistry 2015-17 batch, **Mr. Nasif** and **Mr. Prasanth** got job as Chemist in Dubai and Abu Dhabi respectively.
 - Student of MSc Marine chemistry 2015-17 batch, **Mr. shebin** got job as chemist trainee at Hindustan Newsprint Limited, Velloor.
 - Three students of MSc Marine chemistry batch 2017-19 have successfully completed their MSc Dissertation from ICAR Central Institute of Fisheries Technology, Cochin. Three students from National Institute of Oceanography

Head Quarters (CSIR-NIO) Dona Paula, Goa. One each from the regional centres of NIO at Mumbai and Cochin. Two students from National Centre for Polar and Ocean Research (NCPOR) Goa and one student from Centre for Marine Living Resources and Ecology (CMLRE) Ministry of Earth Sciences, Cochin.

- **Ms. Ahana Mohan**, student of MSc Marine Chemistry batch 2016-18 published a research paper entitled *Biofouling Control Using Nano Silicon Dioxide Reinforced Mixed-Charged Zwitterionic Hydrogel in Aquaculture Cage Nets* in *Langmuir* by ACS Publications on 28th February 2019. The work was a part of her MSc dissertation under the guidance of Dr. P. Muhammed Ashraf at ICAR Central Institute of Fisheries Technology, Cochin. The article can be cited as *Langmuir* 2019, 35, 12, 4328-4335
- Department of Marine Chemistry organized an IV programme for the MSc Marine Chemistry batch (2018-20) on 7th and 8th March 2019 to National Centre for Earth Science Studies (NCESS) Trivandrum and ICAR-Central Marine Fisheries Research Institute (CMFRI) Vizhinjam research centre respectively.
- Department of Marine Chemistry organized an institutional visit for the MSc Marine Chemistry batch (2018-20) on 29th August 2019 to ICAR Central Institute of Fisheries Technology (CIFT), Cochin.
- **Ms. A K Keerthana**, student of MSc Marine Chemistry batch 2017-19 published a research paper entitled *Carbon nanodots synthesized from chitosan and its application as a corrosion inhibitor in boat-building carbon steel BIS2062* in *Applied Nanoscience* on 27th September 2019 by. The work was a part of her MSc dissertation under the guidance of Dr. P. Muhammed Ashraf at ICAR Central Institute of Fisheries Technology, Cochin. The article can be cited as, Keerthana, A.K. & Ashraf, P.M. *Appl Nanosci* (2019). <https://doi.org/10.1007/s13204-019-01177-0>
- M.Sc. second semester (2017-2019 batch) visited Mararikulam, Andhakaranazhi and Chellanam coastal regions and observed the wave-coast interaction processes and the shore protection techniques.
- Department of Physical Oceanography of KUFOS has organized a field visit for the MSc Physical Oceanography batch (2018-2020) from 20th February to 24th February 2019. On 21st, the team visited CSIR-National Institute of

Oceanography (NIO), Dona Paula, Goa, one of the constituent laboratories of the CSIR. On 22nd, the team entered into National Centre for Polar and Ocean Research (NCPOR), India's premier R&D institution responsible for its research activities in the polar and Southern Ocean realms.

- MSc Physical Oceanography students visited Central Marine Fisheries Research Institute (CMFRI) headquarters at Kochi on 5th February 2019, its 72nd Foundation Day, celebrated as the Open House program and enjoyed the ringside view of marine wonders and to learn the latest developments in marine research
- The following students was awarded M.Sc. degree (2019 batch) in Marine Biology. The dissertation of the students awarded in M.Sc. Marine Biology is also given below:

Name of students	Topic
Abijith	Molecular identification of selected clams and mussels from Kerala waters
Aghila.N.S	Ecology of shrimp farms of vembanad lake
Amritha.K.M	Taxonomy of deep sea brachyura and crab like lithodidae (anomura) of the Andaman and Nicobar waters
Anisha Shafni Jhon V	DNA Barcoding of marine organism of conservational significance
Anjali K	Taxonomy of deep-sea squatiobsters (crustacea-decapoda-anomura)of the Indian waters
Anju.V.S	Taxonomy and diversity of Echinoderms in the Agatti Atoll, Lakshadweep
Anupa Albin	Macrobenthic assemblages in Kadalundi estuarine system Kozhikode, Kerara
Anupama Raj	Study of phytoplankton spectral absorption, community size structure and pigment composition of eastern Arabian sea during south west monsoon
Anu Bruno V J	Studies on the bathymetric variations in the second reception capacities of fishes using otolith morphology
Aparna Mol.T.A	Biotechnological potential of marine lactic acid bacteria for the production of lactic acid from seaweed biomass
Ashmy George	Standing stock and community structure of macrobenthos along Agatti Atoll, Lakshadweep
Aswathy Babu	Cuturable diversity of enviornmental vibrios in Vembanad lake

Aswin dev M.P	Role of Riverine inputs and coastal currents in structuring the zooplankton composition and community structure in Bay of Bengal
Haripriya.R	Characterization of antioxidant properties of green seaweeds (phylum-Chlorophyta): isolation of an isochromene analogue
Haritha.V.U	Food and feeding of the three spotted crab portunus sanguinolentus (Herbst, 1783) along vizhinjam coast of Kerala, south west coast of India
Harsha Shanmughan	Assessment of the abundance and distribution of fish eggs along the coastal waters of Eastern Arabian sea using continuous underway fish egg sampler (CUFES)
Ignatious Joseph	Role of Riverine inputs and coastal currents in structuring the phytoplankton composition in Bay of Bengal
Jeenu George S	Studies on biodiversity of major flora and fauna of poovar estuary, south west coast of India
Kajol Raju	Study on the awareness, participation and adoption of coastal zone management among the fisherfolk in south west coast of Kerala
Karthika B.A	Taxonomy of deep sea dendro-branchiate and carideans shrimp of the southern Arabian sea
Karunia P Mathew	Biotransformation of agricultural wastes using mangrove associated bacteria
Krishnendu.A	Study on the benthic ecology of commercially important clambeds of Vembanad lake
Mariya Davice	Intra - annual variability in bio-optical properties of coastal waters of eastern Arabian sea
Neeraj Kumar	A study on spatio-temporal variations in meiofaunal abundance in the Vembanad lake with special reference to impact monsoon flood
Pooja.N.S	Inter-Annual variation in production pattern of the south-eastern Arabian sea during fall-inter monsoon
Praveena Sudheesh	Distribution of mesozooplankton community in the coastal waters of Mangalore during winter monsoon
Rakhimol.M.P	Molecular and morphological identification of platycephalids of vembanad lake
Thasneem.N	Variability of zooplankton in major estuaries along west coast of India
Vani B Mahesh	Role of aquatic plants in removal of toxic waste from inshore waters Kochi, Kerala

Academic/Research/Extension activities of Faculty outside the University

1. Dr. P. T. Mathew attended Board of Studies Meeting in Food Science and Technology, University of Calicut, June 13, 2019.
2. Dr. P. T. Mathew was an Expert for the Selection of professionals in the Dept. of Biochemistry & Nutrition, CIFT

Industrial visits:



CIFT visit in June 2018 by M.Sc. batch



Visit to Goan Smoked Sausages & Ready to Use Sausage Masala Paste (a family enterprise) in June 2018 by M.Sc. batch

Food Tech Exhibition, Bolgatty, Kochi - 24th January 2019



Meat Products of India, Koothattukulam - 26th February 2019



India Sea Foods, Kannamaly, Kochi - 13th March 2019

SCHOOL OF OCEAN ENGINEERING AND UNDERWATER TECHNOLOGY

Staff strength

Adjunct faculty

:1 for M Tech Dr.Sivadas
 Dr.Prasad Rao (Service from SOST)
 Dr.Pankajaction (Service from SOST)

B Tech-Food Tech: Dr.Gopakumar (Service from SOST)
 Dr.D D Nambuthiri(Service from SOST)
 Dr.P T Mathews (Service from SOST)

Contract/Guest faculty:

6(o/c)	/	7(G)
1. Er.George basil		1. Ms.Jasmine
2.Er.RashidaRejuwa		2.Sri.Joseph
3.Er.Bhavya Francis		3Ms.Anjukrishna
		4.Ms.Preeja
4.Er.Rahulkrishna H		5.Mr.Febin Wilfred
5.Dr.LinuSalim		6.Ms.Afsalna
6.Er.PoojaPrasenan		7.Dr.Anju

Student strength B.Tech – year wise : 2017(34),2018 (44)

M Tech (I year) :2018(17)

M Tech (II year) :2017(7)

PhD :3 :

Plan for the current academic period

- Approval of B Tech Course from AICTE
- B Tech Laboratories
- Proposal for permanent staff for the school
- ELP for B Tech Students from premier research organization

Details of school meeting conducted with agenda

- Jan2 2018 S2 and S4 workload lab discussion reg & internships reg
- June4 2018 S3, S5 progressing semester labs and theory
- 14/3/19Allotment of School lab in charges, installation of coming semester lab equipment's,
- 4/4/19AICTE Inspection preparation of all files,duties

- 6th June 2019 Evaluation of m Tech Mini project, Industrial visits, Guest talk for selected areas
- 7/7/2019 call for parents meet reg
- 8/8/2019 PTA meeting minutes reg, Discussion of Internal marks, attendance reg

Conference/Seminar/Workshop/Invited lectures organized by the school

- July 27th 2018 10 a.m to 4.p.m.krishi business kendra at Kakkanad, **One day workshop in Vegetable and Fruit Promotion Council, Kakkanad for B Tech Food Technology 3rd semester students 2017 batch**
- One day workshop on “**Motivation, English & Personality Development** “for Btech 3rdsem Food Technology by **Mr.Binnoy from EdyounetTeleclass rooms** ,Kochi on July 2nd 2018
- One day workshop on “**Communication Skill**” by **Ms.Asha Thomas Fen Corporate Consultant & Academic Advisor on Sept 3rd 2018** for Btech 3rdsem Food Technology
- Orientation programme on Cambridge English Language Assessment which cover the state-of-the-art learning tool of English Language which enables the students to master the language, highlighting the English language assessment by Cambridge University.
- **INTERNSHIP - NIOT, Chennai for M Tech Coastal and harbor Engineering students at the end of 2nd semester**
- **Industrial Visits of B Tech Food Technology**
 - **MILMA Plant Kochi**
To get the practical exposure of processing technology of milk
 - **Heat & Mass Transfer Lab(HMT) Lab Thermal Lab division of Mechanical Enggat CUSAT**
For learning various types of heat exchangers, constructional details of plate heat exchanger, shell and tube heat exchanger in food Industry
- Organized One day hands-on workshop on MATLAB and SIMULINK in association with CoreEL Technologies (I) Pvt Ltd on 17th June 2019. Sessions were on features of MATLAB toolboxes and MATLAB Programming basics, Data Analysis & visualization, Model-based design using Simulink, Image processing and Video streaming in MATLAB, Hands on Session on Mapping Toolbox
- As a part of B Tech Food technology internship programme, the students had **one week training at Indian Institute of Spices Research (IISR), Kozhikode (Calicut)** a constituent body of Indian Council of Agricultural Research (ICAR). Training started with an introduction about IISR, including their activities and vision , about spice production and trade, the various composition and

quality parameters of different spices. Students were also fortunate to visit Krishi vigyan Kendra situated at peruvannamuzhi

- School organized 3 Day Workshop under faculty development prog on “Recent Research and Application Trends in Underwater Sensor Technologies” Dec 11th - 13th 2019 @ KUFOS

Academic achievements of Faculty

- B TECH Food technology Course under this School received letter of approval from

All India Council for Technical Education AICTE , New Delhi.

- FDP sponsored by AICTE
- School Organised a workshop in sensor Technology

Academic achievement of Students

- **M Tech Coastal and harbor Engineering students at the end of 3rd semester visited munambamHarbour and the proposed site for the new port**

Industry Institution Interaction through Industrial Vist

National Institute Ocean Technology (NIOT) INTERNSHIP (10 days)

The M.TECH third semester student of school of ocean engineering and under water technology, KUFOS visited National institute ocean technology(NIOT) Chennai for their internship work and got an exposure about ocean data acquisition, data assimilation, HF RADAR installation and their function, ocean modeling and data processing ,analysis. They also got knowledge about EIA studies, ARC GIS, mapping, Sediment transport analysis using Delft 3D mike 21 and wave structure interaction using plaxis software.

The National Institute of Oceanography (NIO) GOA INDUSTRIAL VISIT (14.03.2018 to 17.03.2018)

- The major research areas include the four traditional branches of oceanography - biological, chemical, geological/geophysical, and physical – as well as ocean engineering, marine instrumentation and marine archaeology. Our students could attend seminar on ongoing project in NIO GOA and visited their museum which has the marine instruments, sensors, sample collectors, samples (manganese nodules) etc., They could also interact with scientist of NIO, Goa to know about the current research opportunities in ocean engineering field

Cochin Port Trust (5th Feb 2018)

The Cochin port consists of mainly two wharf, Ernakulam wharf and Mattanchery wharf. We first made a visit to the Ernakulam wharf. The things that we witnessed are fenders, mooring bollards, unloading of ships and tugging of ships. At Mattanchery wharf we got a class about the fire fighting system



Capacity building of Staff and Students

External training given to The school of Naval Oceanography and Metereology(SNOM)

The 06 Foreign trainees (Myanmar, Sri Lanka, Indonesia & Bangladesh) of SNOM-India navy visited our Marine Instrumentation lab and given training for coastal Dynamics monitoring system and the 16-channel data logger .The data includes meteorological, water resources and water quality. (Feb1st 2018)

Meetings attended by faculty members /research scholars outside the University

- Dr.Linu Salim and Er.Bhavya Francis attended ICAR sponsored Short Course on „Recent advances in post-harvest fisheries engineering’ during 13-22 November 2019 at CIFT Cochin
- Five days online FDP on Recent Trends and Developments in Food Technology organized by Saintgits college of engineering in association with AFSTI, Cochin chapter
- Short course on Recent advances in Post harvest engineering held at CIFT
- Er. Pooja Prasenan attended the National Workshop on “Internet of things”, conducted by School Of Ocean Engineering And Underwater Technology, Kerala University Of Fisheries And Ocean Studies, & ATAL, AICTE. From 23 to 27 Sept, 2019
- Er. NebuPulickal Research Scholar attended webinar “Learn Python Programming Masterclass” organized by Udemy, Online on 10th January 2018
- Er. NebuPulickal Research Scholar attended webinar “100 Days of Code - The Complete Python Pro Bootcamp” organized by Udemy, Online on 14th April 2018
- Er. NebuPulickal Research Scholar attended training on “Antenna Engineering Training ” organized by Tonex, Online on 18th-24th October 2018
- Er. NebuPulickal Research Scholar attended training on “Wireless Sensor Networks ” organized by AMSUB, Online on 2nd - 5th February 2019

- Er. NebuPulickal Research Scholar attended class on "Machine Learning " organized by Coursera, Online on 6th June 2019

Publications of Staff with Research scholars/PG Students

- Ms.Linu Mineral phosphate solubilization by indigenous *Pseudomonas aeruginosa* isolates from chilli (*Capsicum annum L*) rhizosphere. Linu M.S., Aju K. Asok and Jisha M.S. Journal of tropical agriculture.2018. 134-144.
- Linu M Salim, Sreekumar J, and Jisha M S. "Plant growth promoting traits of indigenous *Pseudomonas aeruginosa* isolates from chilli (*Capsicum annum L*) rhizosphere". Communications in Soil science and plant analysis.2019. 50(4)
- Linu M Salim, Sreekumar J, and Jisha M S. Induction of systemic resistance in chilli (*Capsicum annumm L.*) by autochthonous *Pseudomonas aeruginosa* against anthracnose pathogen *Colletotrichum capsici* Journal of tropical agriculture 2018. 56(2):153 166.
- Linu M. Salim and M.S. Jisha. Response of cowpea [*Vigna unguiculata* (L.) Walp.] to phosphate solubilizing bacteria isolated from rhizosphere. Proceedings of 19th Swadeshi science congress pp.31.
- A Aranganathan, Suriyakala,"An efficient secure detection and prevention of malevolent nodes with lightweight surprise check scheme using trusted mobile agents in mobile ad-hoc networks", Journal of Ambient Intelligence and Humanized Computing, Publisher Springer Berlin Heidelberg, pp 1-11, October 5th 2018
- Basim Basheer, NebuPulickal and Suriyakala CD,"High Frequency Antenna Design Challenges for Underwater Communication-An Intensive Probe", Oceanography & Fisheries Journal, Open access Journal, Publisher Juniper, Vol5, issue 5,,Jan 2018, ISSN-2476-0536
- Aswathy Pulickal, A S Kiran, Kalyani.M, Lokesh T, R Vijaya, Suriya Kala C.D A numerical model study using delft3d on the feasibility of sustainable river mouth opening for fishing activities at kadalur villages on the southeast coast of India, Presented paper in 6th Indian National Conference on Coastal, Harbour and Ocean Engineering (INCHOE 2018) at CWPRS, Pune, September 2018.
- Krishnamoorthy Narasu Raghavan, Suriyakala C D, "Performance Analysis of Convolution Code with Variable Constraint Length in Shallow Underwater Acoustic Communication", International Journal of Computer Network and Information Security, 2019, 2, 13-20, Published online february 2019 in MECS (<http://www.mecs-press.org/>)
- Susmitha Thankachan, A S Kiran, Vijaya R, Suriyakala C D," Coastal sediment transport studies along kalpakkam using sediment trend analysis and

numerical modeling”,International Journal of Innovative Technology and Exploring Engineering (IJITEE),ISSN: 2278-3075, Volume-X, Issue-X (**Received the Best Paper Award**)

- Blessan K Varghese, A S Kiran, Vijaya R, Suriyakala C D,”Coastal sediment transport studies along kalpakkam using sediment trend analysis and numerical modeling” International Journal of Innovative Technology and Exploring Engineering (IJITEE),ISSN: 2278-3075, Volume-X, Issue-X
- Haritha,Sreenath K R,Joshi K K presented a poster in “Mapping Vulnerability of coastal villages of Kerala towards sea level rise” at World Brackish water Aquaculture Conference, BRAQCON 2019,CIBA,Chennai
- Haritha,Sreenath K R,Joshi K K presented a paper titled Mapping Vulnerability of Coastal villages of Karnataka Towards sea level rise “ in National Conference on Integrating Biochemistry & Ecosystem in a changing Ocean environment organized jointly by INCOIS-KUFOS,Panangad.
- Noujas V and Thomas K V, 2018. Shoreline management plan for a medium energy coast along west coast of India", Journal of Coastal Conservation (accepted on 16 Feb 2018)
- Pooja Prasenan and Dr.C.DSuriyakala, : An Exploration of Noise Mitigation Technique for Superior Pre-Processing of Image”, International Conference on Aquatic Resources and Blue Economy, November 2019.

