



UNIVERSITY OF KYRENIA

FACULTY OF MARINE SCIENCES

Department of Fisheries Technology Engineering Programme

Course Catalogue

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Dear Students

Welcome to the Faculty of Marine Sciences facing the Eastern Mediterranean basin. It consists of the Department of Marine Biology, Ecology and Oceanography and the Fisheries Technology Engineering as two independent programmes. Following this context our mission is to understand Marine Biodiversity starting from the microscopic level to the macroscopic one including fish and other marine organisms.

In the Marine Biology Part we examine ecological balance between biological, physical, chemical processes in the Marine environment.

In the Fisheries Technology Engineering programme, we aim to raise awareness to the universal fisheries sector theoretically and practically in diverse aspects. Thus, the courses of this faculty are chosen in such a way to follow one vision that includes Oceanography in general with all the natural processes in the Marine environment and the human influences on it. In the Fisheries Technology Engineering the vision is to focus on the management of sustainable fisheries in our region and globally.



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Prof. Dr. Aysel Karafistan
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Faculty of Marine Sciences Programmes

Marine Biology, Ecology and Oceanography Programme

General Information about the Department of Marine Biology, Ecology and Oceanography Programme:

This programme aims to study Marine Biodiversity starting from the microscopic level (Phytoplankton, Zooplankton) connected to the macroscopic level by the food chain (nutrient dynamics), which includes fish and other marine organisms. It is a branch of science that examines ecological balance and its changes from an Oceanographic point of view (biological, physical, chemical). The course will be taught in English by experts of interdisciplinary programmes. The program aims to educate the students with contemporary, innovative and creative ideas as well as following and contributing to the contemporary developments in the field.

Official length of programme: 4 years (excluding one year of English preparatory class for English programme), 2 semesters per year, 14 weeks per semester

Profile of the Programme and Method of Education

Reputed staff with industrial background and class discussion are delivering the course, and individual projects are implemented as the method of education. The undergraduate programs blend fundamentals with hands-on design experience. Our curriculum is solely based on preparing our students for the challenges of the 21st century business world in an increasingly global, continuously changing and competitively demanding world.

Employment Opportunities

Modelling of the future marine ecosystem situation and water quality, with both human-induced overfishing and water quality degradation (including global warming) scenarios will be presented so that the graduates can make use of this knowledge for the preservation of Marine biodiversity, ecology and water quality in education/research or private/public sectors. Graduates of this quite up-to-date programme can be further specialized in marine biology, ecology or oceanography, by developing ecological dynamic models in graduate

education (MSc, PhD and research) or guide research work as experts in laboratory for water quality and its management in enterprises.

Total Credits: 153 Credit

Mode of study: full time

Qualification Awarded: Bachelor of Science (B.Sc.)

Fisheries Technology Engineering Programme

General Information about the Department of Fisheries Technology Engineering:

The Department of Fisheries Technology Engineering is a marine engineering program specifically concerned with fisheries and fisheries technologies. The courses of this department are taught in English.

The Department of Fisheries Technology Engineering, carrying out multi-disciplinary programs, aims to find solutions to the universal fisheries problems and raise awareness to various aspects of this sector both in theoretical and practical terms. The courses of this department mainly focus on the management of sustainable fisheries in terms of the marine engineering, and ecological and biological dimensions of the issue.

Another major aim of this program is educating qualified subject specialists for the fishery sector of which importance is rapidly increasing amongst the other economic sectors. Students of this department are equipped with all necessary knowledge, skills and insight regarding the fishery technologies so that they can both work and contribute to the developments in this sector. The present economic conditions of the world apparently indicate that the fisheries sector and fishery-related technologies, as they are of vital importance for life cycle of our planet, must be protected and developed with great care.

Official length of programme: 4 years (excluding one year of English preparatory class for English programme), 2 semesters per year, 14 weeks per semester

Profile of the Programme and Method of Education

A comprehensive program, focusing on training qualified staff to carry out administrative, technical support and market needs of business sectors dealing with fishery at all levels, is carried out by the Department. The students are provided with every aspect of theoretical and practical issues of this field and equipped with all necessary skills and knowledge on fishery technologies, and are required to develop a deep insight and understanding in this sector as it has an important role through the life cycle of the planet both in natural, nutritive and health terms.

Employment Opportunities

The graduates of this department can easily find job opportunities both in their country and in overseas countries as this sector now has a wide business field around the world. The companies running their business on fishery are always in demand of qualified staff. Besides, graduates of this department always have the chances to establish their own business as there is a rapidly growing demand in this sector.

