

**EDO STATE COLLEGE OF AGRICULTURE AND
NATURAL RESOURCES**

**SCHOOL OF AQUACULTURE AND MARINE
TECHNOLOGY (AGENEBODE)**

A publication of:

EDO STATE COLLEGE OF AGRICULTURE AND NATURAL
RESOURCES

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NATURAL RESOURCES

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**DEPARTMENT OF AQUACULTURE
TECHNOLOGY**

NATIONAL DIPLOMA (ND) IN AQUACULTURE TECHNOLOGY

Programme Goals:

The National Diploma Programme in Aquaculture Technology is designed specifically to equip graduates with various techniques of fish farming (Aquaculture) with associated value chain processes of production, harvesting, processing, storage, packaging, and marketing for sustainable fish production for human consumption and other purposes.

Programme Objectives:

1. Assist in determining suitable environment, planning, layout, construction, and development of structures for production of fish (Shell and Fin) in captivity or confinement.
2. Ensure effective utilization of water resources including waste water and marginal land forms for fish production.
3. Employ modern techniques in stocking, feed preparation, nutrition and preservation, processing and marketing of fish products.
4. Acquire sufficient knowledge in pond management and other aquacultural practices.
5. Acquire computer skills and entrepreneurial knowledge enough to engage or set up a meaningful fishery related business.

Entry Requirements:

As specified in the NBTE guidelines.

Course Description, Code and Units: (See tables)

NATIONAL DIPLOMA (ND) IN AQUACULTURE TECHNOLOGY

YEAR 1 - FIRST SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRER EQUI SITE
STB 111	Cell Biology	2	0	3	3.0	75	WASC /GCE
MTH 101	General Mathematics	2	0	0	2.0	30	WASC /GCE
FIT 111	Basic Fisheries Technology	2	0	3	3.0	75	WASC /GCE
PTD 111	Technical Drawing	1	0	4	3.0	75	WASC /GCE
AGR 101	Introduction to Agriculture	2	0	3	3.0	75	WASC /GCE
CME 122	Basic Workshop Practice	1	0	3	2.0	60	WASC /GCE
GNS 101	Use of English 1	2	0	0	2.0	30	WASC /GCE
GNS 127	Citizenship Education 1	2	0	0	2.0	30	WASC /GCE
BCH 111	General & Physical Chemistry	2	0	3	3.0	75	WASC /GCE
STB 112	Morphology & Physiology of Living thing	2	0	3	3.0	75	WASC /GCE
COM111	Computer Science	1	0	3	2.0	60	WASC /GCE
	TOTAL				28		WASC /GCE

YEAR 1 - SECOND SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PREREQUISITE
BCH 121	Organic & Inorganic Chemistry	2	0	3	3.0	7 5	BCH 111
FIT 122	Biology of Fish	2	0	3	3.0	7 5	FIT 101
AQT123 /FIT 123	Basic Aquaculture	2	0	3	3.0	7 5	FIT 101
AQT125 /FIT 125	Introduction to fish Breeding & Genetics	2	0	3	3.0	7 5	WASC/GCE
FIT 124	Fishing gear & craft Technology 1	1	0	4	3.0	7 5	FIT 101
SUG101/ TSL 101	Basic Principles in Land Surveying 1	2	0	3	3.0	7 5	WASC/GCE
GNS 128	Citizenship Education 11	2	0	0	2.0	3 0	WASC/GCE
GNS 102	Communication in English	2	0	0	2.0	3 0	WASC/GCE
EED 126	Introduction to Entrepreneurship	2	0	3	3.0	7 5	WASC/GCE
	TOTAL				25		

**NATIONAL DIPLOMA (ND) IN AQUACULTURE
TECHNOLOGY**

YEAR 2 - FIRST SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRER EQUIS ITE
FIT 211	Fish Farm Engineering	2	0	2	3.0	75	FIT 123
FIT 212	Fish Processing and Storage Technology	2	0	3	3.0	75	FIT 101
AAP225	Introduction to Animal Husbandry	2	0	3	3.0	75	WASC /GCE
FIT 214	Fishing gear & craft Technology II	1	0	4	3.0	75	
FIT 215	Aquatic Ecology	1	0	3	2.0	60	FIT 101
AGT 231	Field Experimentation and Data Analysis	2	0	0	2.0	30	MTH 101
AGR 216	Introduction to Agricultural Biotechnology	1	0	3	2.0	60	FIT 214
EED 216	Practice of Entrepreneurship	2	0	3	3.0	75	
GNS 201	Use of English II	2	0	0	2.0	30	
COM 201	Computer Package I	1	0	3	2.0	60	
	TOTAL				25	450	