SCHOOL OF FISHERY ENVIRONMENT

STAFF STRENGTH

Professor and Director i/c: 1

Professor of Eminence: 0

Associate Professor: 1

Assistant Professor: 2

Adjunct Professor: 0

Adjunct Faculty: 2

Assistant Professor (Contract): 1

Guest Faculty: 6

STUDENT STRENGTH

SL NO	PROGRAMME	1 ST YEAR	2 ND YEAR	TOTAL
1	MSc Remote Sensing & GIS	10	10	20
2	MSc Environmental Science	15	18	33
3	MSc Disaster Management	9	12	21
4	MSc Climate Science	10	-	10

PLAN FOR THE CURRENT ACADEMIC PERIOD

- To equip all the labs with sufficient equipment
- To furnish the classes and to develop smart class room with ICT

DETAILS OF DEPARTMENTAL MEETING CONDUCTED WITH AGENDA

School Governing Council 04.06.2019

Board of Studies Disaster Management 21.06.2019

ACADEMIC ACHIEVEMENT OF STUDENTS

- IEEE Geoscience and Remote Sensing Society Kerala Chapter Best Thesis Awards 2020 (Masters Category) is bagged by Ms. Shincy Francis (1st Prize) and Mr. Karun Jose (2nd Prize) of MSc Remote Sensing & GIS, 2018 Batch

CAPACITY BUILDING OF STAFF AND STUDENTS

1. Three Day Lecture Series in Disaster Management, Environmental Science and Remote Sensing & GIS was organised by SFE from 01-03 April 2019 at FS, Puthuveypu Campus
2. One Day National Workshop on the “Development of Puthuveypu Campus of KUFOS as a National/International Education Hub for Mangrove and Coastal Ecosystems” conducted at Fisheries Station, Puthuveypu on 29-05-2019
3. Field visit was conducted by MSc. Disaster Management, Environmental Science, and Remote Sensing & GIS students on 12 June 2019 at Eriyad Village in Thrissur district to study the severe coastal erosion and flooding due to incessant rains
4. Visual Problem Appraisal Kerala’s Coast 2.0 – Interaction of Dr. Loes Witteveen and Dr. J.S Jeroen Rijke with Faculties and Students of Puthuveypu Campus on Sep 2019
5. One Day visit of FORV SAGAR SAMPADA - India’s largest biological oceanographic research vessel. Academic community of SFE interacted with scientists/oceanographers on-board and acquainted with state-of-the-art oceanographic instruments such as CTD (Conductivity, Temperature, and Depth measuring instrument), Acoustic Doppler Current Profiler (ADCP), Echosounder, Autoanalyser, Automatic Weather Station etc. (2 October 2019)

6. One Day Seminar on Basic Geodesy and GNSS by Mr. Satheesh Gopi, Former Deputy Chief Hydrographer, Govt. of Kerala on 14-10-2019 at FS, Puthuveypu
7. National Science Day Celebration at SFE on 3 March 2020. Chief Guest of this occasion was Prof. PK Raveendran, Former Principal, Maharaja's College, Ernakulam

RESEARCH ACHEIVEMENTS AND PUBLICATIONS OF STAFFS & STUDENTS

1. Ashish K. Chaturvedi, U Surendran, **Girish Gopinath**, K Madhava Chandrana, Anjali N K and Mohamed Fasil CT (2019) Elucidation of stage specific physiological sensitivity of okra to drought stress through leaf gas exchange, spectral indices, growth and yield parameters, *Agricultural Water Management*, Elsevier, Vol.222,pp 92-104, DOI:[10.1016/j.agwat.2019.05.041](https://doi.org/10.1016/j.agwat.2019.05.041)
2. Surendrana, B Anagha, **Girish Gopinath** and E J Joseph (2019) Long-term Rainfall Analysis towards Detection of Meteorological Drought over Kozhikode District of Kerala, *Journal of Climate Change*, Vol.5,(2), pp 23-34 DOI:[10.3233/JCC190010](https://doi.org/10.3233/JCC190010)
3. **Girish Gopinath**, Nimmi S and Surendran U (2020) Landuse Classification of Hyperspectral Data by Spectral Angle Mapper and Support Vector Machine in humid tropical region of India, *Earth Science Informatics*, Springer, DOI: [10.1007/s12145-019-00438-4](https://doi.org/10.1007/s12145-019-00438-4).
4. Swetha T V, **Girish Gopinath** and Reshmi T R (2020) Isotope mass balance estimation of groundwater recharge in a hard rock tropical river basin in Kerala, India *Journal: Groundwater for Sustainable Development*, Elsevier, DOI:[10.1016/j.gsd.2020.100422](https://doi.org/10.1016/j.gsd.2020.100422)
5. Muscarella, R., Emilio, T., Phillips, O.L., **Joseph, S.** [together with 223 authors] (in press).The global abundance of tree palms. *Global Ecology and Biogeography*, DOI: [10.1111/geb.13123](https://doi.org/10.1111/geb.13123).
6. Sajeev, T.V., Swamy, G.E., George, A., Vimod, K.K., Anitha, K., & **Joseph, S.** (2019). Avenue Tree Health Assessment in a Tropical City-A Case Study from Thiruvananthapuram Corporation, Kerala, India.*Climate Change and Environmental Sustainability*, 7, 199-207.
7. **B Abish** and K Arun (2019). Resolving the weakening of orographic rainfall over India using a regional climate model RegCM 4.5. *Atmospheric Research*, 227, 125-139. (Impact Factor: 4.7) <https://doi.org/10.1016/j.atmosres.2019.05.003>

8. **B Abish**, Annalisa Cherchi and Satyaban B Ratna (2018). ENSO and the recent warming of the Indian Ocean. International Journal of Climatology. 38, 203-214. (Impact Factor: 3.9) <https://doi.org/10.1002/joc.5170>

PLACEMENT CELL-SFE

Intern, Ernakulam DDMA – 4 students

Intern, Kollam DDMA – 1 student

Project Assistant, SIES-IIEM, Navi Mumbai -2 students


Project Assistant, Gujrat Institute of Desert Ecology – 1 student

ACADEMIC ACHIEVEMENT OF STUDENTS

53



Congratulations




IEEE GRSS Best Thesis Awards

IEEE India
Geoscience and Remote Sensing , Young Researchers Conclave 2020

First Price 




Ms. Shincy Francis
M.Sc. Remote Sensing and GIS
2018 - 2020

Second Price 



Mr. Karun Jose
M.Sc. Remote Sensing and GIS
2018 - 2020

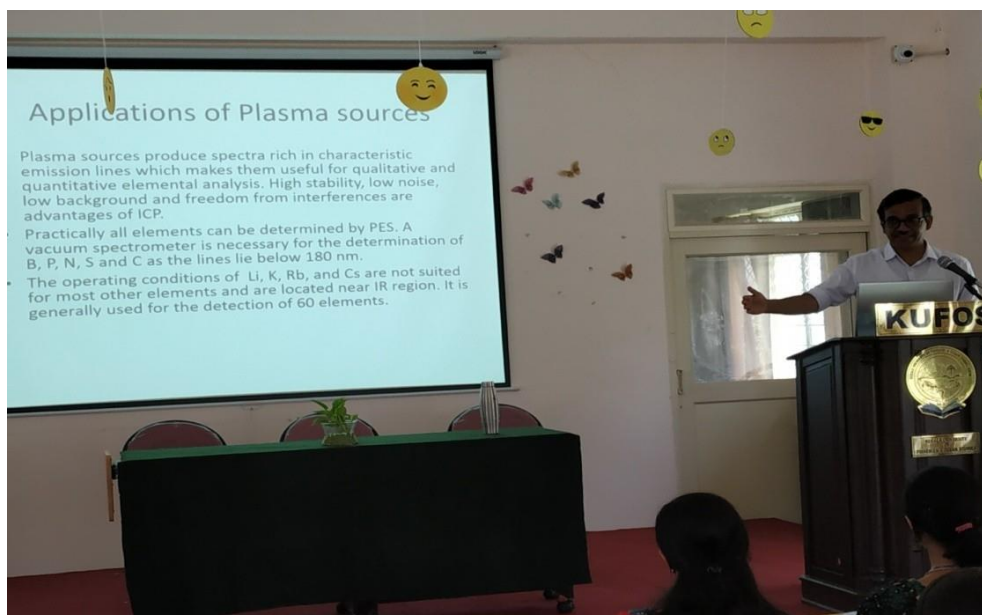
We are happy to share that our former students achieved the Prestigious award from IEEE Geoscience and Remote Sensing Society Kerala Chapter Best Thesis Awards 2020(Masters Category). This Initiative is supported by the IEEE India Geoscience and Remote Sensing Society Council.



CAPACITY BUILDING OF STAFF AND STUDENTS

Three Day Lecture Series –SI No 1





National Science Day Celebration at SFE – SI No 7







Field Visit by SFE Students at Eriyad, Thrissur – Sl No 3







One Day visit of FORV SAGAR SAMPADA –SI No 5










Visual Problem Appraisal Kerala's Coast 2.0 – Interaction of Dr. Loes Witteveen and Dr. J.S Jeroen Rijke with Faculties and Students of Puthuveyyu Campus – SI No 4



One Day Seminar on Basic Geodesy and GNSS by Mr. Satheesh Gopi, Former Deputy Chief Hydrographer, Govt. of Kerala – SI No 6



One-Day Seminar

ON

**BASIC GEODESY
AND GNSS**

Mr. Satheesh Gopi
FORMER DEPUTY CHIEF HYDROGRAPHER
GOVT. OF KERALA

04-10-2019

FISHERIES STATION, PUDUVEYPU
KERALA UNIVERSITY OF FISHERIES AND OCEAN STUD

rganized By

**SCHOOL
OF FISHERY
ENVIRONMENT,
DUVEYPU, 682508**

SCHOOL OF MANAGEMENT AND ENTERPRENUERSHIP

Staff strength : Professor 2
Associate Professor 4
Assistant professor 0
Adjunct faculty 1
Contract/Guest faculty:5/8

Student strength MBA 90
M.Sc. Statistics ; 18
LLM 29
PhD 10

Industrial Visit organized by the Department

- MBA 2018 batch visited Dentcare Dental Lab Pvt Ltd, Muvattupuzha, MILMA located at Tripunithura, Energy Department of TCS and Petronet LNG in Vypin as a part of their industrial visit during the academic year.
- Students and Faculty of Department of Legal Studies went for the cruise on October 12th 2018. Going in the Nefertiti cruise ship was the greatest experience of all time for the students of LLM .We navigated through 12 nautical miles and saw the beautiful ocean. We also saw the separation of the sea



Invited lecturers / Workshop/ Talk

- **SKILL ENHANCEMENT TALK SERIES:** It was officially inaugurated on 2nd February 2018 at Seminar Hall, School of Management and Entrepreneurship by Prof. (Dr.) M. S. Raju (Dean, Fisheries & Director, School of Management and Entrepreneurship). Prof. Dr. V Ambilikumar presided over the function and Sri. P.J. Xavier, President of Junior Chamber International (JCI) Cochin Chapter, was the chief guest. Budding entrepreneurs of Department of Business Administration and Management attended an informative session on “How Prepared Are You for Business Management” which was organized as part of skill enhancement talk series by the department, at seminar hall, SME, KUFOS on 2nd February 2018. Mr. Samir Dayal Singh (Founder of Humble Innovations) was the chief mentor. As part of weekly skill enhancement talk series, the third session was dealt by Mr. Sarath T R on 19th February 2018. Mr. Hafiz Aslam Asst. Prof. Department of Maritime Law, SME, KUFOS handled the fifth session of Skill Development Talk Series on 13th March 2018 at Seminar Hall, SME, KUFOS. The session was on stock trading.
- **Students of MBA 2017 Batch attended a session on Women Empowerment through Entrepreneurship organised by Centre for Advanced Studies and Research in Entrepreneurship Development (CASRED), KUFOS as part of International Women’s Day on 07-04-2018.**
- **Invited Lecture by John Menezes on Maritime Law**



Academic achievements of Faculty

- Dr. V Ambilikumar served as the External expert for conducting Viva Voce exam. of Ph.D students of Kannur University 22nd & 23rd Jan. 2018.
- Dr. V Ambilikumar served as the External expert for conducting Viva Voce exam. of M.Phil students of CUSAT on 29th Jan. 2018
- Sri. Mathew Sebastian, Associate Professor participated in the one day workshop on “Script Writing” organized by KUFOS on 01.10.2018.
- Sri. Mathew Sebastian, Associate Professor is continuing as Head of the Department since 05.06.2017 and co-ordinating the MSc (Statistics) programme. He is also holding the charge of Head of the Department of Fisheries Engineering under the Faculty of Fisheries from 01.02.2018.

Asha Vijay T. and M.S. Raju. (2018) Conceptual Framework to Comprehend the Supply Chain Management of Agriculture Products in Kerala. *Methodological Development in Business Research*. ISBN 97893867-24236. P 87-96.

Lakshmi P. and M.S. Raju. (2018) Analysis of Seafood Export from Kerala with Special Reference to Item-wise Composition. *International Journal of Management and Social Science Research (IJMSSR)*, Vol. 7, No.2, 2018. ISSN 2319-4421.

Asha Vijay T. and M.S. Raju. (2018) Conceptual Framework to Comprehend the Supply Chain Management of Agriculture Products in Kerala. *Methodological Development in Business Research*. ISBN 97893867-24236. P 87-96.

Govind S. Menon (2018)-Parametric Factors affecting the Performance Improvement of a Solar Still, *Indian Journal of Scientific Research (IJSR)*, 18(1): 15-19.

Academic achievement of Students

The following students of the Department of Business Administration and Management, SME were qualified in the UGC NET examination



AMRUTHA T



ANEESHA MOL K.S.

B) Students achievements

- MBA 2017 batch students Aneeshamol K.S, Jincy Jacob, Najeena P. N and Reedhu V bagged second prize for She Entrepreneur program in Tandav 2k17, Management fest organized by Sacred Hearts College, Thevara on 2nd February, 2018. They also received an amount of Rs.8000/- as cash award.
- MBA 2017 batch students Jincy Jacob, Najeena P. N and Reedhu V won third prize for ScrapaAukzio program in Enero 2k18, Management fest organized by Chinmaya College of Arts, Commerce and Science, Tripunithura on 7th February, 2018. They also received an amount of Rs.1500/- as cash award.
- MBA 2017 Batch Student Najeena P N won the Best debater award for Debate competition in All Kerala Inter Collegiate Debate Competition 2018 for Prof. E Antony Issac Memorial Ever Rollin Trophy organized by St. Pauls College, Kalamaserry, Kochi on 8th March 2018
- MBA 2017 Batch Students Najeena P N and Arunkumar P S received third prize for Debate competition in All Kerala Inter Collegiate Debate Competition 2018 for Prof. E Antony Issac Memorial Ever Rollin Trophy organized by St. Pauls College, Kalamaserry, Kochi on 8th March 2018. They also received an amount of Rs. 1000/- as cash award
- MBA 2017 Batch student Najeena P N &Suryamol S Got Second prize for Debate competition in LUMIERE 2K18, National Techno Cultural Fest organized by Govt. College Of Engineering, Kottayam on 23rd of February 2018. They also received an amount of RS 1000 /- as cash prize.
- MBA 2017 Energy Management Batch students attended APQI Power Quality Seminar organized by SEEM, Society of Energy Engineers and Managers at KMA hall Kochi on 21st February 2018. The Seminar mainly focused on Power Quality and Energy Management. One day seminar featured talks by different speakers on Power Quality Problems and Solutions and Dynamic Reactive Power Control.
- MBA 2017 Energy Management Batch students attended 'Machinery Expo Kerala 2018' at the Jawaharlal Nehru International Stadium Ground here from January 12 to 15, organised by the Department of Industries and Commerce. Students could meet machinery manufacturers and suppliers in various sectors, which was a one-stop shop to display the latest manufacturing solutions, as well as promote MSMEs. Various research institutes and entrepreneurs participated in the expo and showcased new technologies in the field of agriculture, food processing, Ayurveda and plastic
- MBA 2017 Energy Management Batch students attended ENCON 2017 organized by Energy Conservation Society at Little Flower Engineering Institute, Kalamassery. It was a three day conference cum exhibition related to energy systems from January 12 to 14, 2018. The conference included technical sessions, paper presentations and panel discussions related to energy management.

MBA 2017 Energy Management Batch students attended APQI Power Quality Seminar organized by SEEM, Society of Energy Engineers and Managers at KMA hall Kochi on 21st February 2018. The Seminar mainly focused on Power Quality and Energy Management. One day seminar featured talks by different speakers on Power Quality Problems and Solutions and Dynamic Reactive Power Control.

Students of MBA 2017 Batch attended a session on Women Empowerment through Entrepreneurship organized by Centre for Advanced Studies and Research in Entrepreneurship Development (CASRED), KUFOS as part of International Women's Day on 07-03-2018.

Students of MBA 2017 Batch attended "Entrepreneurship Awareness Programme" organized by Centre for Advanced Studies and Research in Entrepreneurship Development (CASRED), KUFOS, on 21st March 2018.

MBA 2017 Batch Student Najeena P N won the Best debater award for Debate competition in All Kerala Inter Collegiate Debate Competition 2018 for Prof. E Antony Issac Memorial Ever Rollin Trophy organized by St. Pauls College, Kalamaserry, Kochi on 8th March 2018

MBA 2017 Batch Students Najeena P N and Arunkumar P S received third prize for Debate competition in All Kerala Inter Collegiate Debate Competition 2018 for Prof. E Antony Issac Memorial Ever Rollin Trophy organized by St. Pauls College, Kalamaserry, Kochi on 8th March 2018. They also received an amount of Rs. 1000/- as cash award

MBA 2017 Batch student NAJEENA P N & SURYAMOL S got Second prize for Debate competition in LUMIERE 2K18, National Techno Cultural Fest organised by Govt. College Of Engineering, Kottayam on 23rd of February 2018. They also received an amount of RS 1000 /- as cash prize

FACULTY OF FISHERIES

DEPARTMENT OF AQUACULTURE

Staff strength	Professor	: Dr. Shyama
	Associate Professor	: Dr. K. Dinesh,
	Assistant Professor	: Dr. ChiranjivPradhan
		: Dr. Binu Varghese
		: Dr. Rejish Kumar V J
	Adjunct faculty	:
	Contract/Guest faculty:	Dr. Rachel Fernandez

Student strength B.F.Sc / B.Tech – year wise	:1 st year- 80
	: 2 nd year- 80
	: 3 rd year- 80
	: 4 th year- 80

MFSc/ M Sc (I year)	20
MFSc/ M.Sc (II year)	18
PhD	04

Details of Departmental meeting conducted with agenda

1. Fund allocation to various labs
2. Student allocation for Post-Graduation for various guides
3. Collecting inputs for ICAR report

Conference/Seminar/Workshop/Invited lectures organized by the Department

1. One Day Workshop on Fisheries and Aquaculture Development of the Malabar Region, Kerala on 3rd August 2018 at the KUFOS Regional Centre, Payyannur, Kannur.
2. Organized two-day workshop “Aquaculture Kerala-2018”, Kannur
3. Organized a One Day Workshop on “Development of Puduveypu Campus of KUFOS as an International Education Hub for Mangroves and Coastal Ecosystem”, 29-05-2019 at Fisheries Station, Puduveypu.
4. Under the light of the severe floods faced by the State in 2018 August, the Department has mooted a project under KUFOS Aided Research Project to assess the loss of aquaculture farmers and analyze the situation towards formulating a climate smart aquaculture strategy for the State.
5. Approximately 500 students from various schools and colleges invited to the Department during the period who were given preliminary awareness on aquaculture showing the field facilities.