Total Credits: 158 Credit

Mode of study: full time

Qualification Awarded : Bachelor of Science (B.Sc.)

Level of Qualification

Qualifications Framework- European Higher Education Area (QF-EHEA): 1

Admission requirement(s): High School Diploma, Proof of English Language proficiency

Admission of Turkish nationals is by Placement through a nationwide Student Selection Examination (ÖSS) administered by Assessment, Selection and Placement Centre (ÖSYM). Admissions of Turkish Cypriots is based on the University of Kyrenia Entrance and Placement exam. Admission of international students is based on their high school credentials.

Qualification Requirements

For each programme the required University of Kyrenia Credits as mentioned previously, must be completed to graduate from the Faculty Marine Sciences. In Fisheries Technology Engineering 158 Credit equivalent to total 240ETCS is required.

ECTS is a credit system designed to make it easier for students to move between different countries. Since they are based on the learning achievements and workload of a course, a student can transfer their ECTS credits from one university to another so they are added up to contribute to an individual's degree programme or training. ECTS helps to make learning more student-centred. It is a central tool in the Bologna Process, which aims to make national systems more compatible.

ECTS also helps with the planning, delivery and evaluation of study programmes, and makes them more transparent (http://ec.europa.eu/education/ects/ects_en.htm).

A student is required to have minimum pass grade from each course and obtain minimum 2.00/4.00 cumulative Grade point Average (cumulative GPA).

For further details please contact:

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Examination Regulations, Assessment and Grading

The examinations are a way of finding out whether the module objectives have been accomplished. Every module in the degree program has examinations. The type of examination to be held is given in each module description. At the beginning of each term, students are informed of the examination requirements. All examinations are done during the examination weeks. There are no lectures during examination weeks. Every effort is made to ensure that no more than one examination is taken by a student on the same day.

The assessment procedures, marking criteria, and examination regulations are also available for the students to examine if they wish so.

There may also be quizzes in each module to prepare the students better for the examinations. Written examinations are usually done for each module (except the graduation project, master's seminar and thesis). There are usually two written examinations for each course: a mid-term examination and a final examination. The midterm examinations are done around 8 weeks after the start of a new semester. The final examinations are done at the end of each semester. The examination dates are published in the university calendar at the beginning of each semester.

Students are allowed to take a make-up exam if they have a valid reason for missing the exam. The date and time of the make-up exams are announced by the dean's office.

Students failing a course are also allowed to take resit examinations. Under certain conditions, they may be allowed into the exams even though they have passed the course. Graduate degree has no retake examinations.

Grading Scheme and Grades

PERCENTAGE	COURSE GRADE	COEFFICIENT
90-100	AA	4
85-89	BA	3.5
80-84	BB	3
75-79	CB	2.5
70-74	CC	2
65-69	DC	1.5
60-64	DD	1
50-59	FD	0.5
49 and below	FF	0

Programs Curriculum

Fisheries Technology Engineering Program Curriculum

YEAR-1

Code	Name of the Course	Credit/E CTS	Pre-Requisite
CHEM 101	General Chemistry I	4(3-2-0)	
BIO 103	Biology I	1(2-0-0)	
MATH 105	Calculus With Analytic Geometry	4(4-0-0)	
PHY 107	Physics I	4(3-2-0)	
IFT 109	Introduction to Fishery Technology I	1(2-0-0)	
ENG101	English for Academic Purposes I	3(3-0-0)	
AIİT 101	Principles of Kemal Atatürk and The History of The Turkish Revolution	1(2-0-0)	
		18	
BIO 104	Biology II	1(2-0-0)	BIO 103
MATH 106	Calculus for Functions of Several Variables	4(4-0-0)	MATH 105
PHY 108	Physics II	4(3-2-0)	PHY 107
IFT 110	Introduction to Fishery Technology II	4(3-2-0)	IFT 109
FTSHIP 112	Shipping	2(3-0-0)	
FTCOM 102	Computer Based Knowledge Utilization	3(3-0-0)	
ENG102	English for Academic Purposes II	3(3-0-0)	ENG101
TURK 101	Turkish Language	1(2-0-0)	
		22	
YEAR-2			
FTSWM 201	Physical Education 1	1(1-1-0)	
FTBIO 203	Fish Biology	3(3-0-0)	
MATH 205	Introduction to Differential Equations	3(3-0-0)	MATH 106
FTOCE 207	Introduction to Oceanography	4(4-0-0)	
FTOCE 209	Oceanography and Water Quality Laboratory	1(0-2-0)	
FTFH 211	Fresh Water Fish Husbandry	3(3-0-0)	
FTMS 213	Behaviour of Materials	3(3-0-0)	
ENG 201	Fundamentals of Public Speaking	3(3-0-0)	
		21	
FTSCU 202	Scuba (Introduction)	1(1-1-0)	
FTMIC 204	Microbiology	3(3-0-0)	BIO 104
FTBST 206	Biostatistics	3(3-0-0)	
FTTAT 208	Fishing Tools and Techniques	3(3-0-0)	
FTTRC 210	Computer Aided Engineering Drawing	2(2-0-0)	
FTNAV 212	Navigation	2(2-0-0)	
FTSAF 214	Safety I	3(3-0-0)	
FTMFH 216	Marine Fish Husbandry	3(3-0-0)	
		20	