YEAR 2 SECOND SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRE REQ UISI TE
AQT221/ FIT 221	Pond Management	2	0	3	3.0	75	SSCE
FIT 222	Fisheries Management	2	0	0	2.0	30	FIT 123
FIT 224	Fish Farm and Personnel Management I	2	0	0	2.0	30	FIT 122
FIT 225	Introduction to sustainable livelihood approach and code of conduct for responsible fisheries	2	0	0	2.0	30	FIT 211
EED 216	Practice of Entrepreneurship	2	0	3	3.0	75	
AGT 124	Rural Sociology	2	0	3	2.0	30	SSCE
SUG 102/ TSL 102	Basic Principles in land Surveying II	1	0	4	3.0	75	TSL 101
GNS 128	Citizenship Education II	2	0	0	2.0	30	
AQT 226	Final Year Project				6.0	-	ND1
	TOTAL				25		

COURSE SYNOPSIS
NATIONAL DIPLOMA (ND) IN AQUACULTURE
TECHNOLOGY

YEAR 1 – FIRST SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
STB 111	Cell Biology (See curriculum of SLT)	2.0
MTH 101	General Mathematics (See curriculum of GNS)	2.0
AQT 111	Basic Fisheries Technology History and development of fisheries in Nigeria, Fish Production in Inland waters, Roles of various sectors in Fisheries Exploration, Relationship between Hydrography and Fisheries, Establishment of fish farm, Construction procedures of ponds. Culture of brackish and freshwater fish, fish harvesting in ponds, Types of fishing crafts, Fish preservation, processing and distribution methods.	3.0
PTD 111	Technical Drawing (See curriculum of Engineering/ Architecture)	3.0
AGR 101	Introduction to Agriculture (See curriculum of AGT/ CRP)	3.0
CME 122	Basic Workshop Practice (See curriculum of Mechanical/ Engineering)	2.0
GNS 101	Use of English I (See curriculum of GNS)	2.0
GNS 127	Citizenship Education I (See curriculum of GNS)	2.0

BCH 111	General and Physical Chemistry (See curriculum of SLT)	3.0
STB 112	Morphology and Physiology of Living Things (See curriculum of SLT)	3.0
COM 111	Computer Science (See curriculum of GNS)	2.0
	TOTAL CREDIT UNITS	28

YEAR 1 - SECOND SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
BCH 121	Organic and Inorganic Chemistry (See curriculum of SLT)	3.0
FIT 122	Biology of Fishes The basic principles of fish taxonomy. External morphology of bony fish. Fish anatomy. Food and feeding habits of fish. Environmental behaviour of fish. Age and growth studies in fish. The respiratory, Osmo – regulatory and reproductive systems in fish. Fish population dynamics.	3.0
AQT 123	Basic Aquaculture Meaning and scope of Aquaculture, history of Aquaculture in Nigeria, various types of fish culture systems, fish pond preparation for stocking purposes, Roles of natural foods and supplementary feeding in ponds, production and packaging of feed pellets, Principles and methods of fish seed production, Natural food production techniques, Aquatic weeds and control methods, fish predators and control methods, common fish	3.0

	diseases and prevention, various methods of fish harvesting, transportation and marketing.	
AQT 125	Introduction to Fish Breeding and Genetics Introduction to genetics and breeding, Principles of reproduction, Mendelian theory, Epistasis, Hormones in reproduction, Principles of brood stock selection, methods of breeding, Environmental factors affecting breeding.	3.0
FIT 124	Fishing Gear and Craft Technology I Basic principles of designing, constructing and use of common fishing gears and crafts in Nigeria, classification of fishing gears, Netting materials for gear construction, physical and chemical characteristics of synthetic fibres, Basic processes of net construction, Types of fishing crafts/ boats.	3.0
SUG 101	Basic Principles in Land Surveying I (See curriculum of Surveying/ Geoinformatics)	3.0
GNS 128	Citizenship Education II (See curriculum of GNS)	2.0
GNS 102	Communication in English (See curriculum of GNS)	2.0
EED 126	Introduction to Entrepreneurship (See curriculum of EED)	3.0
	TOTAL CREDIT UNITS	25