Academic achievements of Faculty

1. **Dr. K. Dinesh** was honoured with the prestigious World Aquaculture Society Fellow Award of 2018 which was instituted by the Society in 2011. After late Prof. M.C. Nandeeshha in 2012, he is the second Indian to receive that award. The award was received by the Scientist in August 2018 during a meeting held in Montpellier, France.
2. **Dr. K. Dinesh** received a Certificate of Appreciation from WAS Asian Pacific Chapter, Bangkok, Thailand for serving the Chapter as the Director from 2016 to 2018.
3. **Dr. Dinesh K** participated and delivered a talk on ‘Brackish water fish and shrimp farming’ in a training programme organized by the KUFOS Regional Centre, Payyannur, Kannur on 2nd September 2018.
4. **Dr. Dinesh K** participated in the One Day Workshop on Fisheries and Aquaculture Development of the Malabar Region, Kerala on 3rd August 2018 at the KUFOS Regional Centre, Payyannur, Kannur.
5. **Dr. Chiranjiv Pradhan** was awarded certificate for best poster presentation for the presentation of research paper entitled “Replacement of soybean meal with Cashew Nut Meal (CNM) as an alternative protein source in the diet of tilapia, *Oreochromis mossambicus*” during the BRAQCON 2019, World Brackishwater Aquaculture conference, organised by the society of Coastal Aquaculture and Fisheries (SCAFi) and ICAR-Central Institute of Brackishwater Aquaculture (ICAR-CIBA) at Chennai during 23-25 January 2019.

Academic achievement of Students

1. Through ICAR-AIEEA entrance, 10 students got admission for PG.
2. 5 students got placement in various sector after MFSc.,
3. Vandana Dharan got admission at Thad Cochran national Warmwater Aquaculture Center in Stoneville, under Mississippi state University, USA.

Capacity building of Staff and Students

- **Dr. K. Dinesh**, conducted training programme on “Farm made feed preparation” in Payannur substation, KUFOS on 12 March 2019 and published booklet entitled farm made feed for the culture of carp, tilapia and pangasius
- **Dr. Dinesh K** served as a Faculty in Skill Up-gradation Training on Shrimp farming at NIFAM, Aluva on 4/1/2018.
- **Dr. Dinesh K** participated and delivered a talk on ‘Brackish water fish and shrimp farming’ in a training programme organized by the KUFOS Regional Centre, Payyannur, Kannur on 2nd September 2018.
- **Dr. Rejish Kumar V.J** participated in **126 orientation courses conducted by UGC-HRDC Pondicherry University** from November 2nd to 29th at Pondicherry University (**28 days**).
- **Dr. Binu Varghese**, has organized Level 2 Capacity Building Training ‘Working towards Marine Stewardship Council Certification’ 11-15 December 2018. KUFOS, Panangad, Funded by MSC, London and WWF.
- **Dr. Binu Varghese** has attended workshop on ‘Indian Fisheries towards Sustainability’ organized by Marine Stewardship Council- India at CMFRI Kochi 5th April 2018.

- **Dr. Binu Varghese** has participated 'Clean Campus Green Campus' Suchitwa mission training Samrudhi Gramam, Vengola, Perumbavoor on 19.6.2018.
- **Dr. Binu Varghese** has attended National Workshop on 'Ensuring Quality in Research & Effective Utilization of e-Resources' on 22nd and 23rd January 2019.
- **Dr. Binu Varghese** has participated in workshop on Microscopy held at KUFOS on 24.10.2018

Research achievements and publications of Staff and Students

- **Dinesh, K.**, Geeji M.T. and Chinchu E.R. 2018. Attitude and Perception of Local Inhabitants of Puduveypu Area, Cochin, Kerala towards Mangrove ecosystems (Research Note). Journal of Extension Education Society (EES), TNAU. ISSN 0971- 3123
- **Daisy C. Kappen.**, Dinesh, K and Divya, N.D 2018. Constraints in the Adoption of Cage Aquaculture Practices in Ernakulam District, Kerala, Journal of Extension Education (EES), TNAU, Vol.30 No.4,2018, ISSN 0971-3123
- **Dinesh K:** Practical Manual on Principles of Aquaculture (AQC 111), Published by Kerala University of Fisheries and Ocean Studies, 2018
- **Dinesh K:** *JaivaJalakrishiyudeSadhyathakal (in Malayalam language) – meaning "possibilities of organic aquaculture" February, 2018.*

Book Chapter

- **Dinesh, K.** 2018. Towards a food secure zone through farming commercially important Crustaceans. International Book Chapter in: "Zero Hunger India: Policies and Perspectives" (Ed.): K.V. Peter, 2018 Brillion Publication, New Delhi. ISBN: 978-93-87445-14-7. Pp. 519-534.
- **Dinesh, K.** 2018. Practical Manual on Principles of Aquaculture (AQC 111) published by Kerala University of Fisheries and Ocean Studies (KUFOS). 119p.
- **Pradhan, C.,** Das, S., Bhakta, J.N. 2018. Emerging Bioremediation Approaches under green technology for sustainable Aquaculture. Green technology for bioremediation of environmental pollution. Nova Science Publishers, Inc. 400 Oser Avenue, Suite 1600, Hauppauge, NY 11788 USA. pp. 299-2328
- **Bhakta, J.N., Rana, S., Kundu D., Lahiri, S., Jana, B.B., Mandal, S.K., Panigrahi A.K., Pradhan, C., Gorbatiuk L., Pasichna, O.,** 2018. Bioleaching: Current concepts of microbial metal mobilization and its application as green technology. Green technology for bioremediation of environmental pollution. Nova Science Publishers, Inc. 400 Oser Avenue, Suite 1600, Hauppauge, NY 11788 USA. pp.57-100

Academic/Research/Extension activities of Faculty outside the University

- **Dr. Dinesh K** served as a Faculty in Skill Up-gradation Training on Shrimp farming at NIFAM, Aluva on 4/1/2018.
- **Dr. Binu Varghese**, has ['Genetically Improved Farmed Tilapia Culture in Kerala', Farmers Training programme organized by KUFOS from 10-7-18 to 12-7-18.

- **Dr. Binu Varghese** has participated in ‘Enhancing Rural Livelihood through Ornamental Fish Culture’ capacity building programme under ATMA training Perumbavoor, Ernakulam 19.1.2019 at AsamanoorPanchayat Hall.
- **Dr. Binu Varghese**, has participated in ‘Ornamental Fish Culture and Farm Management’ at KrishiVigyan Kendra - Kerala Agriculture University, Kumarakom, Kottayam on 25.4.2018.
- **Dr. Binu Varghese**, has participated in ‘Breeding and Rearing of Egg laying Ornamental Fishes’ in Ornamental Fish Training Programme 5th to 9th March 2019 at KUFOS.
- **Dr. Binu Varghese**, has organised Mosquito Control programme in the KUFOS campus and supplied Larvivorous fishes to health department for releasing in community on 14.9.2018.
- **Dr. Binu Varghese**, has organised National Service Scheme camp at Thalunkandam Tribal colony, Edamalayar 8 -12 March 2019.
- **Dr. Binu Varghese**, has coordinated Relief activities during Kerala Flood 2018 and worked with Local Administration in running a Relief Camp at KUFOS campus with about 600 inmates

Meetings attended by faculty members outside the University

- Dr. Dinesh K participated and delivered a talk on ‘Brackish water fish and shrimp farming’ in a training programme organized by the KUFOS Regional Centre, Payyannur, Kannur on 2nd September 2018.
- Dr. Dinesh K participated in the One Day Workshop on Fisheries and Aquaculture Development of the Malabar Region, Kerala on 3rd August 2018 at the KUFOS Regional Centre, Payyannur, Kannur.

FACULTY OF FISHERIES

DEPARTMENT OF AQUATIC ANIMAL HEALTH MANAGEMENT

The Department of Aquatic Animal Health Management (AAHM) at Kerala University of Fisheries and Ocean Studies (KUFOS), Panangad, Kochi offers a variety of research & diagnostic services for aquatic animals, from publicly and privately managed cultured and wild sources. Fish and shrimps are submitted for surveillance, and diagnostic assessment of pathogens in compliance with the OIE protocol is carried out. The Dept. of AAHM is a working group of Head of the department, Guest faculties, Research Fellows, PhD students, Masters Students, and Undergraduate Students.

Our Facilities:

1. Research & Development: – Our team provides overall and theme specific teaching, training, and *in vivo*, *in vitro*, wet and dry laboratory research. The group pursues independent and collaborative research related to aquatic animal diseases.

2. Laboratory Services:

A. Molecular Biology based disease diagnosis Lab with BSL2 Level Isolation Unit

- This disease diagnosis facility has separate rooms available for pathogen detection from fish/shrimps. Molecular biology assays detect nucleic acid (DNA or RNA) of infectious disease agents within test specimens viz., fish/shrimps. Test specimens may be swabs, fluids, blood, or tissues.

Major instruments equipping the lab include:

- Real Time PCR, ELISA Reader, Refrigerated Centrifuge, Micro centrifuge, UV Visible Spectrophotometer, Thermal Cycler, Gradient PCR, Bio-photometer, Autoclaves, Deep Freezers (-

20°C), Freezer -80°C, Laminar flow chamber, BOD incubator, UV Transilluminator, Gel Documentation System, Vertical and Horizontal Electrophoresis units etc.

B. Microbiology Lab

- The laboratory provides research, diagnostic service, teaching, and outreach functions, with an emphasis on economically and environmentally important issues in fish/shrimp health.

Major instruments equipping the lab include:

- Microscopes, Small U.V hood, Hot air oven, Incubator-Shaker, Refrigerator etc.

C. Histopathology Lab

- The department hosts a histopathology laboratory that provides services related to Routine tissue processing, Embedding and sectioning of paraffin samples and Routine histological staining (H & E).

Major instruments equipping the lab include:

- Automatic Tissue Processor, Tissue Embedder, Semi-automatic Microtome, Microscopes with Camera and software.

D. Virology and Cell culture Lab

The newly establishing virology lab will investigate viral diseases in fish and shrimps and will be involved in research on developing fish cell lines that can be used to culture and isolate important

Major instruments equipping the lab include:

Biosafety cabinet, CO2 incubator, Deep freezer, Fluorescent & Phase Contrast Inverted Microscope,

E. Soil and Water Analysis Lab

Being of utmost importance in maintaining fish health, the lab offers testing facilities for various soil and water quality parameters. The lab is equipped with Kjeldhal digestion and distillation unit, flame photometer, UV-Vis Spectrophotometer.

F. Wet lab for disease studies

Apart from carrying out the various levels of diagnosis for fish/shrimp diseases in the department lab, a wet lab to facilitate treatment studies and *in vivo* studies is also provided.

3. Training and workshops

The department also provides regular hands-on training to fisheries department officials on aquatic animal diseases surveillance and monitoring. The team has also been actively conducting awareness programmes for fish farmers of the state on emerging diseases, the importance of disease surveillance and best management practices in aquaculture.

Staff strength	Professor	: 1
	Associate Professor	: -
	Assistant professor	: -
	Adjunct faculty	: 1
	Contract/Guest faculty	4

Student strength	B.F.Sc / B.Tech – year wise	
	MFSc/ M Sc (I year)	9
	MFSc/ M.Sc (II year)	7
	PhD	: 6 (One PhD scholar registered with Faculty of Fisheries (Supervisor: Dr.Rejish Kumar, Four PhD scholars registered with Faculty of Ocean Studies and one PhD scholar registered with MG University working in the Department of AAHM under the supervision of Professor & Head, AAHM)

Details of Departmental meeting conducted with agenda: Weekly meetings held with the research staff

Conference/Seminar/Workshop/Invited lectures organized by the Department

Sl No	Sem/Conf/Training /Workshop	National /International/State level/Regional	Title of the event, date/duration	Faculty-in-charge of the prog and Department	Total No of participants – National & International

1.	Training programme for State Fisheries Department officials for 6 days	State level	Aquatic Animal Disease Diagnosis & Preventive management 13/11/2018-18/11/2018	Dr. Devika Pillai	24
1	Workshop	Regional	One day workshop on Microscopy 24/10/18	Dr. Devika Pillai AAHM	20
2	Awareness programme	Regional Payyannur, Kannur	Emerging diseases in aquaculture. And management through best management practice 7/02/19	Dr. Devika Pillai, PI AAHM NSPAAD	82
3	Invited lecture	Regional	Invited lecture- Dr. N.K. Sanil on 'Diseases of Bivalves' for MFSc students. 26/2/19	Dr. Devika Pillai AAHM	30
4	Invited lecture	Regional	Invited lecture- Dr. Robin Paul on AMR 28/2/19	Dr. Devika Pillai AAHM	25
5	Invited lecture	Regional	Dr. Philip Mathew, Associate Professor, Community Medicine, Pushpagiri Institute of Medical Sciences AND Consultant, ReAct Asia-Pacific delivered a talk on "Antibiotic	Dr. Devika Pillai AAHM	25

			Resistance as a problem in Low-Middle Income Countries” for the staffs and students of KUFOS 7/3/2019		
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Academic achievements of Faculty

- ◆ Dr. Devika Pillai served as the **Chairperson of the State Disease Surveillance team** for Aquatic Animal Diseases
- ◆ Dr. Devika Pillai was invited to attend and present papers in the **International Conference on ‘Globalizing food campaigns: sharing strategies to combat antimicrobial resistance’** at **Bangkok** from 12-14 December, 2018 and the **International Conference on Aquatic Resources and Aquaculture for Sustainable Development (ICAR-AQUA 2019)** at **Hawassa University, Ethiopia** from 10-12 January, 2019.

Academic achievement of Students

- Four students successfully completed MFSc program in Aquatic Animal Health Management.
- Reshma R Nair (MFSc 2016 batch) secured the first rank and won the **Gold Medal** for MFSc (AAHM)
- **Cleared ICAR NET** –Kummari Suresh (April 2018), Bini C Das (April 2018), SevokHandique (April 2018).
- Ms. Chandana who completed her BSc from KUFOS in 2017 and is presently undergoing MFSc (2018 batch) in Aquatic Animal Health Management bagged the second prize in the prestigious All India Competition for Best Fisheries Graduate of India Examination 2018 organized by the Professional Graduates Forum of India. She was awarded the Prof. HPC Shetty Award at a function organized at CIFE, Mumbai.

Capacity building of Staff and Students

- One day workshop on Microscopy, 24/10/2018 for students and researchers

- Nine MFSc students of 2018 batch attended the DBT sponsored National Workshop on Hands-on **Training on Fish Cell Culture Techniques: Development and Application** at CAH college, Vellore, Tamil Nadu on 26/11/2018 to 2/12/2018.

Research achievements and publications of Staff and Students

Achievements and Research Projects

- **National Surveillance Programme for Aquatic Animal Diseases (NSPAAD)** funded by NFDB, Hyderabad and coordinated by NBFGR, Lucknow is a network project with ICAR institutions and College of Fisheries of different states-Outlay: Rs 76.43 lakhs, 2013-20
- **Integrated System for Aquatic Animal Health Research and Management: Plan project** in the Centre for Excellence in Sustainable Aquaculture and Aquatic Animal Health Management. Outlay: Rs 10.5 lakhs for 2018-19
- **Training manual on ‘Aquatic Animal Health Management: A Diagnostic Approach’**
- **Revenue generated: Rs 1,69,308/- from diagnostic services and conduct of staff training programme**

Paper published

- Sam Peter, B. Manojkumar and **Devika Pillai** (2018) First record of *Eutoninaindicans* (Romanes, 1876) from Kerala waters, India. Indian Journal of Geo Marine Sciences 47(08):1636-1639.
- Sam Peter, B. Manojkumar, **Devika Pillai**, A. Velusamy, BarsanaKamarudeen, P. Sreeparvathy and Fejila Agnes (2018). Distribution and Diversity of Gelatinous Zooplankton in the South Eastern Arabian Sea, Kanyakumari to off Kollam. VestnikZoologii 52(5):379-388.
- HemantaPokhrel, Rahul Krishnan, **Devika Pillai**, Rakesh C.G. and Sneha K.G. (2018). Identification and characterization of methicillin resistant bacterial isolates from fish and shellfish collected from Cochin backwaters, Kerala, India. International Journal of Current Microbiology and Applied Sciences. Volume 7 Number 07, 916-922.
- Kumhari Suresh, Divya V Haridas, Sam Peter, SevokHandique, Rakesh C.G, Sneha K.G, B.Manojkumar and **Devika Pillai** (2018). Incidence of Heatopancreaticmicrosporidiasis, by *Enterocytozoonhepatopenai* (EHP) in *Penaeusvannamei* culture in Nellore District, Andhra Pradesh, India and the role of management in its prevention and transmission. International Journal of Current Microbiology and Applied Sciences. Volume 7 Number 02, 2125-2134

- Kummari Suresh, SrinuRathlavath, **Devika Pillai** and Gadasu Rajesh (2018). Hephathopancreaticmicrosporidiasis (HPM) in shrimp culture: A review. International Journal of Current Microbiology and Applied Sciences. Volume 7 Number 01, 3208-3215.

Papers presented

- Bini C Das, Shaheer P, Divya V Haridas, Chandhini S, Devika Pillai and Rejish Kumar V. J (2019). Isolation and Characterization of Quorum Quenching Bacillus Sp. from the Gastrointestinal Tract of *Latescalcarifer*. Presented in World Brackish water Aquaculture Conference (BRAQCON 2019) conducted on January 23, 2019.

Academic/Research/Extension activities of Faculty outside the University

Dr. Devika Pillai was resource person in the following programmes

- Capacity building programme to fish farmers on ‘Closed system farming of shrimps’ at NIFAM Aluva, Topic- Disease management and GMP on **13-6-2018**.
- Capacity building programme to fish farmers on ‘Recirculatory Aquaculture System’ at NIFAM Aluva . Topic - Fish disease Management on **30-5-2018** and **23-6-2018**.
- Training programme for farmers organized by ADAK, Thevara. Topic: Fish Diseases and their management on **25.05.2018**
- Dr. Devika Pillai served as external expert in the evaluation of two PhD and three MFSc students specializing in Fisheries Microbiology at the College of Fisheries, Mangalore, Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar.
- Dr. Devika Pillai, Head, Department of Aquatic Animal Health Management, attended the launch meeting of the Kerala Antimicrobial Resistance Strategic Action Plan (KARSAP) on October 25, 2018, which was inaugurated by the Hon. Chief Minister of Kerala Shri. Pinarayi Vijayan.
- Dr. Devika Pillai attended the FAO-ICAR training on WHONET software for data management of Antimicrobial Resistance (AMR) held at ICAR-CIFT on 19-11-2018.
- Dr. Devika Pillai attended the Workshop on ‘Integrated Surveillance Framework for AMR for Kerala’ organized by Centre for Science and Environment at the Kerala State Pollution Control Board, Kerala on September 27, 2018.