YEAR-3			
FTFPT 301	Fish Processing Techniques	2(2-0-0)	
FTFDS 303	Fish Diseases	2(2-0-0)	
FTFME 305	Fluid Mechanics	3(3-0-0)	PHY 108
FTPDY 307	Population Dynamics	3(3-0-0)	
FTNFT 309	Fish Nutrition and Feed Technology	3(3-0-0)	
FTFVS 311	Fishing Vessels	2(2-0-0)	
FTMEM 313	Marine Ecosystems and Management	2(2-0-0)	
FTCDA 302	Computer Aided Fisheries Data Analysis	2(2-0-0)	
		19	
FTCSF 304	Aquatic Resources Chemistry	2(2-0-0)	FTOCE 207
FTFCH 306	Fisheries Chemistry	2(2-0-0)	
FTCOM 308	Communications	2(2-0-0)	
FTFEQ 310	Fishing Equipments	2(2-0-0)	
FTWAT 312	Standards of Watchkeeping	2(2-0-0)	
FTBAI 314	Live Bait Production	2(2-0-0)	
FTMIC 316	Microbiology II	3(3-0-0)	FTMIC 204
FTRES 318	Research Methods	2(2-0-0)	
		17	
FTENG 401	Engineering Planning For Aquaculture	3(3-0-0)	
FTFMA 403	Fisheries Management And Ecology	3(3-0-0)	
FTQCO 405	Quality Control of Seafood	2(2-0-0)	
FTSHI 407	Ship Stability And Cargo Handling	3(3-0-0)	
FTMET 409	Meteorology	3(3-0-0)	
FTEECO 411	Economy And Marketing	3(3-0-0)	
FTPLE 413	Plankton Ecology	2(2-0-0)	FTMIC 316
FTCZM 415	Integrated Costal Zone Management	3(2-2-0)	
		22	
YEAR-4			
ENG 402	Report Writing	2(2-0-0)	
FTDIP 402	Diploma Thesis	4(4-0-0)	
FTPOL 404	Water Pollution Control	2(2-0-0)	
FTLAW 406	The Law Of The Sea And Fisheries Law	4(4-0-0)	
FTGEN 408	Genetics	3(3-0-0)	
FTMAM 410	Marine Mammals	2(2-0-0)	
FTPLA 412	Water Resources Planning	2(2-0-0)	
		19	
		158	

Fisheries Technology Engineering Programme

Course objectives and contents

Code	Course Name	Credit/ECS
CHEM 101	General Chemistry I A basic course emphasizing the metric system, introduction to stoichiometry, the structural and physical properties of matter, the states of matter, i.e., gases, liquids and solids. Chemical reactions in aqueous solutions, chemical thermodynamics and electrochemistry. Chemistry of water and seawater.	4(3-2-0)
BIO 103	Biology I Unifying concepts in Biology. The cellular basis of life. Chemical constituents, cell structure and function, material exchange with the environment, the role of cell membrane, cellular energy, photosynthesis, cellular respiration, control of cellular activity, cell reproduction and genetic basis of life are the major headings of the course.	1(2-0-0)
MATH 105	Calculus With Analytic Geometry Functions, limits, continuity and derivatives. Applications. Extreme values, the Mean value Theorem and its applications. Graphing. The definite integral. Area and volume as integrals. The indefinite integral. Transcendental functions and their derivatives. L'Hopital's rule. Techniques of integration. Improper integrals. Applications.	4(4-0-0)
PHY 107	Physics I Fundamental principles and theories of mechanics; translational motion; rotational motion; gravitation; oscillations.	4(3-2-0)
IFT 109	Introduction to Fishery Technology I First course in a sequence that includes an introduction to the Fisheries Technology program as well as topics such as fisheries literature, identification of the economically important adult fishes, spawning fish surveys, definition of a fishery, aquatic invasive species, knot tying, recreational creel, commercial fish surveys and an overview of fish culture operations. Not to be taken out of sequence.	(2-0-0)