**NATIONAL DIPLOMA (ND) IN AQUACULTURE
TECHNOLOGY**

YEAR 2 – FIRST SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
AQT 211	Fish Farm Engineering Criteria for fish farm site selection, Introduction to fish farm engineering, design simple fish – farm structures, construction of fish holding structures, Introduction to Re – circulatory Aquaculture System (RAS), care of fish farm facilities, Concept of hatchery design	3.0
AQT 212	Fish Processing and Storage Technology Introduction to fish handling, preservation, processing and storage techniques, Importance of fish in human nutrition, common fish handling equipment, causes of fish spoilage, Techniques to determine the freshness of fish, signs of spoilt fish, methods for preserving fish, Losses in cured fish, Roles of insects and rodents during storage of cured fish	3.0
AHP 225	Introduction to Animal Husbandry (See curriculum of Animal Science)	3.0
AQT 214	Fishing Gear and Craft Technology II Use of twines and ropes in gear construction, safety rules while working on twines, various types of knots in net mending, names of fishing twines and ropes, design and construction methods of various fishing gears, Functions of fishing gears accessories, system of ordering netting materials, basic maintenance of fishing gears.	3.0

FIT 215	Aquatic Ecology Structure and function of aquatic ecosystems. Characteristics and classification of Aquatic Environments. Characteristics of freshwater, brackish and marine ecosystems. Ecological problems of aquatic fauna. Tropics relationships in an ecosystem.	2.0
AGT 231	Field Experimentation and Data Analysis (See curriculum of AGT)	2.0
AGR 216	Introduction to Agricultural Biotechnology (See curriculum of AGT)	2.0
EED 216	Practice of Entrepreneurship (See curriculum of EED)	3.0
GNS 201	Use of English II (See curriculum of GNS)	2.0
COM 201	Computer Package I (See curriculum of GNS)	2.0
	TOTAL CREDIT UNIT	25

YEAR 2 - SECOND SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
AQT 221	Pond Management History of pond and water quality parameters, Processes in pre-stocking preparation of pond, Stocking of ponds, Procedure for feeding fish in pond, Common fish diseases, Pest, Weeds and their control, Management of fish nursery and grow-out ponds, Rescue operations during emergency in pond management, Methods of fish harvesting.	3.0
FIT 222	Fisheries Management Scope of fisheries management. Fisheries management practices in Nigeria. Sources and methods of data collection in fisheries. Status of	2.0

	Nigeria fisheries resources. Socio-economic impact of fisheries management in Nigeria. Aquatic productivity in fisheries. Stock assessment in fisheries.	
AQT 224	Fish Farm and Personnel Management I Concept of personnel management, Nature and purpose of communication and motivation in organizational management, Concept of supervision and supervisor role in organizations, Principles of Industrial relations and the role of trade unions in organization, Procedure of employment, Wages and salary determination, role of discipline in personnel management.	2.0
AQT 225	Introduction to Sustainable Livelihood Approach and Code of Conduct for Responsible Fisheries.	2.0
EED 216	Practice of Entrepreneurship (See curriculum of EED)	3.0
AGT 124	Rural Sociology (See curriculum of AGT)	3.0
SUG 102	Basic Principles in Land Surveying II (See curriculum of Surveying/ Geoinformatics)	3.0
GNS 128	Citizenship Education II (See curriculum of GNS)	2.0
AQT 226	Final Year Project Final year practical project assigned to each student under the supervision of Academic Staff. Project must be submitted and oral examination must be conducted.	6.0
	TOTAL CREDIT UNITS	25

DEPARTMENT OF AQUAPRENEURAL STUDIES

COURSE STRUCTURE OF DEPARTMENT OF AQUAPRENEURAL STUDIES

Justification for the Programme

The increasing rate of unemployment of higher school graduates in Nigeria has made it imperative that prospective students into higher education, particularly at National Diploma and Higher National diploma levels should begin the choice to read courses that will enhance their chances of being self-employed in the world of work. The Department of Aquapreneurship Studies of the College of Agriculture and Natural Resources, Agenebode has taken the lead to provide prospective students the opportunity to develop relevant skills to become successful entrepreneurs after graduation.