- Dr. Devika Pillai attended the One day 'Food Conclave' organized by Centre for Science and Environment on 'Sustainable Food Production' and 'Responsible food production' at the India Habitat Centre, New Delhi on March 15, 2019.

Meetings attended by faculty members outside the University

- Expert at a Project Assistant interview as part of Dr.KP Joy's SERB project held on 1st June 2018, CUSAT

Placement Cell Bulletin

1. SevokHandique(MFSc 2015 batch) got placed as Fishery Development Officer at Govt. Of Assam.
2. Rahul Singh (MFSc 2015 batch) got employmentas Hatchery manager at Triton aquaculture, Accra Ghana, Africa.
3. M. Narasimhudu (MFSc 2015 batch) got employment in Grobest Feed Corporation
4. SerinShaji (MFSc 2016 batch) got placed as Senior Technician in the Multinational company M/s C.P. Feeds Pvt Ltd in 2018 by campus placement
5. Nithin Jacob(MFSc 2016 batch) got placed as Hatchery manager at Victoria Treasures LTD, Uganda.

Department in News

Outbreak of Epizootic Ulcerative Syndrome in Fishes during the floods of August 2018 reported by our lab was widely reported in print media and prominent TV channels

Asianet news: <https://youtu.be/1JwCTc5XGh8>

Delivering a lecture at the **International Conference on 'Globalizing food campaigns: sharing strategies to combat antimicrobial resistance'** at Bangkok



Six days Training for Fisheries Department officials: 13.11.2018-18.11.2018





One day workshop on Microscopy, 24/10/18 at KUFOS



Awareness programme -Emerging diseases in aquaculture And Best management practices,7/02/19, Regional Centre of KUFOS,Payyannur, Kannur.





FACULTY OF FISHERIES

DEPARTMENT OF FISH PROCESSING TECHNOLOGY

Staff strength	Professor	:Nil
	Associate Professor	:Nil
	Assistant professor	:4
	Adjunct faculty	:Nil
	Contract/Guest faculty	:1
Student strength	MFSc (I year)	:6
	MFSc (II year)	:8
	PhD	:15

Details of Departmental meeting conducted with agenda

- Meeting held on 23.02.2018 regarding workload submission, constituting advisory committee of MFSc.2017 batch and their synopsis presentation, submitting request for Assistant Professor on contract basis
- Meeting on 02.07.19 regarding stock verification, submitting details about projects handled by each faculty, workload submission, submission of request for appointment of lab assistant, plan for conducting 5 day training by department

Conference/Seminar/Workshop/Invited lectures organized by the Department

- Two day training program conducted for 43 participants on “Various pickled products and its marketing” on 27.04.18 to 28.04.18 at model fish processing plant, KUFOS
- Two day training programme on “Production and Marketing of value added products from seafood” from 10.10.18 to 11.10.18 for 15 participants at KUFOS Regional Centre, Payyannur.
- Another two day training programme was organized for 8 members on “Production and Marketing of value added products from seafood” from 13.12.18 to 14.12.18 at KUFOS Regional Centre, Payyanur.
- One day training programme on “Production and Marketing of value added products from seafood” on 26.01.19 at KUFOS for 30 members from Kizhakkambalam Kudumbasree unit, Ernakulam
- Conducted HACCP training for BFSC 2015 batch students at KUFOS

Training Programs Organized

1. One day training programme on "Production and Marketing of value added products from seafood"(26th January 2019) for 30 participants from Kizhakkambalam Kudumbasree unit at Kerala University of Fisheries and Ocean Studies, Panangad.

Academic achievements of Faculty: Dr. Abhilash Sasidharan

Supervised M. F. Sc. Dissertations

Sl.No.	Name of the student	Year	Title of the Dissertation
1.	Akashdeep Singh	2019	Development and Standardization of Process Parameter for Ready to Eat Fried Short Neck Clam (<i>Marcia recens</i> Holten, 1802) in Retort Pouch.

Trainings

1. 4 days training program on "**Laboratory Quality Management System & Internal Audit as per ISO/IEC 17025:2017**" organized by Indian Institute of Quality Management, Jaipur from 19th to 22nd November 2019.
2. One week Model Training Course on "**Advanced Fish Drying and Chilling Technology**" organized by ICAR-CIFT, Kochi from 19th to 26th August, 2019.
3. 25 days **Orientation Program** as per UGC-Career Advancement scheme for Assistant Professors at **Jawaharlal Nehru University (JNU), New Delhi** from 5th to 29th March 2019.

Participation in Workshops / Seminar / Symposia / Conference

1. 7th **Bio-processing India Conference** Organized by CSIR-CFTRI, Mysuru, India from December 14-16, 2019.
2. International Conference on **Auatic Resources and Blue Economy, AQUABE**, 28th to 30th November 2019, Le Meridien, Cochin, India.

Classes conducted for training programs

1. Conducted a session on "**Production of value added seafood products and their marketing**" at one day training programme on "Production and Marketing of value added products from seafood"(26th January 2019) organized by Department of Fish Processing Technology, KUFOS for 30 participants from Kizhakkambalam Kudumbasree unit at Kerala University of Fisheries and Ocean Studies, Panangad.

2. Conducted a session on “**Production of value added seafood products and their marketing**” at a One Day Awareness Program on “**Fisheries allied sector and women empowerment Entrepreneurship**” on 6th January 2019, organized by Dept. of Zoology, Sree Kerala Varma College, Thrissur.
3. Conducted a session on “**Production of value added seafood products and their marketing**” at a 3 Day Workshop on Entrepreneurship Development (WED) from 29th January 2019 to 31st January 2019, organized by Centre for Advanced Studies and Research in Entrepreneurship Development (CASRED) Kerala University of Fisheries and Ocean Studies (KUFOS).
4. Conducted a session on “**Production of value added seafood products and their marketing**” at a 3 Day Workshop on Entrepreneurship Development (WED) from 29th to 31st May 2019, organized by Centre for Advanced Studies and Research in Entrepreneurship Development (CASRED) Kerala University of Fisheries and Ocean Studies (KUFOS).

Research achievements and publications of Staff and Students

1. **Sasidharan, A.** and Venugopal, V. (2019). Proteins and Co-products from Seafood Processing Discards: Their Recovery, Functional Properties and Applications. *Waste Biomass Valor.* Pp 1-17. <https://doi.org/10.1007/s12649-019-00812>.
2. G. Archana, Akashdeep Singh, **Abhilash Sasidharan** and Sabu Sarasan (2019). Thermal process standardisation of Ready to Eat (RTE) fried Malabar short neck clam (*Marcia recens*, Holten, 1802) in transparent retort pouches. International Conference on Aquatic Resources and Blue Economy, AQUABE, 28th to 30th November 2019, Le Meridien, Cochin, India.
3. **Abhilash Sasidharan** (2019). Fresh or Not: The Fish Dilemma. MEDC Economic Digest. September, Vol. 2(1), pp 18-20.

Academic/Research/Extension activities of Faculty outside the University

1. State Level Evaluator for the Young Innovators Program (2019-Present) K-DISC (Kerala Development and Innovation Strategic Council), Government of Kerala

Academic achievements of Faculty: Dr. Blossom K.L.

- Guided MFSc student on the topic “Standardization and development of a value added product from *Sardinella longiceps* Valenciennes, 1847 using the leaves of tropical plants”
- Guided MSc student from St.Terasas College, Ernakulam on the topic “Development and quality evaluation of fish protein concentrate incorporated value added products”
- Guided MSc student from St.Terasas College, Ernakulam on the topic “Development of healthy vegetable based extruded products”

- Attended 21 days ICAR sponsored winter school conducted by the Biochemistry and Nutrition division of CIFT, Kochi on the topic entitled “Marine nutrients for fighting malnutrition: Recent advances in marine biomolecules for human nutrition and healthcare” from 1/02/18 to 21/02/18
- Attended Orientation programme conducted by UGC HRDC at Venkateswara University, Tirupati from 21.01.19 to 16.02.19.

Capacity building of Staff and Students

Conducted ELP programme for BFSC students 2015 Batch

Research achievements and publications of Staff and Students

Projects

- As Principal investigator in the plan project “Standardization and development of fortified and nutritious fish noodles and pasta for fighting malnutrition” -20 lakhs
- As Co PI in the plan project “Model fish processing plant and training centre” State plan scheme - 25 lakhs

Conference abstracts

- Ancy Thoms, Amitha Raj T.P and Blossom K L. *Development of sausage casing from fish viscera and comparison of its textural properties with animal casing*. Nat.Conf. on Research methodology, Writing Practices, Language and Soft skills, July, 12-13,2018.
- Amitha Raj T.P, Ancy Thomas & Blossom K.L. *Qualitative change of fish sausage casing prepared from fish viscera during storage*. Int.Conf.on doubling farmers income through processing, IIFPT, Thanjavur Aug, 17 -19,2018.

Full length paper

- Blossom K.L, Shilpa Jose and Daisy Kappen. *Food Consumption pattern among School Going Children in a Rural Area of Kerala*. *J. of Extension Education*. 2019.

Training manuals prepared

- Training manual on production and marketing of different types of pickles as part of “Model fish processing plant and training centre”- 2018
- Training manual on production of value added products as part of “Model fish processing plant and training centre”- 2019

Academic/Research/Extension activities of Faculty outside the University

- External examiner at St.Teresas College, Ernakulam for MSC Fourth Semester Practical Examination on 20.04.2018
- Volunteer for Vembanad fish count 2018 from 23.05.18 to 26.05.18
- Subject expert in the panel of Assessment Committee for the evaluation of the UGC sponsored major Project on ‘Sensitising Consumers on Food Adulteration: A Sustainable Health Approach’ on 15.12.18
- External examiner for centralized valuation camp of subject public health nutrition on at St.Teresas College, Ernakulam
- External examiner at St.Teresas College, Ernakulam for MSC Fourth Semester Practical Examination on 11.04.2019

Academic achievements of Faculty: Dr. Safeena, M.P

Full Paper

- Hafsa Maqbool, M.P. Safeena, K. Sathish Kumar, A.A.Zynudeen, George Ninan, and B. Manoj Kumar 2019. Beet root peel extract as a natural preservative for shelf life extension of Deccan Mahseer (*Tor khudree*) steaks during chill storage. Fishery Technology 56:190-198.

Conference Papers/abstracts

- Preenanka, R., Safeena, M.P., 2019. **Development and Validation of multiplex PCR for the simultaneous detection of six virulent genes of *E. coli* O157 from seafood** presented a paper in 3 days International conference Aquatic Resources and Blue Economy (Aquabe) conducted during 28th to 30th Nov 2019 organized by KUFOS.
- Reshma R. Nair, Safeena, M.P., Praveen Rai, Devika Pillai, Anu Ruby Benny, 2019. **Molecular characterization and antibiogram analysis of *Vibrio parahaemolyticus* isolated from traditional penaid shrimp rearing ponds of Cochin, Kerala** presented a paper in 3 days International conference on Aquatic Resources and Blue Economy (Aquabe) conducted during 28th to 30th Nov 2019 organized by KUFOS.
- Sushri S Behera, K. Elavarasan, M.P Safeena, Hanjapam Mandakini Devi and C.S Tejalpal. **Changes in protein during agar processing from seaweed (*Gelidiella acerosa*); a comparison between acid and alkali method of agar extraction presented** a paper in 3 days International conference on Aquatic Resources and Blue Economy (Aquabe) conducted during 28th to 30th Nov 2019 organized by KUFOS.

- Hafsa Maqbool, M.P. Safeena, A.A Zynudheen and Sathish Kumar, 2019. **Preservation of mahseer (*Tor khudree*) steaks in natural extracts** presented a paper in 3 days International conference on Aquatic Recourses and Blue Economy (Aquabe) conducted during 28th to 30th Nov 2019 organized by KUFOS.
- Muhammed P. Safeena, Praveen Rai, Iddya Karunasagar, Indrani Karunasagar (2019). **“Efficacy of recombinant protein for the protection of shrimp against *Penaeus monodon* densovirus** “presented a paper in World Brackish water Aquaculture Conference (BRAQCON 2019) held at CIBA, Chennai on 23-25th January 2019.
- Ravendra Mishra, Bini C Das, Safeena M.P, Sunitha Poulouse, Rejish Kumar V.J. (2019) **Isolation and identification of probiotic yeasts from the gastrointestinal tract of brackishwater fishes**, presented poster in World Brackish water Aquaculture Conference (BRAQCON 2019) held at CIBA,Chennai on 23-25th January 2019.
- Sushri S. Behera, S.M Zafair, V. Renuka, Safeena, M.P., Deepa Madathil, 2019. **Nutritional profiling of marinated shrimp *Parapenaeopsis stylifera* in different medium during refrigerated storage** presented poster in 3 days International conference and Exposition, Asian-Pacific Aquaculture conducted during 19th to 21st June 2019 organized by World Aquaculture Society.

On going Projects

- “As Principal investigator in the plan project “ Development of multiplex PCR for the detection of virulent factors in Enterohaemorrhagic *E.coli* from seafood”
- As Co-PI for NFDPI Funded Project on National Surveillance Programme For Aquatic Animal Diseases-Budget 76 Lakhs (
- **Academic/Research/Extension activities of Faculty outside the University**
 - Served as **resource person** in the 3 day Skill Development Programme on **Inland Fisheries Management For Livelihood Improvement** conducted at ICAR-CIFRI, Kochi Centre, Ernakulam, Kerala from 20-22nd February 2019
 - Served as a Resource person in one day training programme organized by **The Aquaculture Development Co-operative Society Ltd. (ADCOS)**, Payyanur, to the fish farmers on the topic “Finfish diseases” on 29-10-2019.
 - Served as a **Resource person** in one day awareness programme organized by **FFDA, Kannur** in connection with Fish Farmers Day celebration on 10/07/ 2019 and taken a class on Disease Management in Aquaculture.
 - Served as **resource person** and taken a class on “**Disease Management in Aquaculture and Major Diseases of Fresh water Fish**” in the 3 day Skill Development Programme on **Inland Fisheries Management For Livelihood Improvement** conducted during 10th to 12nd December 2019 at ICAR-CIFRI, Kochi Centre, Ernakulam, Kerala
 - Served as an **external expert** for evaluating the answer papers (103 No.) of VI semester of B.F.Sc. degree programme (2016-17 batch) of **Tamil Nadu Dr. Jayalalitha Fisheries University** for the course FS 314 Fish By Products and Waste utilization.

Faculty recharge programmes viz., orientation/ refresher prog/ summer/ winter school/ Seminar/Conferences/ Training programmes

- Attended an 28 days orientation programme conducted on 27.02.2019 to 26.03.19 at UGC- HRDC- Karyavattom campus, University of Kerala, Trivandrum
- Attended 3 days International conference BRAQCON 2019 from 23rd January 2019- to 25th January 2019 at CIBA-ICAR at Chennai, Tamil Nadu
- Attended 3 days International conference on Aquatic Recourses and Blue Economy (Aquabe) conducted during 28th to 30th Nov 2019 at Kochi, organized by KUFOS.

Academic achievement of Students

- Ms. Preenanka R., Research fellow, Won the Best poster award in the 3 days International conference on Aquatic Recourses and Blue Economy (Aquabe) conducted during 28th to 30th Nov 2019 organized by KUFOS.
- Ms. Sushri Subhashini Behera, PhD Student (FPT-2018-50-02), attended and presented a poster in 3 days International conference and Exposition, Asian-Pacific Aquaculture conducted during 19th to 21st June 2019 organized by World Aquaculture Society.

M F Sc thesis produced as Major Guide:- 2019

- Molecular Characterization and pathogenecity evaluation of *Edwardsiella sp.* from freshwater ornamentalfish” Submitted by Ms. Zahida Beegum (AQB 2017-22-06) M.F.Sc student of Dept. Of Aquatic Animal Health management, KUFOS 2019.

M Sc thesis produced as Major Guide:- 2019

- Isolation and identification of chitin degrading bacteria from shrimp shell processing effluent Submitted by Ms. Husna Hussain (170011019838) MSc student of Department Of Bioscience, M.E.S COLLEGE,Marampally 2019.

FACULTY OF FISHERIES

Department of Fisheries Extension, Economic and Statistics

The school offers courses as an inter school program for the various undergraduate and Post Graduate programs such as B. F.Sc, M.Sc., M.Tech courses run by the other six schools/ Faculties of the University.

i. Faculty Members:

Dr. V. Ambili Kumar, Professor and Director i/c of SME		
Department of Business Administration and Management	Department of Extension, Economics and Statistics	Department of Legal Studies
Dr. Afsal E. M., Associate Professor & Head of DBMS	Sri. Mathew Sebastian, Associate Professor, Head of E&S	Ms. Ashamol V., Assistant Professor on contract
Dr. Rajesh K., Assistant Professor	DrDaiscy C Kappan, Professor and Director of Extension i/c	Dr A. S. Saroja : Adjunct Faculty
DrAnoop K.K., Assistant Professor	Smt. AlphiKorath, Associate Professor	SrAliyar M.E.: Adjunct Faculty
DrJeetha Jose: Guest Faculty	Prof.(Dr.)K.R., Muraleedharan Nair, Adjunct Faculty	
DrJominyJoice: Guest Faculty	Mrs.Ambily Jose: Guest Faculty	
Mrs.Anjali M.A.: Guest Faculty	Mrs.SethulakshmiBahuleyan : Guest Faculty	
	Ms.AmbilyJaison : Guest Faculty	
	Mrs. Sowbhagya S. Prabhu: Guest Faculty	
	Ms. AmbilyBalakrishnan : Guest Faculty	

ii. Non-teaching Staff

Mr. Vijay Shine K.V	Section Officer
Ms. Shalet	Typist
Mr.Jishanth	Assistant on contract
Mr..Mathew Stephan	Reference Assistant on contract

iii. Research Centres of the School

1. 'Centre for Livelihood Security and Development Issues among Fisher folk of Kerala'
2. 'Centre for Indigenous Knowledge of Traditional Fisher folk – Looping Traditional Knowledge and Science'
3. 'Centre for Survey and appraisal of Socio-economic Status of Fisher folk'
4. 'Centre for Field Consultancy and Data Analysis'

5. Chair for Socio-Economic Empowerment of Fisher folk and Archiving Traditional Knowledge of Fishermen

iv. External Aided Projects: SME

The School completed four major projects sponsored by NANSEN, CMLRE, Department of Bio Technology and State Institute of Rural Development. The details are given below.