ENG101	English for Academic Purposes I	3(3-0-0)
	<p>The course reinforces academic reading skills (finding the main idea, skimming, scanning, inferring information, guessing vocabulary from context, etc.) through reading selections on a variety of topics. It also aims at developing critical thinking, which enables students to respond to the ideas in a well organized written format. Other reading related writing skills such as paraphrasing and summarizing are also dealt with.</p>	
AIİT 101	Principles of Kemal Atatürk and the History of the Turkish Revolution	1(2-0-0)
	<p>A Definition of the Revolution. The aim and the importance of the Turkish history of the revolution. General state of the Ottoman Empire, the reason for the decline. Efforts to save the Ottoman Empire. The current ideas. The First world War. Societies. Mustafa Kemal in Anatolia and the Congresses. The opening of the Great Turkish National Government. National and International policy. The Mudanya treaty. Lausanne conference.</p>	
BIO 104	Biology II	1(2-0-0)
	<p>The course content includes evolution and diversity, structure and function at level of organisms, response of the organisms to their biological and physical environments, basic concepts in ecology and marine biology.</p>	
MATH 106	Calculus for Functions of Several Variables	4(4-0-0)
	<p>Sequences, infinite series, power series, Taylor series. Vectors, lines and planes in space. Functions of several variables: Limit, continuity, partial derivatives, the chain rule, directional derivatives, tangent plane approximation and differentials extreme values, Lagrange multipliers. Double integrals with applications. The line integral.</p>	
PHY 108	Physics II	4(3-2-0)
	<p>Electric charge, Coulomb`s law, electric field and Gauss`s law, electric potential and electric potential energy, capacitance and capacitors, current and resistance, circuits and loop theorems, magnetic field and Ampere`s law, Faraday`s law of induction, alternating currents, Maxwell`s equations, electromagnetic oscillations and waves.</p>	
IFT 110	Introduction to Fishery Technology II	4(3-2-0)
	<p>Topics covered include how to read and interpret topographic maps, use of a compass, mapping of seas, lakes and streams, use of fish anesthetics, various types of fish data collection techniques and using a variety of fish</p>	

marking.

FTSHIP 112	Shipping Fundamental technical knowledge centered on ships and maritime systems. A baseline understanding of ships and maritime systems is developed to support future assessment of the impact, benefit, and risk of decisions involving the design, acquisition, operation, regulation, law enforcement, damage control, maintenance, and salvage of ships and maritime systems. Specific subject areas include seaman language, fishing vessels operations, ship maintenance, damage control, grounding, propulsion etc.	2(3-0-0)
FTCOM 102	Computer Based Knowledge Utilization The course aims to teach students how to use common, Windows-based computer software productivity tools such as email, word processing, spreadsheet, presentation, graphic and table applications software, database and statistics tools and Web browsing. Much emphasis is given to develop skills in the basics of each tool and have a practice in how to use these tools efficiently in the field of fishing technologies.	3(3-0-0)
ENG102	English for Academic Purposes II The course reinforces academic writing skills. In this course students write different types of essays based on the ideas they are exposed to in the reading selections. The emphasis is on the writing process in which students go through many stages from brainstorming and outlining to producing a complete documented piece of writing.	3(3-0-0)
TURK 101	Turkish Language	1(2-0-0)
FTSWM 201	Physical Education 1 The course aims to train the students in gaining adequate skills in free style swimming, backward style swimming, jumping and diving into water, life-saving in water.	1(1-1-0)
FTBIO 203	Fish Biology Throughout the course elementary physical and chemical concepts as applied to life processes are covered along with the classification, life histories and distribution of major fish of the oceans.	3(3-0-0)
MATH 205	Introduction to Differential Equations Ordinary and partial differential equations. Explicit solutions. First-order differential equations, separable, homogenous differential equations. Ordinary linear differential equations. Bernoulli differential equations. Cauchy-differential equations. High-order ordinary	3(3-0-0)

differential equations. Introduction to Laplace transforms. Introduction to series method for solving differential equations. Linear systems of differential equations.