Philosophy

Entrepreneurship and specifically, Aquapreneurship is the driving force of personal and organisational growth as well as the country in general. The programme will train students in skill acquisition and prepare them for middle level manpower and as technicians in their various endeavours. This will also through multiplier effect create new jobs for the economy.

AIM

The aim of the department is to train middle level manpower, and more importantly, in the areas of aquaculture and allied areas.

Specifically, the major objectives of the programme in Aquapreneurship are:

- i. To develop enterprise among students with emphasis on practice, hands on in entrepreneurship development;
- ii. To develop entrepreneurial spirit among students with the hope of creating new and greater social and economic value to the society;
- iii. To nurture entrepreneurship knowledge among students through entrepreneurial studies and education;
- iv. To provide students with the required skill for developing viable enterprises that are capable of competing in the global environment.

COURSE STRUCTURE: NATIONAL DIPLOMA

ND First Semester Year 1

COURSE CODE	COURSE TITLE	L	T	P	C U	CH	PRER EQUI SITE
GNS 101	Use of English I	2	-	-	2	30	
GNS 127	Citizenship Education 1	2	-	-	2	30	
MTS 101	General Mathematics	2	-	-	2	30	WASC /GCE
AQS 112	Elements of Microeconomics	2	-	-	2	30	WASC /GCE
AGR 101	Introduction to General Agriculture	2	-	3	3	75	WASC /GCE
AQS 101	Elements of Statistics	2	-	0	2	30	
AQS 102	Practice of Management	2	-	0	2	30	
FIT 111	Basic Fisheries Technology	2	-	3	3	75	WASC /GCE
COM 111	Computer Science	1	-	3	2	60	
?	Basic skill acquisition 1	2	-	3	3	75	WASC /GCE
Total		19	0	12	23	465	

ND Second Semester Year 1

COURSE CODE	COURSE TITLE	L	T	P	C U	CH	PRER EQUI SITE
AQT 123	Basic Aquaculture	2	-	3	3	75	
FIT 122	Biology of Fish	2	-	3	3	75	
FIT 124	Fishing Gear & Craft Technology 1	1	-	4	3	75	
AQS 104	Elements of Agribusiness	2	-	-	2	30	
GNS 102	Communication in English	2	-	-	2	30	
AQS 113	Elements of Macroeconomics	2	-	-	2	30	WASC /GCE
EED 126	Introduction to Entrepreneurship	2	-	-	2	30	
AQS 124	Introduction to Transport and Maritime Economics	2	-	-	2	30	
AQT 224	Fish Farm And Personnel Management 1	2	-	-	2	30	
Total		17	0	10	21	405	

Note that any course that has a course code of (AQS) is to be domiciled in Aquapreneural Studies Department.

ND First Semester Year 2

COURSE CODE	COURSE TITLE	L	T	P	C U	C H	PRER EQUIS ITE
GNS 201	Use of English II	2	-	-	2	30	
AQS 201	Basic Mathematics for Agriculturists	2	-	-	2	30	MTHS 101
AGT 231	Statistics and Field experimentation	2	-	-	2	30	MTHS 101
FIT 222	Fisheries Management	2	-	-	2	30	
FIT 216	Practical Fishing I		-	3	3	75	
EED 216	Practice of Entrepreneurship	2	-	3	3	75	
AQS 214	Entrepreneurial Venture and Change Management	2	-	-	2	30	
AQS 215	Elements of Book Keeping	2	-	-	2	30	
AQS 216	Skill Acquisition II	2	-	3	3	75	
Total		114	0	9	21	480	

ND Second Semester Year 2

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRE REQ UISI TE
GNS 128	Citizenship Education II	2	-	-	2	30	
FIT 212	Fish Processing & Storage Technology 11	2	-	3	3	75	
AGT 124	Rural Sociology	2	-	-	2	30	WASC /GCE
FIT 223	Practical Fishing II	2	-	3	3	30	
AQS 216	Introduction to Natural Resource Management	2	-	-	2	30	
FIT 213	Elementary Navigation and Seamanship	2	-	1	3	75	
AQS 226	Final Year Project	-	-	-	6	-	
Total		12	0	7	22	270	