Sl. No.	Project	Amount (Rs.)	Project Team	Funding Agency	Status
1	INDO MARECLIM Project on Seasonal Variations in Fish Landings and its Impact on the Livelihood of the Fisherfolk of South-West Coast of India (Kerala).	8.0 Lakh	1.Dr.V.Ambilikumar -Principal Investigator 2.Dr.M.S.Raju - Co-Principal Investigator 3. Shri.Mathew Sebastian -Co-Principal Investigator	NANSEN Environmental Research Centre (India).	Completed (2015)
2	Impact Assessment Study of Mahatma Gandhi National Rural Employment Guarantee Scheme in Alappuzha District	5.4 Lakh	1.Dr.V.Ambilikumar -Principal Investigator 2.Dr.M.S.Raju - Co-Principal Investigator 3. Shri.Mathew Sebastian -Co-Principal Investigator	State Institute of Rural Development, Kerala	Completed (2014)
3	Ornamental Fish Culture for Income and Employment Generation & to enhance the Socio-Economic status of the Rural Population of Kumbalam Panchayat, Kanayannur Taluk, Ernakulam District, Kerala State, India	20 Lakh	1.Dr.T.V.Anna mercy -Principal Investigator 2.Dr.V.Ambilikumar -Co-Principal Investigator	Department of Bio- Technology, Govt. of India	Completed (2010)
4	Biology,	34.98	1. Smt. AlphiKorath	CMLRE, Mo ES,	Completed(

Resource characteristics and Stock assessment of deep-sea fin fishes and prawns in the depth zone 200-1200 m along the southern and central Indian Ocean		- Principal Investigator 2. Smt. Malika V - Co-Principal Investigator	Govt. of India	2017)
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v. Workshops

- a) School of Management and Entrepreneurship, KUFOS organized a Trainers' Training Programme on 24th Aug 2013 in the campus towards equipping the students on 'Sea safety and fishermen welfare'. The program was conducted in four sessions. The sessions were engaged by experts from the Department of Fisheries, Indian Navy and Central Industrial Security Force. The services rendered by the respective agencies with a view to ensuring the safety of fishermen at sea and also the fishermen welfare schemes were discussed in the program.
- b) As part of the Social Responsibility Programme of the 2012 Batch MBA students of SME, KUFOS jointly organized the workshop in association with the State Dept. of Fisheries, Indian Navy, Indian Coast Guard, CISF, Marine Enforcement wing, *KadaloraJagrataSamithi* and *NjarakalJanamaitri* Police. A total of forty one fisher-folk including full time and part time fishers registered for the workshop.
- c) School of Management and Entrepreneurship, KUFOS organized a two day National workshop on Research Methodology with a special emphasis on Statistical packages on 27th & 28th of February, 2020.

vi. LIBRARY

The library is equipped with large number of books, journals and periodicals.

vii. Classrooms

The classrooms are spacious and specifically designed to facilitate participative learning. They are equipped with all the necessary modern teaching and presentation facilities.

viii. Other Major activities of the Department

- The Admission Supervisory Committee (ASC) for Professional Colleges in Kerala (Hon'ble Justice **RajendraBabu Committee**) has decided to entrust KUFOS to conduct the MBA entrance examination **KMAT 2020** and Dr. M.S. Raju, Professor & Director, SME was selected as Convenor of the exam.

Kannur Regional Centre, Payyannur

The KUFOS Regional Centre-Kannur started functioning in a rented building at Payyanur from 1st March 2018. This centre was established with the aim of extending the activities of Kerala University of Fisheries and Ocean Studies to North Kerala especially to the Malabar region. The formal inauguration of the working of the Centre was done by Smt. J. Mercy Kutty Amma, Hon. Minister of Fisheries and Harbor Engineering and Cashew Industries Kerala state and Pro Chancellor, KUFOS on 11.10.2018. However, the centre started its activities well before the formal inauguration. The centre is functioning under the plan project “Establishment of Aquaculture Training ,Extension and Research Centre at Kannur”. The centre is headed by Dr.B.Manoj Kumar, Special Officer. The supporting personnel include an assistant for administration and 2 SRFs and an RA. The SRFs joined the office on 24.10.2018 and 06.03.2019. The RA joined on 01.11.2018. Another SRF under the project “Setting up of cage culture units for production and training in two geographical zones of Kerala for further demonstration and popularization of the technology ”also based in this centre who joined on 01.01.2019. The various research and training programmes of the centre is being managed through these projects and research personnel.

Various programmes taken up by the centre during the financial year 2018-19 is as follows.

Technical support and advisory services to the small scale aqua farmers of the Malabar region.

Fish Farmers Day 2019



Under this programme, seminars, training programmes and awareness meetings were conducted frequently for the benefit of farmers. The first programme organized was the observation of Fish Farmer’s Day on 10.07.2018. The programme was inaugurated by Sri C Krishnan, Hon.MLA of Payyanur. A total of 100 participants attended the event. The inaugural programme was followed by classes on various aspects of aquaculture. Smt Sho ha A.V explained various aspects of fresh water fish culture. This was followed by a class on ornamental fish farming by

Shri Santhosh Baby an eminent ornamental fish exporter. Shri Rakesh talked about brackish water farming. The last part of the programme was a session by Smt Mini Narayanan on various schemes implemented by the State Fisheries Department for fish farmers.

Brain storming workshop

A one day Brain Storming Session on the topic **“Fisheries and Aquaculture Development of the Malabar Region, Kerala”** on 11th October 2018 at the Centre’s office in Payyanur in order to finalise the detailed project proposal of the centre. The programme was inaugurated by Shri C.Krishnan, MLA Payyanur. Shri Adv Sasi Vattakooval, Chairman, Payyanur Municipality and Dr.K.K.Vijayan, Director, Central Institute of Brackish Water Aquaculture were the guests of honour. Dr.T.V.Sankar, Director of Research, KUFOS chaired the technical session. The lead presentation on brackish water aquaculture was delivered by Dr. K.K.Vijayan, Director, Central Institute of Brackish Water Aquaculture. This was followed by the presentation of Dr.T.V.Sankar, Director of Research, KUFOS on the programmes to be taken up by the Kannur Regional Centre of KUFOS. The other distinguished participants in the discussion that follows included Dr.Ashokan, Scientist Incharge, Calicut Research Centre of CMFRI, Dr.M.P. Remasean, Principal Scientist, CIFT, Kochi, Dr. Suresh Kumar, KUFOS Governing Council Member, Dr.Devika Pillai, Professor and Head, Department of Aquatic Animal Health, KUFOS, Dr.K.Dinesh, Head Department of Aquaculture, Dr.Dinesh Cheruvatt, Deputy Director Fisheries and Shri T.Purushothaman, Farmer Representative. The meeting discussed in detail various aspects of the fisheries and aquacultures scenario of the Malabar region and derived some suggestions regarding the activities to be taken up by the centre.





Other training programmes

Basics of Aquaculture



Awareness training programme about the **Basics of Aquaculture** on Sunday 2ndSeptember 2018 at ‘MalayalamVayanasalaHall’,Karanthode,Kunnuru,Kannur.The programme was inaugurated by Shri C.Krishnan, Hon’ble MLA, Payyanur. Shri. M.V.Govindan , President, Ramanthali Panchayath presided over the function. Dr.B.Manojkumar, Special Officer, KUFOS Regional Centre-Kannur welcomed the participants and Shri Veliyat Pramod, member Aquaculture Development Cooperative Society proposed vote of thanks. The inaugural session was followed by classes on various aspects of aquaculture as givenbelow.

Dr.Dinesh K, Head, Department of Aquaculture, KUFOS - Brackish Water Fish/Shrimp Farming

SmtSangeetha A.K, Fisheries Extension Officer, Kannur- Various Schemes for Aquaculture Development in Kerala

SmtShoba A.V. BFSc, AquacultureConsultant - Basics of Fresh WaterAquaculture

The programme came to an end with an open forum presided over by Shri T.Purushothaman, a progressive farmer and chairman Aquaculture Development Cooperative Society (ADCOS), Payyanur in which various doubts and queries of the participants were answered by the experts. A total of 97 participants registered for the programme.

Training on Pen Culture



As a part of starting pen culture demonstration programme a study class for the beneficiaries of the PEN culture demonstration project was conducted on 26.09.2018. Department of fisheries also collaborated in this programme. There were 29 farmers for this programme. The main resource persons for this programme were Shri. Saneer from KUFOS and Smt. Manju, Inspector of Fisheries, Department of Fisheries, Kerala.

Training programme on the production of value added products from sea food.

The centre organized 3 programmes on the production of value added products from fish in collaboration with Model Fish Processing Plant and Training Centre, KUFOS head quarters, Panangad, Kochi. The first programme was on 10th and 11th of October 2018 along with the formal inauguration of the activities of the centre, the next programmes were on 13th and 14th December 2018 and 21st March 2019. A total of 38 persons were retrained on the production, quality assurance and marketing of various value added products such as pickles, cutlets, fish fingers etc. Shri

Jayakrishnan one among the participants started his own fish pickle production unit with expertise gained in this programme.





Awareness Programme on Emerging Diseases In Aquaculture

One of the main problem faced by the fish farmers is the loss of crop due to diseases. At present there is an increase in the farming of tilapia in the state. Infection due to Tilapia Lake like virus is a threat to the tilapia farmers of the region. A class on the management of tilapia lake virus and other emerging disease was conducted by Regional Centre jointly with National Surveillance Programme on Aquatic Animal Diseases of the Department of Aquatic Animal Health Management of KUFOS on 7th February 2019. A total of 82 farmers from Kannur and Kasargod districts participated in this programme. Dr. Devika Pillai, Professor and Head, Department of Aquatic Animal Health and Principal Investigator of the project along with the project staff conducted the programme.



Seminar on Cage culture



Culture of aquatic organisms in cages is getting popular in the region, but many farmers are not aware about the scientific basis of this method. In order to create awareness among the farmers about the scientific methods and recent developments in the field of cage aquaculture an one day seminar on Cage culture was conducted on 01.03.2019 with the participation of 97 people. The Seminar was inaugurated by the Hon. MLA of Payyanur Sri C Krishnan. Dr.K.Dinesh (Head Department of Aquaculture, KUFOS, Shri Purushothaman T (Chairman, ADCOS), Smt.K.Vanaja (Senate member, KUFOS) were also present during the occasion. Dr.K.Dinesh, Head, Department of Aquaculture talked about the cage culture project being implemented by the University at Payyanur. Dr.A.P.Dinesh Babu, Principal Scientist, Mangalore Research Centre of CMFRI talked about the techniques in brackish water cage culture. Dr.Bobby Ignatius, Principal Scientist, CMFRI, Cochin explained various aspects about cage culture in open sea. Shri Rijul Raj from the state department of Fisheries gave an account about various schemes of the fisheries department for encouraging fish culture.

Training of Fish feed preparation

The success of any aquaculture activity depend on the availability of suitable feed to the cultured species. The farmers are depending on the costly feed marketed by various companies for meeting their requirements. The use of farm made feed will be of great help to farmers of Kerala. In order to familiarize the small scale aquaculture farmers on the preparation of farm made feed from non-conventional ingredientson 12th March 2018 a training programme on Farm Made Feed Preparation. Shri.TPurushothaman (Chairman ,ADCOS)inaugurated the programme. Dr.BManojKumar (Special Officer ,KUFOS RC –Kannur ,Payyanur) presided over during the occasionDr.Chiranjeev Pradhan, Assistant Professor, KUFOS explained in detail about various ingredientsandpreparationoffarmmadefeedforthecultureofCarps,TilapiaandPangasius.The participantswereintroducedtovarious equipmentsusedinfeedpreparation. Variousconventional and non conventional ingredients which can be used for feed preparation were displayed and a livedemonstrationofthefeedpreparationwasalsocarriedout. Therewere30participantsforthis trainingprogramme.



Extension Programmes

Diversification of aquaculture practices in the Malabar region

With the aim of diversification of the aquaculture activities PEN culture of fish was initiated in the region. A total of 4 PENs culture units were installed. This was through participatory mode of farming. The beneficiary farmers selected from the members of the Aquaculture Development Cooperative Society (ADCOS) and self-help groups were formed. Asian seabass fishes were procured from Andhra Pradesh and stocked in these PENs. The units were installed at Kunnuru, Edayilakad and Koyabram.





Research Programmes

1. To study the Physico-chemical and Biological characteristics of Kavvayi wetland system

A scientific study on the Physico-chemical and Biological characteristics of the Kavvayi backwaters started. Regular monitoring of water quality parameters like temperature, salinity and chlorophyll is being done. An initial study revealed that the water body is much alike across all stations. To study the fish diversity, regular sampling were done across the of the waterbody. Apart from fishes, the backwater also supports a good fishery of clams. To analyze the economical role of the water body in the life of the local people, estimation of fish catch is being done. Small, medium and big fish landing points are being mapped across the length and breadth of the system.







Study of the Physico-chemical and Biological characteristics of the system will be of use in taking management decisions about the huge mussel farming activity carried out in this water body as well. Mussel farming in this region, due to its high popularity and profit, is becoming

more unscientific in terms of number of farming units in a particular area. This unscientific farming might alter the ecology of the system.

An investigation was conducted to analyse the reason behind the heavy spat fall in the Orié region of the water body. The proximity to the bar mouth and conducive environmental conditions were found to sustain this heavy spat fall in the region. This observation was published as a poster in Braqcon 2019 at CIBA, Chennai.

Physico-chemical Characteristics and Community Structure of the Green Mussel Spatfall Ground in the Padanna Backwaters authored *Binesh, C.P., Ashwini Gopi., Devika Pillai and Manoj Kumar, B.* Poster was presented in Braqcon 2019 conducted at CIBA, Chennai during 22-25th January 2019.

The mussel farming and its future prospects in the system was studied and presented in Braqcon 2019 at CIBA, Chennai during 22-25th January 2019. The presentation was selected as the best oral presentation.

Mussel culture in Kasaragod district, Kerala: Present status and future authored by *Manoj Kumar, B., Devika Pillai., Binesh, C.P., Ashwini Gopi., Keerthana, T.A. and Purushothaman, T.* The paper was presented by the first author.

2. Establishment of a biotechnology laboratory with PCR facility

The biotechnology laboratory is envisaged primary for the benefit of farmers especially for testing the seeds for diseases before stocking. Most of the required equipment and chemicals are tender-finished and it could function soon.



3. Establishment of a hydrobiological laboratory

The essential equipment and chemicals are tender-finished and the laboratory could function soon.



4. To conduct rural agriculture work experience(RAWE)programme

A part of the RAWE programme for the 7th semester BFSc students of KUFOS is monitored from this centre. A total of 20 students of the final year BFSc batch participated in this programme for seven days (13.08.2018 to 19.08.2018) and a total of 6 students of the second batch of the final year BFSc participated for 7 days(28.08.2018 to 03.09.2018) . Under the programme, the students visited mussel, oyster, seaweed and shrimp farms, fish farms in cages and pens and an integrated farming site.



Directorate of Research

THRUST AREAS

- To promote basic search to facilitate the aquaculture promoting R&D in breeding of commercially important edible and ornamental fishes
- Developing brood bank for sustainable production of fish employing selective breeding techniques
- Sustainable practices for culture of economically important Non-conventional species freshwater and brackishwater species
- Development of sustainable aquafeed from wide spectrum raw materials and propagation of feed based aquaculture in Kerala
- Bio prospecting of microbes from various aquatic environments for potential application in aquaculture
- Integrated system for multi-disciplinary aquatic animal health research and management

Professor Chair:

Dr.T.V.Sankar
Director of Research, KUFOS
(in Charge)

Faculties associated:

Dr.Shyama. S
Dr. Devika Pillai
Dr. RejishKumaR .V J
Dr. Chiranjiv Pradhan
Dr. Binu Varghese
Dr. LinoyLibiny

I. Centre of excellence in Sustainable Aquaculture & Aquatic Animal Health Management

The major thrust areas identified were

- To promote basic search to facilitate the aquaculture promoting R&D in breeding of commercially important edible and ornamental fishes
- Developing brood bank for sustainable production of fish employing selective breeding techniques
- Sustainable practices for culture of economically important Non-conventional species freshwater and brackishwater species
- Development of sustainable aquafeed from wide spectrum raw materials and propagation of feed based aquaculture in Kerala
- Bio prospecting of microbes from various aquatic environments for potential application in aquaculture
- Integrated system for multi-disciplinary aquatic animal health research and management

Progress:

- 1. Developing brood bank for sustainable production of Karimeen, *Etroplussuratensis* (Bloch, 1790) and an initiation of selective breeding program**

The research on pearl spot progressed in line with the previous years focused area and new initiatives on improving the seed production. Apart from the stocks available from Panangad (Ernakulam), Edathua (Alapuzha) and Azhikode (Thrissur), new stocks were included from Udayapuram (Kottayam). Currently all the four stocks are breeding under captivity and the Alappuzha stock F1 generation started spawning and shortly we will get F2 generation. The innovative outdoor tank setup for continuous mass breeding was successful and are now producing about 10-15 spawning per month and this will be increased to morethan 50 in coming months.

Important Findings:

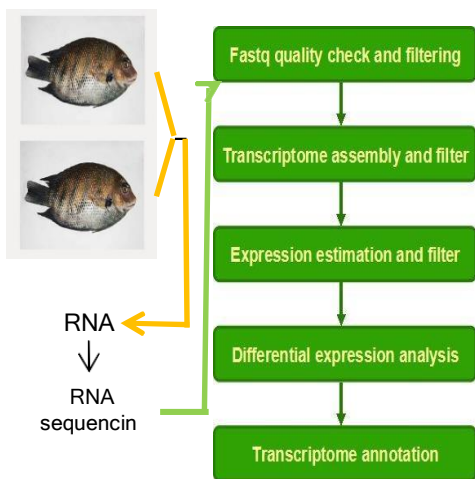
- 1) Production of monosexetroplus (all male) (>90%)
- 2) Broodstock nutrition for optimal growth.
- 3) Successfully developed system for external incubation for continuous spawning curtailing parental care. Experiments are on for confirming the results..
- 4) Optimization stocking density and growth of karimeen larvae in freshwater RAS.
- 5) Mass production and larvae rearing of karimeen in outdoor cement tanks.
- 6) Maintenance of stock and mass culture of microalgae, moina, rotifers, microwormsetc

Genetic analysis of different strains and generations of Karimeen, early stage sex identification of karimeen and producing all male pearlspot are some of the envisaged activities.

2. Transcriptome analysis of *Etroplussuratensis*

Etroplussuratensis is a high demand palatable economic species endemic to Southern India and Sri Lanka. Exploring the biology of the fish at genomic level is important for the enhancement of its productivity.

This is the first in depth transcriptome analysis of *E. suratensis*. Around 96,646 unigenes were assembled *de novo*. The genetic makeup was most similar to *O. niloticus*. Growth factor proteins including those of Fibroblast Growth Factor signaling pathway were found highly expressed in the female sample among the DEGs. A total of 29,999 SSRs were identified.