- FTOCE 207 Introduction to Oceanography** 4(4-0-0)
Physical and chemical properties of water, chemical composition of seawater, factors affecting the chemical composition of seawater. Horizontal and vertical distribution of the organic and inorganic macro and some micro constituents of seawater. Air-sea interface interactions and surface micro-layer structure. Geological and geophysical features of the oceans. Waves, currents and tides in the oceans.
- FTOCE 209 Oceanography and Water Quality Laboratory** 1(0-2-0)
The course includes field sampling exercises and field trip(s). Exercises for sampling and measurement on certain physical (pH, salinity, conductivity, TSS), chemical (reduced and oxidized nitrogen nutrients (i.e. ammonia, nitrates, nitrites), phosphates, reactive silicate, and chlorine) and microbiological (total coliforms and E-coli) parameters. Decision making on sampling site and sampling depth(s). Understanding and testing the basics of water quality. Data handling, data interpretation and data management. Reporting by utilizing standard protocols.
- FTFH 211 Fresh Water Fish Husbandry** 3(3-0-0)
The course is an introduction to fresh water fish husbandry. The water quality of fresh water. Choice of the location, species, and system. A special emphasis is given to the common commercial species such as trout; carp, sturgeon etc. Specific systems. Topic covers bloodstock management and spawning methods, disinfection, incubation, development, shocking, sorting, enumeration and shipping methods of fish eggs, ponding and initial feeding of fish, as well as sampling methods and calculating feeding amounts.
- FTMS 213 Behaviour of Materials** 3(3-0-0)
Engineering materials and properties. Materials selection and development. Thermal processing, specific examples. Some advanced materials. Design with brittle materials. Materials selection charts
- ENG 201 Fundamentals of Public Speaking** 3(3-0-0)
The course provides instruction and opportunities to prepare and present a variety of forms of speeches with emphasis on content, research organization, audience analysis, delivery methods, language and anxiety management. While this course is a blend of theory and application, it is based upon a knowledge-based format.

FTSCU 202	Scuba (Introduction) This course is designed to provide the student with the knowledge and underwater skills needed to meet qualification standards for coastal shallow seas (pool) scuba certification. Upon demonstration of adequate knowledge and underwater skill performances, the student can elect to continue toward open water scuba certification.	1(1-1-0)
FTMIC 204	Microbiology I Introductory course starting with a brief history, survey of bacterial morphology, biochemistry and physiology with special emphasis on the cultivation, identification and control of microorganisms is intended.	3(3-0-0)
FTBST 206	Biostatistics Statistical methodology in collecting and analyzing biological data and fisheries data. Elementary probability distributions, hypothesis testing, analysis of variance, analysis of frequencies with emphasis on the use of computers in processing data in biological sciences.	3(3-0-0)
FTTAT 208	Fishing Tools and Techniques Introduction to the equipment and skills necessary for commercial fishing. The course covers the main topics for tools and techniques for commercial fishing such as: Demersal Species: Bottom Trawling (Single-boat), Bottom Trawling (Pair), Seine Netting, Pair Seining, Beam Trawling, Long lining, Set-nets. Pelagic Species: Purse Seining, Mid-water Trawling (Pair), Mid-water Trawling (Single-boat). Shellfish (Shrimps, Scallops, Crabs, etc.): Bottom Trawling (Single-boat), Potting and Creeling. Migrating Game Fish (Sea trout): Bag-Nets, Stake-Nets.	3(3-0-0)
FTTRC 210	Computer Aided Engineering Drawing Introduction to computer aided drawing. Geometrical constructions. Orthographic drawing and sketching. Three dimensional drawings. Dimensioning principles. Sectioning and conventions.	2(2-0-0)
FTNAV 212	Navigation Definition and history of navigation, development of nautical instruments, the earth, its shape and rotation, poles, equator, greenwich, latitudes, longitudes, difference of latitudes and longitudes, chart projections, specifications of the marine navigation charts, drawing a small area mercator chart, comparing the mercator projection with other kind of projections, chart catalogues and usage, symbols and abbreviations, notice to mariners, chart corrections, definition of distance and direction, nautical publications and specifications.	2(2-0-0)