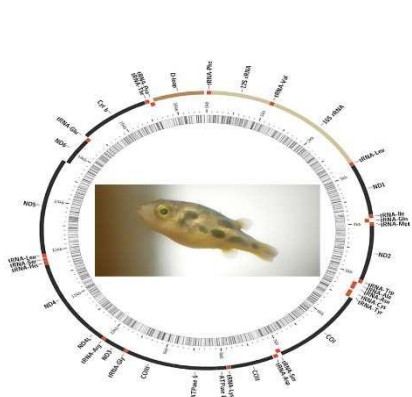


SSR results	Numbers
Total No. of sequence examined	96,646
Total No. of identified SSRs:	29,999
Number of SSR containing sequences:	18,165

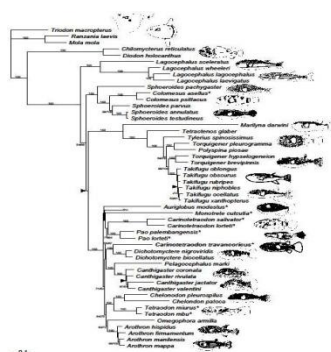
Processes	Major genes
Growth	<i>fgf, fgfr, igf1 & 2, gh, megf10</i>
Reproduction & Development:	<i>vg5, vgr, zp3, sox8a, dmrt3, zar11</i>
Immunity	<i>TLR5, CISH, A2M, IL17R</i>

3. Development of molecular markers for the conservation of fishes endemic to Kerala

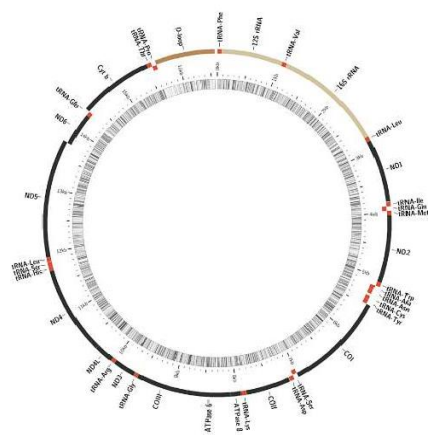
Completed whole mitochondrial genome sequencing, genome annotation and phylogenetic and comparative analysis of *Carinotetraodontravancoricus*, *Channadiplogramma* and *Horabagrusnigricollaris*.



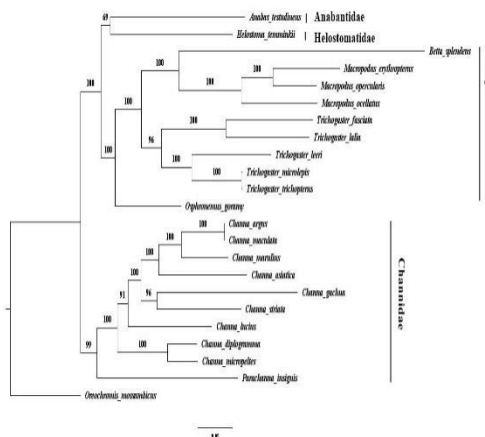
Carinotetraodontravancoricus



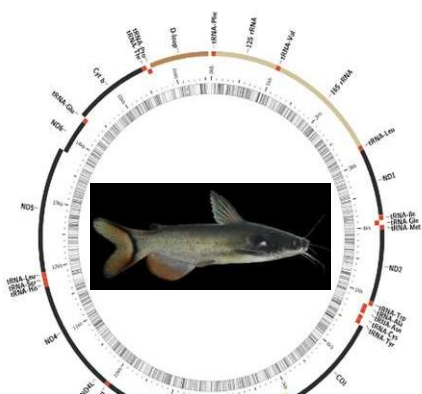
Maximum likelihood (ML) tree using the 12_n3_rRT_n data set. Arrowheads indicate the difference from the tree from the 123_nRT_n data sets. The numbers near internal branches indicate bootstrap probabilities of 12_n3_rRT_n(left) and 123_nRT_n(right) data sets, respectively (values less than 50% not shown). Single numbers indicate that ML analyses for the 12_n3_rRT_n and 123_nRT_n data sets resulted in identical values. Asterisks with species names indicate freshwater species.



C. diplogramma



Phylogenetic analysis of *C. diplogramma* among the Anabantiformes based on the maximum likelihood (ML) method of the 13 mitochondrial protein coding genes with bootstrap probabilities obtained from 1000 replications (bootstrap values which are more than 50% are shown on the branches)



H. nigricollaris

Structural comparison of *H. nigricollaris* and mitogenome *H. brachysoma*. Green and red block in the beginning and end of the sequences indicate the sequence orientation. Normal sequences are coloured by black and inverted repeats are marked with lime colour. The coloured blocks outside the sequence describe the blast hit scoring, best quartile being red, then orange, green and blue, respectively. The mitogenome of *H. nigricollaris* has 97.6% sequence similarity to that of *H. brachysoma* mitogenome.

4. Culture of Live feeds

Studies are going on the production of live feeds of importance namely Microworm / breadworm, Grindal worm, Infusoria, Paramecium, Zooplankton-cladocerans, copepods and Chironomous larvae, on commercial scales for use by ordinary farmers engaged in farming.

Microworm culture-*Panagrellus redivivus*

Microworms which are white in colour and grow up to 3mm in length, are excellent live feed for the fish fry and are very easy to raise. Microworms are live bearing, releasing 10 to 40 young every 1 to 1.5 days for a 20 to 25 day life span. Therefore, each female produces approximately 300 young. The young reach sexual maturity in approximately three days. Their size increases by three times during the first day and five to six times during the next three days. The live nematodes contain 76% water and 24% dry matter; 40% of the dry matter is protein and 20% is fat. Trial culture of bread worms were done by employing different methods. Microworms are especially useful for species of fish whose fry are too small to initially feed on newly hatched brine shrimp nauplii. They can be used as an alternative or substitute to baby brine shrimp.



Fig *Panagrellus redivivus* cultured on bread/ milk substratum

Grindal worm

Grindal worm (*Enchytraeusbuchholzi*) is a small white non-parasitic worm that lives in soils around the world. They are similar to White worms that are commonly used by other aquarists as a source of food for their fish. However, these worms are smaller than White worms and their generation and maintenance differs slightly. Grindal worms are good food source for young fry and adult fish, that stay under a couple of inches.

Infusoria

The production of infusoria on different substrates namely Banana peel, Potato peel, Cabbage leaves, Tomato slices and lab beans were assessed and it was seen that infusoria production was high in cabbage and the next highest production was in banana peel

Paramecium

Paramecium cultivation was carried out on banana peels, milk and potato peels. Faster growth of Paramecium was recorded in milk enriched media. The study showed easy maintenance of paramecium and also highlighted the nutritional value of Paramecium was good



Zooplankton

Zooplanktons collected from freshwater ponds using plankton net. Zooplankton such as cladocerans, copepods and rotifers were isolated from the water sample and maintained using Baker's yeast *Saccharomyces cerevisiae* as feed. Experimental trials were designed to study the effect of different plant sources (coconut oil cake, GNOC, Sesame oil cake and rice bran) on the population density of zooplankton. *Moina* showed adequate growth on both CSOC and GNOC and advanced growth and coloration exhibited by *Moina* fed with GNOC.



Experimental culture of *Moinamicrura*



Enchytraeus buchholzi cultured using wet sponge as substratum and oats as food

Blood worm / Chironomous larvae

Chironomous larvae are most abundant aquatic insects found in any water body and it is common for chironomids to comprise more than 50% of species, some kinds are blood red due to the presence of haemoglobin. The chironomid larvae and pupae are highly nutritious, easy to rear and their peculiar movement will induce feeding stimuli in fishes. The larvae can be used as live food for aquarium as well as carnivorous fish fry in aquaculture.

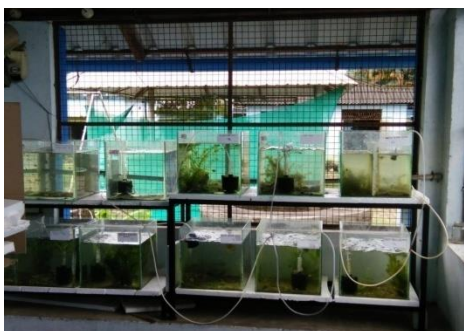


5. Establishment of fish seed bank

Timely availability of quality seed is a major factor influencing the success of any aquaculture enterprise. The culture of ornamental fish continues to be an important activity in the country. Attractive coloration determines the commercial value of ornamental fishes. Quality of brood stock and larvae is a crucial factor in ornamental trade. The project was aimed at facilitating timely availability of seed, evaluate and formulate different brood stock and larval diets and to Standardize of different approaches for improving larval growth and survival. Sixteen varieties of 9 types of fishes as given below were studied.

	Fish	Variety	Scientific name	Generation under study
1.	Guppy	Half black guppy	<i>Poeciliareticulata</i>	F7
2.		Seven color guppy	<i>Poeciliareticulata</i>	F5
3.		Yellow cobra guppy	<i>Poeciliareticulata</i>	F7
4.		Turquoise red tail guppy	<i>Poeciliareticulata</i>	F7

5.		White tuxedo guppy	<i>Poeciliareticulata</i>	F5
6.		Yellow tuxedo guppy	<i>Poeciliareticulata</i>	F7
7.	Molly	Pepper molly	<i>Poecilia velifera</i>	F2
8.		Black molly	<i>Poecilia sphenops</i>	F2
9.	Tiger Barb	Tiger barb	<i>Puntius tetrazona</i>	F1
10.	Fighter fish	Siamese fighter fish	<i>Betta splendens</i>	F2
11.	Sword tail	Sword tail	<i>Xiphophorus hellerii</i>	F2
12.	Platy	Red coral platy	<i>Xiphophorus maculatus</i>	F3
13.		Red top platy	<i>Xiphophorus maculatus</i>	F3
14.	Gold fish		<i>Carassius auratus</i>	F1
15.	Tilapia		<i>Oreochromis niloticus</i>	-
16.	Asian cat fish		<i>Pangasianodon hypophthalmus</i>	-



Comparative evaluation of the color enhancement potential of different pigment sources of plant origin in the gold fish *Carassius auratus*

The experiment was designed to study the development of color in gold fish fed carotenoids from three different plant sources, namely African tulip tree flower (*Spathodea campanulata*), Red bell pepper (*Capsicum annum*) and Pomgrenate peel (*Punicagranatum*). The pigment sources are included in feeds, at 5% inclusion level. The water quality was maintained by periodic partial replenishment, as required. Water quality parameters were monitored over the duration of the study by sampling at fortnightly intervals. The carotenoid content and the colour intensity, was estimated using spectrophotometer. The highest carotenoid value was obtained from red bell pepper.



Difference in color intensity shown by *Xiphophorus maculatus* fed with experimental diets – control, moringa, shrimp head waste meal, mixed diet of moringa, shrimp head waste meal at 1:1

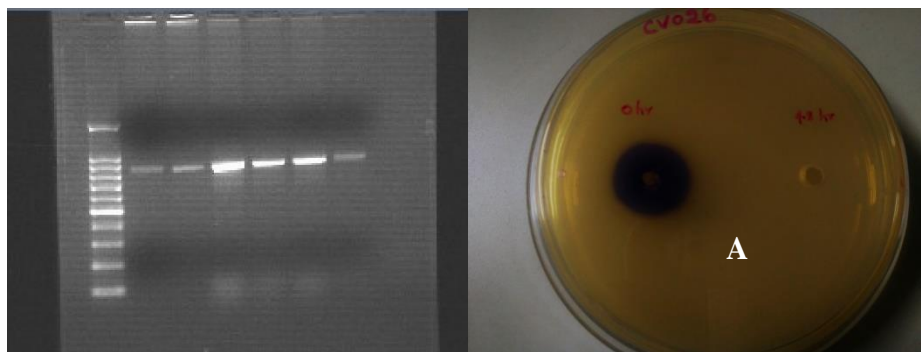
Difference in Color intensity shown by *Carassius auratus* fed with experimental diets - control feed, African tulip tree flower, pomegranate peel feed and Red bell pepper respectively

6. Establishment of a fish virology/cell culture lab

A fish virology/cell culture lab was established in the Centre for Aquatic Animal Health Management. Cell lines from different tissues of *Channa diplogramma* was developed and primary cultures were developed from caudal fin, spleen, and eye. Only 17.74% of the total explants showed radiation of the cells from the fragment of the tissue. Among this, only 8 explants formed the monolayer leading to the development of cell lines.

7. To screen the probiotic potential of N-acylhomoserine lactone-degrading bacteria isolated from fish culture pond and gastrointestinal tract of *Oreochromis niloticus*

Diseases constitute one of the most important economic constraints for the development of aquaculture sector. With a view to control bacterial diseases in aquaculture, 20 bacteria capable of inhibiting the quorum-sensing signals (Quorum quenching bacteria) were isolated from fish intestine and soil from culture pond. The potential probiotic traits of these bacteria are being investigated to explore their use as a suitable biocontrol agent in aquaculture. The presence of an autoinducer inactivation homologue gene (Fig) and AHL-inactivation assay showed the ability to rapidly degrade synthetic C6-HSL and C10-HSL in vitro and hampered violacein production. They had excellent biodegrading ability of natural N-AHL produced by *Aeromonas hydrophila*, suggesting that they can be used as a potential quencher bacterium for disrupting the virulence of *A. hydrophila*. The study indicates that the combination of quorum quenching bacteria could be used as a non-antibiotic feed additive in aquaculture to control bacterial diseases.



PCR detection of *aiiA* homologue gene. Lane A: 100 bp DNA ladder (Promega); lane B-G: different isolates; lane H: negative control. Arrow shows the expected amplicon size of approximately 800 bp.

AHL degrading activity of QQ isolate on natural N-AHL. QQ isolate was incubated with crude cell free culture supernatant of *A. hydrophila* (served as natural N-AHL) for 0 h (A) and 48h (B). Pigment formation indicates the presence of N-AHL in the cell free culture supernatant of *A. hydrophila*; degradation of N-AHL is evident by loss of pigment formation on the biosensor lawn.

8. Molecular characterization of multidrug resistance genes

Antimicrobial resistance is a major global public health concern and considered as a serious food safety issue. Samples were collected from different area and compared with samples from a control area. Samples -water, soil, clam, fish, shrimp and crab - included the direct discharge from the hospital to public water bodies and the aquaculture farms using the same water as inlet water source. A total of 324 isolates were collected from different samples. Most of the isolates belonged to Gram negative Enterobacteriaceae, Pseudomonas, Bacillus, Aeromonas, Acinetobacter, Staphylococcus, Streptococcus and Enterococcus families.

The antibacterial activity of over 30 antibiotics was determined by MIC and antimicrobial susceptibility (AST) was also determined. Results showed high resistance against many antibiotics. Maximum resistance was shown by Staphylococcus and Enterobacteriaceae group. MIC concentration was also found to very high. Most of the Enterobacteriaceae group showed MIC value of above 240 µg ml⁻¹. Screening of antimicrobial resistant gene showed positive result for methicillin (*mecA* gene), vancomycin (*van B*, *vanC*, *vanH*, *vanX*), and fluoroquinolones (*qnrA*, *qnrB*, *qnrS*) and extended spectrum beta lactamase resistant genes (*bla*NDM-1, SHV, CMY, CTX-M, TEM). Vancomycin resistance was successfully transferred from the resistant strain as a donor to a vancomycin sensitive recipient indicating the possible plasmid mediated transfer of AMR.

9. Advisory services and technical consultancy to farmers & government

Whenever disease was reported by the farmer; steps were taken to advise the farmer to take prompt treatment measures and to collect samples. Farmers were encouraged to practice BMPs.

10. Diagnostics services for fish diseases

Controlling disease in shrimp culture can benefit the shrimp and fish farmers of Kerala in a significant way as disease is now regarded as the most important constraint to production. Farmers can ensure the stocking of disease free healthy shrimp/fish seed, an essential prerequisite for health management in aquaculture, by getting the seed tested for its health before stocking. During culture operation, prompt and timely diagnosis can be done at the centre so that the farmer can take immediate preventive steps to control the spread of infection, if any, thereby minimizing significant revenue losses that would normally occur in such circumstances. The samples were screened by PCR for the presence of White spot syndrome virus (WSSV), Monodon baculo virus (MBV), Infectious hypodermal haematopoietic necrosis virus (IHHNV), Hepatopancreatic parvo virus (HPV), Enterocytozoon hepatopenaei (EHP), Tilapia lake virus (TiLV), Epizootic ulcerative syndrome (EUS), Infectious myonecrosis virus (IMNV), Yellow head virus (YHV), Taura syndrome virus (TSV), Macrobrachium rosenbergii nodavirus (MrNV) and Extra small virus (XSV).

Directorate of Extension

Directorate of Extension, Kerala University of Fisheries and Ocean Studies (KUFOS) implemented the following Plan Projects funded by Government of Kerala during the year 2018-19

I.Village Adoption for Empowerment and Capacity Building Ensuring Livelihood of Fisherfolk in Central Kerala

Kerala University of Fisheries and Ocean Studies (KUFOS) implemented the Plan Project “ Village Adoption for Empowerment and Capacity Building Ensuring Livelihood of fisherfolk in Central Kerala” from the year 2015 onwards. The major objectives of the project are promoting diversified aquaculture practices and allied activities in an eco- friendly and sustainable manner so as to increase the fish production of the State, creating more employment opportunities to the fish farmers and fisherfolk, thus ensuring livelihood security to them. The project also focuses on transfer of post harvest technologies to the fisherfolk with special emphasis on women empowerment .

As part of the project, with a view to ascertaining the culture prospects of seabass as a candidate species for pen culture, KUFOS conducted a trial culture cum demonstration of pen culture of seabass at Thiruthipuram, N.Parur. Five hundred numbers of seabass seeds purchased from Rajiv Gandhi Centre for Aquaculture (RGCA), Sirkali was introduced in the pen (80m²) constructed in Thiruthipuram backwaters . After a period of culture of one year, the stocked fishes were harvested on 26/5/2018. Total production was 618kg with a survival rate of 96.6%. Maximum size of the fish was 2.330kg and the fishes were sold at selling price of Rs.450/kg. Culture of seabass in pens was the first attempt in Kerala. Successful conduct of this trial culture cum demonstration indicates the prospects of pen culture of seabass as a candidate species for pen culture. The trial culture also proved that it is a cost effective technology which could be extended to further areas and the farmers can adopt it without much capital investment for increasing their income through fish production.

Harvesting of the Seabass at Thiruthipuram on 26/5/2018



Harvested fishes



Cage and pen culture units started

During the year 2018-19 University provided both technical and financial support to the fish farmers interested in cage aquaculture and pen culture at various places viz. Kottuvally, Kaitharam, Methala, Poyya, Puthenvelikkara, Aroor, Arookutty, Vadakkumpuram, Varappuzha, Gothuruth, Thattappilly Chendamangalam, and Panangad. These units were stocked with commercially important cultivable fishes like Pearlsport, Seabass, Red snapper etc. Altogether the University has started 23 cage aquaculture units comprising 45 beneficiaries. In penculture, support was given to three groups consisting of seven-member farmers .To know the prospects of simultaneous culture of Seabass and pearlsport a demonstration pond of 1 acre was selected at Panangad and stocked with 1300 numbers of seabass and 1500 numbers of pearlsport which was not fully successful on account of the devastating flood occurred during the last week of August 2019.

Stocking of the demonstration pond at Panangad on 2/4/2018



Stocking the cages at Panangad on 4/4/2018



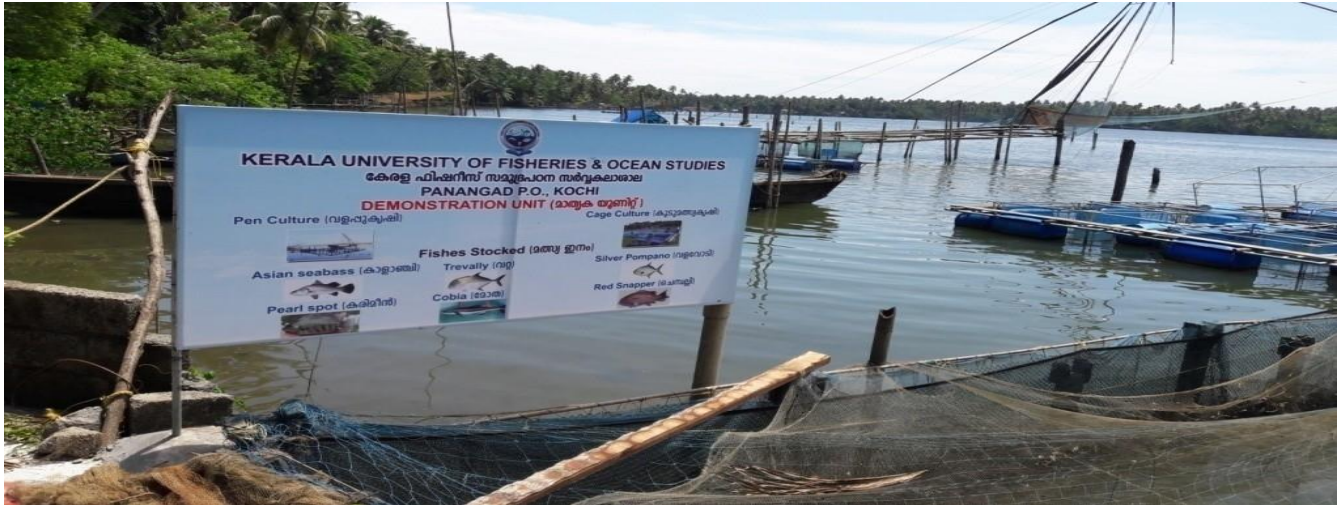
Growth assessment of the pearlspot



To know the impact of the project a joint physical verification of the project was carried out by the AG Audit party on 14/6/2018. The team members comprising N.V.Surendran, Sr.Audit Officer, Geo Jose, Asst.Audit Officer, P.B.Dineshkumar, Asst. Audit Officer visited various sites and conducted physical verification at four brackishwater fish farming sites at Arattukadavu, Kottuvally and Cheriappilly including the demonstration unit established at Thiruthipuram where innovative techniques like Cage aquaculture of variety species viz.seabass, pearlspot, red snapper etc. and pen culture of commercially important fishes were being carried out since 2011. The audit team reported that among the various technologies, the technology of cage aquaculture, both selective stocking and Capture Based Aquaculture system (CBA) and pen culture of variety species has been found to be most profitable, cost - effective, less capital intensive and less risky in nature which could be viewed as a desirable model of sustainable fisheries

development for rural empowerment and food security for the fish farmers in various coastal Grama Panchayaths

Demonstration unit established at Thiruthipuram



Visit of the AG Audit wing on 14/6/18





Partial harvesting of the stocked fishes at various places were carried out

Partial harvesting at Kottuvally on 21/8/2018

Name of farmer : Arun T R

Place : Kottuvally

Cage dimension : $3*3*1.5 = 13.5\text{m}^3$ (one cage size)

No of cages 4

No of seeds stocked : 1500

Survival rate 80%

Culture period :8 months

Total quantity of harvest - 400 kg



Harvesting at Manjali on 23/8/2018

Name of the farmer :Anas K. A

Total number of cages : 9

Quantity harvested : 742.5kg

Survival rate : 78%



Partial harvesting on 25/7/2018 from the demonstration unit (pen culture) established at Panangad



INFRASTRUCTURE

PLAN FUND PROPOSAL APPROVED FOR THE YEAR 2018-2019

Sl. No	NAME OF WORK	AMOUNT (IN LAKHS)
1.	Construction works at KUFOS HQ head quarters including Flat complex for staff, Research Complex, Seminar Complex , Compound Wall International Hostel And Staff Quarters,	375
2.	Repair and Renovation of the existing Building	100
3.	Upgradation of Playground at KUFOS phase III and Development of Campus Development	150
4.	Installation of Solar Panel at Panangad & Installation of RO Plant	65
5.	Construction of School Of Fishery Environment (Marine School) At Puthuveypu - Campus Development	143.73
6.	Establishment of Fishery Training ,Extension and Research centre at Kollam and establishment of Aquaculture Training centre Kannur	200
7.	PG Hostel for women and PG Hostel for men	149.27
8.	Sewage Treatment Plant Marine engineering workshop fish craft lab and Furniture & fixtures	100
	Sub Total	1283
III	RIDF PROJECTS	1500
	Total	2783

1.(1).FLAT COMPLEX FOR EMPLOYEES – (PHASE -5)

To overcome the shortage of quarter's facility for teaching and non-teaching staff in the University, it is decided to construct a flat complex for the employees. The flat complex comprises of six units and each unit shall accommodate one office room, two bed rooms with attached toilets, dining hall, drawing room, kitchen, work area and servant's toilet.

The building is designed as RCC framed structure (G+2) having a plinth area of 370 Sq.M in each floor which comprises two quarters in each floor and a central staircase. Thus the total plinth area shall be 3 x 370 = 1110 sq.m. Thus the building will be ultimate with G+2 when completed with no provision for future

expansion. BSNL Civil wing was entrusted with the construction work in a phased manner according to the availability of funds. By using the plan fund allotment, all the six units. are completed. Now, the GF units are used as Guest rooms.

During 2014-15 plan fund of Rs.100 lakhs is allotted for phase -1 , in the year 2015-16, Rs.100 lakhs allotted for phase-2 and in the year 2016-17, Rs.150 lakhs and, in the year 2017-18, Rs.50 lakhs for phase- 4 is allotted. The work upto phase 4, i.e. building work is completed. An amount of Rs. 50 lakhs is allotted for phase 5 for the provision of GI fabric wire fencing with GI posts around newly constructed twin type quarters and adjacent ladies hostel building; including double leafed gate formed with GI frame and GI fabric wire., paving blocks around the building and landscaping. This last phase of work is entrusted to KSCADC.



1.(2). CONSTRUCTION OF RESEARCH COMPLEX AT KUFOS HEAD QUARTERS PANANGAD (phase 4)-

First and second phase construction of the Research complex was entrusted with M/s. BSNL, first phase work was completed and second & third phase work are in progress. During 2013-14 plan fund Rs.155 lakhs is allotted for phase -1, 2016-17 plan fund of Rs. 101.50 lakhs for phase -2 and 2017-18 plan fund of Rs.50 lakhs is allotted and these phases are for building.

The work of this fourth phase amounting to Rs.75.00 lakh is entrusted with KSCADC, for external work, which includes road work, drain work etc. The road is 4.00m wide and 150m long starting from the present south end in front of library and will give access to the southernmost point of the campus as well as Research complex. The road is designed to take heavy traffic to enable big vehicular movement inside the campus. The wearing surface is 8cm thick heavy duty M 40 paver blocks laid over 20cm thick water bound macadam. The items for filling the front marshy portion of the Research complex to provide approach road is also included. The work is in progress.



1.(3).CONSTRUCTION OF SEMINAR COMPLEX AT KUFOS HEAD QUARTERS PANANGAD – (Phase – 5)

The building shall be of RCC framed structure with floor height 10.50m having a plinth area of 1044sq.m in ground floor accommodating 436 seats and 618sq.m.in first floor accommodating 184 seats. Thus the building shall be ultimate with a total plinth area of 1662 sq. m to accommodate a total seating capacity of 618.The Seminar Complex is designed as a main air-conditioned Seminar Hall, acoustically treated and provides with a centrally controlled audio system .This spacious and well-equipped

facility is well suited for conducting of seminars, conferences, conventions and cultural programmes etc. The hall can also be used for screening Film.

During the plan fund 2014-15 Rs.100 lakhs for phase 1 , 2015-16 plan fund Rs.150 lakhs for phase 2 , 2016-17 plan fund Rs.25 lakhs for phase 3 ,2017-18 plan fund Rs.200 lakh for phase 4 and 2018-19 plan fund Rs. 100 lakhs for phase 5 had allotted .The construction of phase 1 & 2 were completed and phase 3, 4 & 5 are in progress. The total project cost is Rs.1275 Lakhs.The work included in this phase are Interior Civil Works including False Ceiling, Wall Paneling, Texture Painting and Fabric Curtain Works ,Electrical Works including Electrical Works, Light and Ventilation Systems and Air Conditioning.



1.(4).COMPOUND WALL AT HEAD QUARTERS PANANGAD (Phase - 3) –

The compound wall is missing in some areas on the eastern campus and on the western campus .The western campus is distributed with a number of ponds /fish ponds. In order to protect the ponds and boundaries from trespassing, a compound wall around all the campuses is very essential.

The work is taken up in in a phased manner according to the availability of fund. The first and second phases of the work under various plan funds were entrusted with M/s BSNL.The

first phase for a length of 300m at western campus is completed and the second phase is in progress. The construction of third phase amounting Rs. 15 lakh for the length of 130 m, height 1.5 m, in the Eastern campus is entrusted with KEL is in the initial stage

1.(5). INTERNATIONAL HOSTEL CUM GUEST HOUSE AND STAFF QUARTERS – (Phase -1&2)

For the Construction of Staff quarters the allotted fund is Rs.100 Lakh (2017-18) & Rs. 50 Lakh (2018-19). For the Construction of International Hostel the allotted fund is Rs.50 Lakh (2017-18) & Rs. 75 Lakh (2018-19).

Due to the availability of land for these constructions and horizontal spreading of building is not economical, it is decided to combine these two projects and built the staff quarters over the international hostel. The work is proposed to execute through M/s KEL as deposit work

The building is of RCC framed structure having (G + 6 floors) with plinth area of 235.98 sq.m in ground floor and 235.98 sq.m for 1st floor accommodating International hostel, and 2nd ,3rd ,4th ,5th& 6th floor each having 235.98 sq.m accommodating staff quarters. Thus the building shall be ultimate with a total plinth area of 1651.86 sq m. The initial phases (Phase I & II) under various plan funds entrusted with M/s KEL is nearing completion.

2..REPAIR & MAINTENANCE –

An amount of Rs.100 lakhs is allotted for Repair & Maintenance works at KUFOS HQ. Detailed estimate amounting to Rs.1, 00, 00,000/-includes the following works,are in progress.

Sl.No.	Name of Work	Amount (In Lakhs)
1.	Painting works to Vembanad ladies hostel at KUFOS Head Quarters Panangad.	15.00
2.	Providing additional security to PG hostel for ladies at N-E campus of KUFOS Head Quarters Panangad	5.00
3.	Granite flooring to the corridors of Second floor of Administrative block at KUFOS Head Quarters Panangad	10.00
4.	Tiling and light roofing to the back side open space of Quarters type IV/1, 2, 8 at KUFOS Head Quarters Panangad.	9.00

5.	Wiring Of The Type IV/1,2,8 Quarters at North eastern Campus	3.00
6.	Painting works to the Ad. block of KUFOS Head Quarters Panangad.	12.00
7.	Replacing the old GI pipelines at KUFOS Head Quarters Panangad	4.00
8.	Minor repair & renovation works	42.00
	Total	100.00

Painting work of vembanadu hostel



3. UP GRADATION OF PLAYGROUND & DEVELOPMENT OF CAMPUS ROADS –

The University has a vast playground of area about 13000 sqm. Most of the areas are water logged. First phase of the work was entrusted with M/s. KEL under plan fund 2017-18 for an amount of Rs. 50 Lakhs was completed. An amount of Rs.150 lakh is allotted for Up gradation of play ground and Development of campus roads in the second phase.. This phase includes development of campus roads, items for site clearance, supplying and filling using good earth, consolidation by using 8 to10t power rollers etc.The work was entrusted with KEL and is in progress.



4. INSTALLATION OF SOLAR PANEL & RO PLANT–

An amount of Rs.50 lakhs is allotted for the Installation of Solar panel at KUFOS HQ Panangad. Work is proposed to execute through M/s. KEL as deposit work. The estimate amounting to Rs.50, 00,000/- (Rupees Fifty lakhs only) is submitting for approval. The work includes supply of 50 kW Solar Power Plant, PV Modules, Inverter, Mounting Structure, Cables, Energy Meters, Panel Cleaning Systems & all other accessories .

An amount of Rs.15 lakhs is allotted for RO Plant. There are many labs are working in the main campus and it is very essential to provide RO water to the lab activities. Hence it is decided to install tube well and RO of capacity 1500LPH. The main components of the RO plant is Dosing system, Raw water sand filter, Pressure sand filter, Activated carbon system, Micron filter, RO system, Instrumentation, RO skid, RO electrical panel, Automatic PH correction, UV disinfection, Plumbing works, Errection & commissioning.

5 CONSTRUCTION OF SCHOOL OF FISHERY ENVIRONMENT (MARINE SCHOOL) AT PUDUVEYPU -CAMPUS DEVELOPMENT

The School of Ocean Studies and Technology is presently established in the main campus for the ease of administration during its inception. Since the school is offering courses with direct relevance to ocean studies, a campus and buildings developed near the shore is much beneficial for the students. In this regard, a building to hold the class and laboratories of all the departments under the school is planned to be constructed in the Puthuvypu campus of KUFOS as Marine School.

The building is designed as RCC framed structure for ground floor and gal valium sheet roofing with steel truss for first floor (G+1ultimate) with floor height 3.80m for both floors.The total area of construction is 1362sq.m with 667 sq. m in each floor and stair tower with 28.00sq.m. Ground floor consisted of lobby, office room, labs, Director's room, and class room and toilet blocks. First floor includes lobby, class rooms and toilet blocks. . BSNL Civil wing was entrusted with the construction work in a phased manner according to the availability of funds

During 2014-15 plan funds Rs.200 lakh is allotted for phase -1 and it was insufficient for the completion as per our requirement. Hence an amount of Rs.143.73 lakh was allocated from Plan fund 2018-19 for the

CONSTRUCTION OF MARINE SCHOOL



completion of

the building



6. DEVELOPMENT OF VARIOUS FISH FARMS

Presently there are various ponds in the KUFOS western campus compound which is not upto standards and hence it was directed by KUFOS officials to select 3 brackish water ponds, 2 fresh water ponds and its necessary facilities to make the same an ideal pond for fish farming. (west side of the western campus, total approx length of bund comes to 526m). As the existing bunds are dilapidated and low lying, the bunds for the ponds are constructed with coconut piling either side with necessary bracings and geotextiles for avoiding seepage. The bund is formed by filling excavated clay from the existing ponds. 30cm topping with gravel earth is also proposed for outer bunds. The top width of main bund is proposed for 3m width so as to ply the vehicles. For main bund outer sides facing river are proposed with rough stone work tightened and with RCC belt to protect the flowing of bund due to high flow of water. 4no's small sluices are constructed for inner pond bunds. Coconut piles of 6.00m at 1m c/c, dry rubble packing and cement concrete 1:4:8 is proposed for foundation of sluices. Over the foundation RCC base and vertical walls, beams connecting the vertical walls and cover slab are proposed. Grooves are provided at inside portions of vertical walls so as to control water by inserting the Thambakam wood planks wherever necessary.

Using plan fund allocation for the year 2017-18 (Rs. 185 lakh), the construction of earthen ponds, which includes 3 brackish water ponds, 2 fresh water ponds, outer bunds at the boundaries of proposed lake and land for protecting the proposed area for 100 m from south towards north direction with 2 no main

sluices for controlling water in and out of ponds, was entrusted with KSCADC in phased manner and completed as phase 1. An amount of Rs 50 lakhs is allotted for the development of ponds for organic farming at Western campus as phase 2. The Phase 2 is for pond area of 13,155 sq.m, includes sluice gate , clearing grass, earth work, bailing out water, ring bund construction, coconut piling, laying Geo textile membrane on inside slops, stacking and fixing causarina poles, filling quarry muck, CC interlocking paver block for road development , Retaining wall, GI chain link fabric fencing etc complete for organic farming.

7.PG HOSTEL FOR MEN AND WOMEN

An amount of Rs.49.27 lakh is allocated for the construction of PG Hostel for Men (phase 3). Work is entrusted with M/s. BSNL as deposit work. First and second phase construction was entrusted with M/s. BSNL, first phase work was completed and second phase work is in progress. During 2014-15 plan fund Rs.200 lakh is allotted for phase -1 and 2016-17 plan fund of Rs. 251.63 lakh for phase -2. This phase 3 amounting to Rs. 49.27 Lakhs is only for inbuilt cupboard work and furniture in the Ground floor of Gents hostel.

An amount of Rs.100 lakh is allocated for the construction of PG Hostel for Women(phase 3). Work is entrusted with M/s. BSNL as deposit work. First and second phase construction was entrusted with M/s. BSNL, first phase work was completed and second phase work is in progress. During 2013-14 plan fund Rs.250 lakhs is allotted for phase -1 and 2016-17 plan fund of Rs. 97.21 lakhs for phase -2.

The building is of RCC framed structure (G+2 floors) with floor height of 3.00m in ground floor and 3.20 m for other floors having a plinth area of 688 Sq.M in each floor. Thus the building shall be ultimate with a total plinth area of 2064 Sq.M. The building will have light weight sheet roofing laid on steel trusses for topmost floor. In the first phase entire ground floor (688sqm), First floor (251sqm) and in the second floor columns raised and light roof laid over the left portion (251 sqm) was completed. In the second phase six rooms with toilet block in each first and second floor of the right portion (north side) of the building with total plinth area 322 sqm (161X2) is under progress.

In this third phase, the estimate includes, First floor of area 97.92 sqm above dining of GF and Second floor of area 311.43 sqm in the front left side and also upto the next room of rear stair.



8 SEWAGE TREATMENT PLANT, MARINE ENGINEERING WORKSHOP CUM FISH CRAFT LAB AND FURNITURES & FIXTURES

1. Sewage treatment plant

The STP & ETP with capacity 100 M3 / Day amounting to Rs. 36, 64,406 /- and STP with capacity 150 M3 / Day amounting to Rs. 46, 87,031/- and thus for a total amount of Rs. 83,51,437/- for two campuses are included in this proposal. An amount of Rs.25 lakh is allocated for this work in the current year plan fund and the balance fund can be met from the future plan funds.

2. Marine engineering workshop cum fish craft lab:-

An amount of Rs.25 lakh is allocated for this work in the current year plan fund. A semi permanent building with plinth area 100 sq.m is proposed for Marine engineering workshop cum fish craft lab. The main components of the estimate are civil Works, electrical works, plumbing works, erection of instruments etc.

3. Furniture & Fixtures

An amount of Rs. 50 lakh is allocated for furniture and fixtures in the current year plan - fund.