FTSAF 214	Safety I SOLAS 1974 and amendments, rules and regulations of SOLAS. Conditions of fire, fire preventing, fire classes, different methods of firefighting, firefighting equipment, fixed and portable fire extinguishers, fireman outfit, breathing apparatus, hoses and nozzles international shore connection. Maintenance and control of firefighting equipment. Fire fighting plans.	3(3-0-0)
FTMFH 216	Marine Fish Husbandry Short history of fish husbandry, location and water quality, fish nutrition and feeding methods, projecting growth of fish, fish sampling techniques, carrying capacities of various types of rearing units, hatchery water supply requirements and treatment methods, hatchery and hatchery management, fish health management, disease treatment.	3(3-0-0)
FTFPT 301	Fish Processing Techniques The course provides knowledge on the composition of seafoods and its importance for nutrition, postmortem alteration in seafoods and its effect on rigor mortis and quality of fish meat, freshness parameters in seafoods, the major fish processing techniques such as fin fish handling and processing, salt curing and drying of fish, smoking of fish, shell fish handling, processing and preservation, fish and shellfish marinades, comminuted fish and shellfish products.	2(2-0-0)
FTFDS 303	Fish Diseases The course provides information on cause and effect of stresses on fish, information and diagnostic techniques for viral, bacterial, fungal and parasite diseases of fish of the world. Course covers etiological agents, geographical range, species susceptibility, clinical signals, clinical pathology, epidemiology, control and management of infectious diseases and parasites.	2(2-0-0)
FTFME 305	Fluid Mechanics Introduction. Hydrostatics, forces on plane and curved surfaces, buoyancy, hydrostatics in moving and rotating containers. Lagrangian and Eulerian descriptions, derivatives, rate of deformation, flowlines. System and control volume approach, Reynolds transport theorem, principles of conservation of mass, momentum and energy, Bernoulli equation. Dimensional analysis, Buckingham pi	3(3-0-0)

theorem, similitude.

- FTPDY 307 Population Dynamics** 3(3-0-0)
The course provides the necessary tools for assessing commercial fisheries for management purposes. Methods for estimating population parameters (e.g., size, density, growth, recruitment, and mortality), modeling and statistical techniques to interpret basic fisheries data. Using “Fishery Analyses and Simulation Tools” to predict yield and catch composition for commercial fisheries.
- FTNFT 309 Fish Nutrition and Feed Technology** 3(3-0-0)
The course covers the main topics for nutrition and fish feed technology with special emphasis on chemical composition of all feed ingredients, the deleterious compounds in fish feeds, the feed additives and growth promoters in fish feed, untraditional ingredients to be used in feed formulation, feeding rates for optimum growth of cultured fish species, nutritionally balanced diets suitable for optimum growth of different cultured fish species at different sizes. Fish feeds analysis, fish feeds production technologies, feeds storage, fish feeds management.
- FTFVS 311 Fishing Vessels** 2(2-0-0)
Introduction, basic definitions and knowledge on fishing vessels, Ship dimension, constructional arrangements, general arrangement plan, holds, engine-room, deck plating, frames, brackets, transverse frames, deck beams, shell plating, stiffeners bow and stern, fore castle, deck houses, bilges, mooring bitts, pipes arrangement, for and aft perpendicular, propeller, shaft, freeboard, draught marks, safety construction certificate, controls.
- FTMEM 313 Marine Ecosystems and Management** 2(2-0-0)
This course gives an overview of the fundamental processes in the marine environment with emphasis on interdisciplinary linkages in the functioning of marine ecosystems. Understanding the dynamics in the physics, chemistry, and biology of the oceans. Man induced problems associated with the marine ecosystems and management.
- FTCDA 302 Computer Aided Fisheries Data Analysis** 2(2-0-0)
The course stresses the importance of neatness and accuracy in recording scientific data. Basic data summarization and statistical concepts used in analyzing data. FAO fisheries data statistics and analysis
- FTCSF 304 Aquatic Resources Chemistry** 2(2-0-0)

The chemistry of seafood components. An Overview. Seafood Proteins and Preparation of Protein Concentrates. Protein Hydrolysis in Seafoods. Seafood Lipids. Oxidation of Lipids in Seafoods. Flavor of Fish. Flavor of Shellfish and Kamaboko Flavorants. Taste Active Components of Seafoods with Special Reference to Unami Substances. Quality of Seafoods: A Review. Freshness Quality of Seafoods: A Review. Preservation of Seafood Quality. Microbiological Quality of Seafoods: Viruses, Bacteria, Parasites. Microbiological Quality of Seafoods. Marine Toxins. Sensory Assessment Quality in Fish and Seafoods. Further Processing of Raw Materials. Surimi Processing from Lean Fish. Surimi Processing from Fatty Fish. Seafood Processing By-Products. References. Index

FTFCH 306	Fisheries Chemistry The chemical structure of the living organisms, metabolisms responsible from energy production and consumption, biological transformations, cells; size, basic structures of the eukaryotic cells, biomolecules, water; its effect on dissolved molecules, ionization of water, amino acids and general structure of the peptides, protein; structure and characteristics of proteins, enzymes; functioning principles and kinetics, fats; their structure in the cell membranes, accumulated fats, carbohydrates; monosaccharide's, disaccharide's, polysaccharide's, analysis of carbohydrates, nucleotides and nucleic acids; structure, chemical composition and functions, glycolysis, citric acid cycle, fatty acid cycles, biosynthesis of carbohydrates.	2(2-0-0)
FTCOM 308	Communications Signaling by morse code, International Code of Signals, single-letter meanings, usage of Code book, Radiotelephone communications, distress, urgency and safety messages, communicating with port authorities and vessel traffic services, distress frequency monitoring, keeping a radio log-book, radiotelex, procedures for distress, urgency, safety and navigational messages in Global Maritime Distress and Safety System.	2(2-0-0)
FTFEQ 310	Fishing Equipments Hydraulic systems, winches, cranes, filters, ropes, fishing nets gear, fish finders, fish pumps, hatching cabinets, fish scaling tools, ponds, cage and tank equipments.	2(2-0-0)
FTWAT 312	Standards Of Watchkeeping Content, application and intent of COLREG 72, the traffic separation scheme, individual responsibilities, deep draught vessels, vessels under way, look-out, use of radar, safe	2(2-0-0)

speed, safe distance, risk of collision, alteration of course, responsibility of a vessel giving way, narrow channel, entering and leaving the traffic separation scheme, inshore traffic zone, deep water route, navigational lights, avoiding collision, overtaking another vessel, the signaling, head on situation, crossing vessels, stand-on vessels, daylight signal, sound signals, vessels not under command, vessels restricted in their ability to manoeuvre, grounding vessels, anchored vessels, fishing vessels, navigation under restricted visibility.

- FTBAI 314 Live Bait Production** 2(2-0-0)
The course aims to teach on microalgae's; species selection, species cultures, usage and conservation. Industrial production of microalgae's. Rotifers; biological characters, mass production, enrichment and usage. Artemia; biological characteristics, eggs production, harvesting and conservation, eggs incubation and usage. Copepod cultures. Biology and cultures of daphnia. Production of micro swarms.
- FTMIC 316 Microbiology II** 3(3-0-0)
Introduction. The importance of microorganisms in aquatic systems. The ecology of aquatic microorganisms (viruses, bacteria's, protozoa's, and algae's). The role of microorganism on the cycle of elements in aquatic systems. The environmental microbial pollutants and their detoxifications.
- FTRES 318 Research Methods** 2(2-0-0)
The course defines the understanding of science and engineering and describes the links between the interrelated technical subjects. Further, it considers the methods of scientific research and focuses on the five methods most widely used for natural sciences and engineering, giving much emphasis on experimental and field studies research methods. It also stresses the importance of integrated research methods. It stresses the important aspects of writing research proposal, presenting and report (thesis) writing. Finally it provides some information on research ethics.
- FTENG 401 Engineering Planning For Aquaculture** 3(3-0-0)
Introduction, planning process (formulation and management) of production facilities, site selection and water necessities, production engineering plan and system analysis, room programme, basics of and aquaculture and design, necessary analyses, drawing up alternative solutions, evaluation of and choosing between the alternative solutions, finishing plans, detailed planning.