Discover classroom desk single seater table with modesty with front panel model, Discover lassroom individual chair, Anjily wood Junior Officer Table with drawer and cupboard (120x75x75cm), Anjillywood Arm Chair Plank Seat and Reaper Back, LCD projector, White ceramic board with size 8x4 feet, Green chalk board 8x4 feet, Cube Audio podium with in built 60W speaker, ghooseneck mic, one lamp etc. complete, Steel Cabinet with 3 shelvs 127x76x43cm, Incinarator for hostels and various buildings, Water cooler, Computer table - Size 60x45x75 m, Computer chair- Revolving type with seat and back cushion, Visitors chair etc are included in this amount.

NATIONAL SERVICE SCHEME (NSS)

World Environment Day

The activities of National Service Scheme (NSS) in KUFOS started with the celebration of World Environment Day Celebrations on 5th June 2019. Hon'ble Vice Chancellor, Prof. (Dr.) A. Ramachandran inaugurated the function. The theme of this years' Environmental Day was "Nattile Maram Campusil". Apart from this trees were planted In association with Social Forestry Department of Govt. of Kerala, the NSS volunteers facilitated planting of morethan 500 saplings in the campuses of Panangad, Kochi. Most of the tree saplings were of fruit bearing trees. On the occasion of World Environment Day NSS volunteers planted trees in the Western Campus which were brought from their hometowns. All the volunteers participated in the activity by bringing the saplings. Since, the day comes immediately after the summer vacation it was easier to mobilize the volunteers in bringing the saplings. The saplings of Mango, Guava, Jamun, Custard apple, jackfruit, Pappaya etc were planted. Statutory Officers, Teaching and non-teaching staff of the University participated in the planting.



Green Campus Clean Campus – Haritha Keralam

Programme Officers attended one day training programme for NSS organized by KILA and Suchitwa Mission regarding Green Campus Clean

Campus on 19.6.2018 at Samridhi Gramam, Vengola, Ernakulam. Our units received grants allotted by the Suchitwa mission and carried out various activities inside and outside the campus.



Shri. Thomas Issac, Hon'ble finance minister inaugurated the programme by planting trees. This was followed by involving traditional farmers and

farming knowledge. Karanellu Krishi was also done as part of it. Apart from this the regular activities like solid waste management, plastic waste reduction etc were done. Activities were carried out inside and in the pangalitha gramam.

International Yoga Day Celebrations

International Yoga day was celebrated by the NSS KUFOS unit on 21st June 2019 at KUFOS main campus, Panangad, Kochi. Shri. Krishnakumar Menon K, Yoga instructor, delivered a talk on “Pranayama for everyone’s wellness” and demonstrated various yogasana to the participants. This was followed by practicing of various yogasanas by the NSS volunteers.



Nammude Kulam

Renovation of two ponds in the western campus was done under this project. The slope of the ponds were strengthened by planting Vettiver (Ramacham).



Advisory Committee meeting

The advisory committee meeting of the NSS units of KUFOS was held on 14-8-2018. Shri. GP Sajith Babu, Regional Director, NSS and Shri. K. Sabukuttan, State NSS Officer participated in the meeting chaired by Prof. (Dr.) A. Ramachandran, Vice Chancellor KUFOS. The committee revised and approved the action plan for 2018-19. Dr. Binu Varghese NSS Programme coordinator welcomed the members and presented the activities of KUFOS NSS units while Dr. Rejish Kumar, NSS Programme officer offered the vote of thanks.

Independence Day

NSS Volunteers actively participated in the Independence Day celebration by participating in the flag hoisting done by the Hon'ble Vice Chancellor, Dr. A.

Ramachandran. National Integration and patriotic songs. After the event volunteers were engaged in cleaning the campus.

FLOOD RELIEF ACTIVITIES

COLLECTION OF RELIEF MATERIALS

NSS units started collecting relief materials from 13.08.2018 in four of its campuses in association with 'Anpodu Kochi'. The collections at the campuses was initially meant up to 17.08.2018 which was later extended as relief camps were opened at KUFOS campus. Press release regarding material collection was given in newspapers. All the relief materials collected were used for the camp activities later.



MANAGING RELIEF CAMP AT THE CAMPUSES

Two campuses were identified as relief camps for the flood survivor's on 17.08.2018 first one at the Academic Block and another at Western Campus. There were about 600 inmates mostly from Varapuzha, Koonammavu, Cheranelloor, Panangad area. There were also 50 migrant labours from Assam and Bengal.

The camps were organised by the Kumbalam Panchayat in association with KUFOS. NSS volunteers were in charge of Registration, Collection and Distribution of store inventories, water and food supply, assisting medical teams (Allopathy and Homoeopathy), creating awareness on camp activities, cleaning and waste management. Revenue department was actively involved in the daily activities and the camps and were successfully run with the assistance of Panangad Police, NHAI etc.

Since the camps were properly managed by the volunteers and was well covered in the visual media. All the inventories on the items received, supplied to each individuals, those leaving the camps their re- entry to camp etc were kept meticulously. Transparencies in the activities were maintained by constituting a camp management committee with people's representatives, camp inmates and volunteers. Materials worth morethan eight lakhs were collected and distributed in the camps which were sponsored by individuals and organisations.

AFTER FLOOD ACTIVITIES

Cleaning teams were formed by the camp management committee which assisted in sanitation and cleaning works at the camp inmates houses. Our volunteers actively participated in this after flood cleaning and sanitation activities.

Awareness program on Leptospirosis

An awareness program and preventive medicine distribution against Leptospirosis was held at KUFOS seminar hall on 5th September 2018. The program was attended by students, staff and public and classes were delivered by Health Department officials. Hon'ble Vice Chancellor, Dr. A Ramachandran inaugurated the event by distributing Doxycycline tablets to NSS volunteers involved in the relief camp and after flood cleaning activities.

Shri. Siby Augustine, Health Officer Nettoor and Deepak, Health Inspector Kumbalam lead the classes on Leptospirosis and allied diseases expected after the flooding and general hygienic practises to be followed to avoid contamination.



Mosquito control programme

NSS unit in collaboration with Health department observed source control of mosquitos on 14.9.2018. As part of the programme volunteers emptied all the sources which can harbour mosquito egg and larvae inside and outside the campus. The programme was done as part of after flood disease control by state health department and shri. Deepak, Health inspector and shri. Prasanth, Asst. Health Inspector actively coordinated activities with Programme Officers of NSS. As a pilot project NSS KUFOS handed over larvivorous fishes to the health department officials for rearing them in their facilities as well as to release in the drain and abandoned.

NSS Day

On 24th September NSS Day was observed, the importance of NSS its activities etc were described by the Programme Officers. An yearlong awareness program, collection and management of plastic waste were initiated on the day. Plastic discards were collected from both inside and

outside the campuses. The magnitude of the plastic waste management came into the light as the volunteers were able to collect more than 20 sacs of plastic refuse from Western Campus alone within an hour. Therefore a follow-up plastic waste collection was planned during Swachhata Pakhwada culminating on Gandhi Jayanthi.



Contribution to CMDRF by NSS-KUFOS

Though volunteers were already contributed to the relief activities by means of cash and materials a collection drive was done among the NSS volunteers towards CMDRF. Volunteers collected Rs. 5,500/- towards the same and the amount collected was given to State NSS cell account.

Pencil Drawing on Kerala Flood and Resilience

A pencil drawing completion on the topic "Pralayam Athijeevanam" was held on 28.9.2018 to mark the tremendous resilience shown by the people of Kerala. About 35 students participated in the 100 minutes drawing competition which highlighted the resurgence of the state from extreme calamity.



Participation in Gandhi Smrithi Programme

Ten volunteers participated in the Gandhi Smrithi Programme organised by Sacred Heart College, Thevara from 30.9.2018 to 2.10.2018. Of these two volunteers attended the special camping programme arranged by NSS MG University. Our volunteers won three first prizes and two second prizes in the state level competitions held as part of it.

Gandhi jayanthi Celebration

NSS Volunteers actively participated in the Gandhijayanthi celebrations held at the University to commemorate the 150th birth anniversary of Mahathma Gandhi. The programme was initiated by Dr. Victor George, Registrar KUFOS, which was followed by Gandhijayanthi and patriotic songs by the volunteers. Dr. Binu Varghese, PC, NSS and Dr. Rejish Kumar PO, NSS gave guidance for the campus cleaning and adopted village hygiene programme which was initiated on the NSS Day.

After the programme the volunteers were grouped into two batches and one batch did cleaning of three campuses of University and the second batch did cleaning public spaces in the adopted village. These activities were done as part of the Haritha Keralam project funded by Suchitwa Mission.

Convocation programme

Hon'ble Governor P. Sathasivam was the chief guest of 5th Convocation Ceremony of KUFOS. NSS volunteers assisted in the smooth conduct of convocation programme which was held on 29th October 2018.

Award for Best NSS Volunteer

KUFOS has established an award for Best NSS Volunteer. The Award includes a cash prize of Rs. 5000/-, a trophy and a citation. The selection of the best NSS volunteer is based on the criteria given by NSS State Cell. The first NSS Best Volunteer Award was given to Ms. Saranya Raju of the 2014 BFSc batch during the 5th Convocation Ceremony of KUFOS on 29th October 2018.

Rashtriya Ekta Divas

31st October was observed as the Rashtriya Ekta Divas and NSS volunteers and officers participated in the pledge at the University main campus. Hon'ble Vice Chancellor led the pledge.



Malayalam day/ Bharanabasha mathrubhasha...

Hon'ble vice chancellor led the pledge and reminded the importance of using Malayalam in day to day activities.

Meeting of NSS Advisory Board

Programme coordinator attended the advisory board meeting chaired by Hon'ble Higher Education Minister K. T. Jaleel at his cabin on 8th November. The meeting decided on the action plans for NSS in the state.

Road safety awareness

The National Service Scheme of KUFOS in association with the National Highway Authority organised an awareness programme on "**Pedestrian safety**". This was organised as part of the inauguration of foot overbridge in front of the University at Madavana Jn on 21.12.2018. The aim of this campaign was to emphasize and accentuate people about the pedestrian safe measures like the use of foot overbridge, zebra crossing and proper use of roads. Shri. M. Swaraj MLA inaugurated the programme and was attended by Chairperson Maradu municipality, President Kumbalam panchayat, Regional Officer NHAI and Registrar KUFOS.

Republic Day Celebration

NSS KUFOS unit actively participated in the 70th Republic day celebrations at the Main campus. Hon'ble Vice Chancellor, Dr. A. Ramachandran and Volunteers took oath to safeguard national integration on the day.

Medical Camp

NSS volunteers assisted NHAI in organising a one-day free medical camp to public at KUFOS amenity centre on 7th February 2019. More than 300 people participated in the camp in which screening tests for diabetics, cardiac problem, eye sight, and general health was done.

Special Camping Programme

NSS special camping programme was organised at the Thalumkandom tribal

colony in the Thundathil forest range near Edamalayar Dam. This colony was inhabited by Malayar tribes and about 51 families are currently settled there. The volunteers were involved in following activities like cleaning of drinking water source, socio-economic data collection, testing of water quality, cleaning the area, community hall and Anganwadi painting, clearing the electric fencing area from shrubs, creation of natural spaces for community meetings, supply of provision/cloths, games and drawing activities for children's, hosted community lunch other general activities like awareness programmes on health, plastic pollution, protecting water sources etc. Many of the activities were done in a community participatory mode.

We were able to clean and disinfect the community water source and a household well with active participation from the beneficiaries. This ensured quality drinking water for the community at the most needed time. Checking of water quality of the wells (4 nos) increased the confidence of families in using the same.



NSS UNIT KUFOS



UNIVERSITY LIBRARY

Staff strength

1. Assistant Librarian : Kunjumammed V S
2. Reference Officer Hr. Gr. : P V Vijayalakshmi
3. Reference Officer : Dr. Ramya Raveendran
4. Library Assistant (on Deputation): Mathew George
5. Lab. Asst (Photocopy) : Rajamma K R
6. Office Attendant : Arun K J

Plan for the current academic period

Total number of books added in the library	1468
Total number of project reports added in the library	22
Total number of thesis added in the library	55

Details of Departmental meeting conducted with agenda

Conducted 3 periodical staff meetings to improve the quality of services in the library.

Conference/Seminar/Workshop/Invited lectures organized by the Department

1. One Digital Library Workshop was conducted on 16th to 18nd Nov 2018 in collaboration with Kerala Library Association. 50 Professionals have been participated in the workshop. Hon. Vice Chancellor, Dr. Ramachandran, inaugurated the workshop.
2. Reading Week was celebrated in a befitting manner by arranging various literary competitions for readers.in the month of June from 19th to 24th June 2018.
3. One National Workshop was conducted on “ Improving Quality in Scientific Research” on 18th and 19th of February 2019 with the financial assistance of ICAR.



Utilization of fund for the current month (cumulative details)

Head	Amount sanctioned (2017-18)	Utilization	Particulars	Balar
Plan Fund	30 Lakhs	30 Lakhs	1. Books & Journals	0

PHYSICAL EDUCATION

Details of staff members:

1. Dr. K. Raju (Professor I/C Physical Education), Director of School of Management & Entrepreneurship.
2. Mr. Ranjith T. A -Assistant Professor, MPEd , UGC-NET, MPhil.

Course offered by Physical Education Cell:

1. Physical Education class for BFSc 1st year students as a Non Credit course (I semester)
2. Swimming class for BFSc 2nd year students (III semester)
3. Physical Education class for BTech Ocean Engineering & Under water Technology 1st year students as a Non Credit course (I semester).

University Achievements

Our University Table tennis team participated in the **All India Fisheries College Sports and Cultural Meet- 2018**, organized by Mangaluru College of Fisheries in collaboration with COFAA, Mangaluru during 14-15 December 2018 and our Doubles team secured **IInd position** in this tournament.

Event organized by the Physical Education Cell:

The Physical Education Cell, KUFOS divided its activities in two broad categories Intramural and Extramural. University was sending various teams for the Inter University South Zone/ All India championship. We are also organized KUFOS inter-department Track and Field and Games Meet. In the Intramural programme inter discipline/class/course tournaments were held in following events.

1. Cricket
2. Football
3. Volleyball (Men & Women)
4. Badminton (Men & Women)
5. Table tennis (Men & Women)

This year University teams participated in 7 disciplines, they are:

During the period around 100 students participated in the extramural programme in sports and games competitions at various levels. For procuring the above need University was to organize special Coaching camps for various teams. Various sports in which the students participated are as follows:

1. Football
2. Cricket
3. Badminton
4. Table tennis
5. Athletics
6. Basketball
7. Volleyball (Men and Women)

STUDENTS UNION 2018-19

Union Inauguration and college day celebrations were held on 31st January 2019



During 2018-2019, Union activities began on a colourful note. College day celebrations marked the beginning of Union activities. Film director Jude Anthony Jose inaugurated the ceremony. GCDA Chairman V saleem and other eminent personalities attended the ceremony and famous violinist Bala prasad performed for KUFOSIANS.

Vishu celebration - Date : 10/04/2019

Vishu the festival of joy and prosperity, is an extremely significant festival of Kerala. Vishu was celebrated with a wide range of events to suit the occasion.

Face painting competition- Date : 19/06/2019

Great artists doesn't always need a canvas to express their mind. Artistic minds of Kufos made their friend's face as canvas and painted their magic. The 'Face Paniting Competition' challenged the piccasos of KUFOS with constraints, but their artistic talent accepted those challenges and provided the audience a great experience.

Onam celebration- Date : 06/09/2019

Onam festival unites everyone from all communities in Kerala irrespective of their religion and caste.KUFOS welcomed the ONAM with the grand celebration of PONNONAM 2019. A range of

activities from onapattu to uriyadi added spice to the festive mood.

Arts fest- Date : 23/09/2019 - 28/09/2019

The purpose of the Celebration of the Arts Day is to highlight our students' creative ambition and drive and to give them a chance to showcase their hard work and inspiration. Since creativity and innovation do not come in a single form or medium, our showcase highlights student work from a diverse range of genres; including music, poetry, theatre, visual art and more at the Celebration of the Arts Day. College Union organized and conducted the mega event 'VARNIKA 2019' for the benefit of students and staff of KUFOS. Cine Artist Anarkali Marakkar Honble Vice Chancellor, Honble Registrar were the eminent personalities who attended the inaugural and valedictory functions of the arts festival.

Social Activities

Based on the principles social justice, human rights, and the responsibility of each citizen with respect to the diverse social culture of the country, Students Union actively participated in various social activities and provided a helping hand to needy people. Students union collected necessary materials like food, cloths, study materials like book, pen etc from the locals, university officials and students and distributed them to the flood victims. Students Union runs 24/7 blood donation unit throughout the year. Each year at least 100 units of blood are being donated under the leadership of the Students Union. A sum of money was collected and disbursed for the treatment of a petrol attack victim in Kerala. These activities by the Union proved its commitment to society.

CONVOCATION



The Fifth convocation ceremony of Kerala University of Fisheries and Ocean Studies (KUFOS) was held on 29.10.2018 at university headquarters. Justice P Sathasivam, Governor of Kerala and Chancellor conferred degrees to 219 successful Under Graduate and Post Graduate students, who completed their courses in 2017-2018 academic year in different disciplines related to fisheries and ocean science from KUFOS in the function. While delivering the convocation address, the Governor called upon KUFOS scientists to popularize the University's facilities among public to find toxic materials in fishes sold in our markets. Justice Sathasivam has also wanted fisheries and ocean science students to make more interactions with coastal communities to learn the traditional knowledge they possess. The Governor has mentioned about how Kerala learned great lessons in disaster management from coastal community during the recent floods.

The Governor has also presented Gold Medals to 18 meritorious students who secured first rank in their course and two Endowment awards for best outgoing [B.F.Sc](#) students. Minister for Fisheries, Harbour Engineering, Cashew industry and Pro Chancellor of KUFOS Mrs. J.Mercykutty Amma delivered the presidential address in the Convocation, which was welcomed by KUFOS Vice Chancellor Dr. A.Ramachandran. KUFOS Governing Council member Sri.E.T.Taison MLA delivered a special address in the convocation. Dr.V.M. Victor George, Registrar of the University proposed vote of thanks.

The course wise split up of the number of students conferred degree during the convocation ceremony is as follows.

Sl. No.	Name of the Course	Number of students
1	B.FSc.	50
2	M.FSc. (Fish Nutrition and Feed Technology)	4
3	M.FSc. (Aquatic Animal Health Management)	4
4	M.FSc. (Fisheries Resource Management)	6
5	M.FSc. (Aquatic Environment Management)	6
6	M.FSc. (Fish Processing Technology)	4
7	M.FSc. (Fisheries Engineering Technology)	4
8	M.FSc. (Aquaculture)	3
9	M.Sc.(Physical Oceanography and Ocean Modelling)	8
10	M.Sc., (Biological Oceanography and Biodiversity)	26
11	M.Sc. (Marine Chemistry)	11
12	M.Sc. (Food Science & Technology)	24
13	M.Sc. (Marine Microbiology and Marine Drugs)	14
14	M.Sc. (Biotechnology and Bioinformatics)	16
15	M.Sc. (Remote Sensing & GIS)	5
16	M.Tech. (Coastal and Harbour Engineering)	7
17	M.B.A.	15
18	M.Sc. (Statistics)	2
19	LL.M (Maritime Law)	10
GRAND TOTAL		219