FTFMA 403	Fisheries Management And Ecology The course covers the topics of aquatic ecology and fisheries within an ecosystem, the dynamics of marine and freshwater fisheries resources, marine fisheries and important ecological principles that guide conservation and management. Management of renewable and no renewable natural resources, fisheries management and planning objectives, strategies and methods. Fishery national and international regulations.	3(3-0-0)
FTQCO 405	Quality Control of Seafood Quality concept and quality criteria in foods, basic concepts of quality assurance and related definitions (ISO, GMP, HACCP, GAP), quality assurance organization and its function, quality control cards and their interpretation, color, textural and rheological properties of seafood, international standards and legislation concerning seafood quality, quality changes in seafood, defect types and their determination in seafood.	2(2-0-0)
FTSHI 407	Ship Stability And Cargo Handling Ship dimensions, ship tonnages, forces and moments density and specific gravity, laws of flotation, transverse stability, righting lever GZ, centre of gravity, stiff and tender ships, metacentric heights, avoid of negative GM, the effect of the free surface of liquids on stability, longitudinal stability, trim, trim calculations, grain cargo and its heeling moments, static stability diagram, Simpson's methods, ship strength, static and dynamical forces, stress, shearing force and bending moments, Bonjean curves, Murray's method, draft survey.	3(3-0-0)
FTMET 409	Meteorology Description and importance of meteorology in maritime. The atmosphere, its composition and physical properties, solar radiation. Meteorological elements; Wind, True wind speed and direction. Air temperature, atmospheric pressure, humidity cloud and precipitation, and General atmospheric circulation, world pressure and wind systems, monsoons, local winds. Weather observations and codes. Basic weather forecasting at sea.	3(3-0-0)
FTEECO 411	Economy And Marketing The basic tool kit a general introduction to economy and marketing, fisheries product economy and marketing and similarities and differences from the other products,.	3(3-0-0)

Consumers attitude and its effect on marketing, marketing parameters, circulation patterns of fisheries products and marketing limits. Marketing surveys of fisheries products. Relevant national and international laws of fisheries marketing.

- FTPLE 413 Plankton Ecology** 2(2-0-0)
This course provides a rigorous examination of the ecology of marine and brackish water systems based on the principles of population biology and community ecology. The ecology of the major marine plankton communities and major fresh water and brackish water plankton communities.
- FTCZM 415 Integrated Costal Zone Management** 3(2-2-0)
Topography and bathymetry of the coastal zones, hydrodynamics of coastal zones, natural structure of coastal zones. Artificial coastal zones structures, planning and applications. Fundamental and infrastructure elements of harbors. Economical, ecological and social impacts on mans activity on coastal zones. Coastal zones natural resources, development and strengthening, cost-benefit analysis.
- ENG 402 Report Writing** 2(2-0-0)
This course introduces students to professional and technical documents with an emphasis on improving their abilities to read, analyze and prepare technical reports used in the workplace. The term's work culminates in a major technical report using research and documentation. Students prepare and revise memos, a proposal, a progress report and a PowerPoint presentation that lead up to this major technical report. Students also produce a job portfolio. All work in this course emphasizes precise use of language and graphics to communicate complex information efficiently and ethically
- FTDIP 402 Diploma Thesis** 4(4-0-0)
The course requires the student to identify a research topic in a specialty area, write a concept paper and develop a proposal to be carried out in fisheries technologies and allied subjects.
- FTPOL 404 Water Pollution Control** 2(2-0-0)
Introduction to environmental pollution and water pollution concepts. Hydrological cycle. Causes and varieties of water pollution. Pollution emanating from agricultural, industrial and municipal activities. Petroleum and petroleum products, detergents, heavy metals, pesticides, radionuclides and organic pollutants. Pollutants effects and living aquatic organisms. Water quality management.

FTLAW 406	The Law Of The Sea And Fisheries Law Divisions of Maritime Law and their subjects. Maritime public law, Maritime Administrative Law. Related Administrative organizations and their duties and liabilities. Safety at sea for life and property. Custom affairs and transactions and financial obligations. Ship, registration of ship, flag, ship owner, captain. Maritime Penal/Criminal Law, regulations regarding Sea Pollution international law of the sea, internal waters, territorial waters, contiguous zone, blockade, embargo. Maritime Labor and Social Security Law. The key legal frameworks of conserving fish and wildlife resources.	4(4-0-0)
FTGEN 408	Genetics This course provides the students with the basic concepts of classical genetics and with the view of molecular genetics from today`s perspective. General principles of Mendelian Genetics, chromosome theory of inheritance, linkage and mapping, structure and function of genes, gene expression and its regulation, chromosomal aberrations and mutations are covered. Elementary principles that govern developmental, quantitative, behavioral, population and evolutionary genetics are also discussed.	3(3-0-0)
FTMAM 410	Marine Mammals The biology of cetaceans, pinnipeds, sirenians, and sea otters. The diversity, evolution, ecology, and behavior of marine mammals and their interactions with humans.	2(2-0-0)
FTPLA 412	Water Resources Planning Principles of integrated water resources planning. Planning scales and approaches. Comprehension of different frameworks used in water resources planning with focus on key steps in the planning process, such as situation and function analysis including multi-level water sector analysis, planning objectives and criteria, scenario and strategy development, role of modelling in water resources planning and multi-criteria analysis.	2(2-0-0)