HND AQUAPRENEURAL STUDIES

HND First Semester Year 1

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRER EQUIS ITE
GNS 302	Communication in English III	2	-	-	2	30	ND, GNS
AEM 311	Agricultural Mathematics	2	-	-	2	30	ND
AEM 312	Microeconomic Theory	2	-	-	2	60	ND
AEM 316	General Farm Practice 1	1	-	3	3	75	
AEM 313	Resource Economics	2	-	-	2	30	ND
AGR 302	Field Experimentation and Data Analysis	2	-	3	3	75	AGT 213
AEM 314	Extension Methods	2	-	-	2	30	
AQS 311	Feasibilities and Business Planning	2	-	-	2	30	
AQS 312	Venture Creation and Growth	2	-	-	3	30	
AQS 313	Social Responsibility and Community Development	2	-	-	3	30	
Total		19	0	6	24	420	

HND Second Semester Year 1

COURSE CODE	COURSE TITLE	L	T	P	C U	CH	PRER EQUIS ITE
AEM 321	General Farm Practice II	2	-	3	3	75	
AGR 302	Farm Management	2	-	-	2	30	
AGR 401	Research Methods	2	-	-	2	30	
FIT 321	Fish Nutrition	1	-	4	3	75	
FIT 324	Fishing Gear & Craft Technology III	2	-	3	3	75	
EED 326	Entrepreneurship Development	2	-	-	2	30	
AEM 435	Agricultural Marketing	2	-	-	2	30	
AQS 322	Business Finance	2	-	-	2	30	
FIT 327	Ornamental Fishery & Aquarium Tech.	1	0	3	2	60	
Total		14	0	14	22	435	

HND First Semester Year 2

Course Code	Course Title	L	T	P	CU	CH
AEM 433	Farm Records and Accounting	1	-	-	2	30
AEM 431	Macroeconomic Theory	2	-	-	2	30
AGR 402	Agricultural Personnel Management	2	-	-	2	30
GNS 401	Communication in English IV	2	-	-	2	30
CPT 441	Produce /Post-Harvest Management	2	-	3	3	75
FIT 432	Fish Processing Technology	2	-	3	3	75
AQS	Events Management	2	-	-	2	30
FIT 436	Integrated Fish Farming	1	-	3	2	60
Total		14	0	9	18	364

HND Second Semester Year 2

COURSE CODE	COURSE TITLE	L	T	P	CU	CH
AGR 402	Agricultural Personnel Management	2	-	-	2	30
GNS 128	Citizenship Education 11	2	-	-	2	30
AQS	Family Business and Succession Planning	2	-	-	2	30
AEM 432	Agricultural Business Law	2	-	-	2	30
AOS	Transport and Maritime Economics	2	-	-	2	30
AQS	E – Business	2	-	-	2	30
AQS	Entrepreneurship and Gender Issues	2	-	-	2	30
AQS 446	Project for final year students	-	-	-	6	-
Total		14	0	0	20	210

COURSE SYNOPSIS
DEPARTMENT OF AQUAPRENEURSHIP
NATIONAL DIPLOMA (ND) YEAR 1
FIRST SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
GNS 101	USE OF ENGLISH I (See curriculum of GNS)	2.0
GNS 127	Citizenship Education I (See curriculum of GNS)	2.0
MTH 101	General Mathematics Real number system, indices, logarithms, polynomials and monomials, equations, inequalities, function and relations, elementary co-ordinate geometry, matrix algebra, set theory, introductory growth mathematics, series, sequences, progressions, elementary trigonometry.	2.0
AQS 112	Elements of Microeconomics Introduction to Microeconomics, Economic Systems and Decision Making, Theory of Demand, Elasticity of Demand, Budget Constraint , Theory of Utility Maximisation, Theory of Production, Theory of Cost, Perfect Competition, Monopolistic Competition and Monopoly, Price Discrimination, Bilateral Monopoly and Monopsony, Collusive Oligopoly and Non-Collusive Oligopoly.	2.0
AGR 101	Introduction to General Agriculture Meaning and importance of agriculture to the national economy, Origin and formation of soil, Nature, composition and properties of soil, introduction to farm mechanisation,	2.0

	<p>Farm power, Farm Machinery and Implements, importance and classification of crops, Principles of crop production, importance, classification and distribution of breeds of farm animals in Nigeria, Animal nutrition, Reproduction in farm animals, Principles of animal health improvement, Basic principles of ornamental plant production, Introduction to fisheries, and Fish farming.</p>	
AQS 101	<p>Elements of Statistics Origin and development of statistics, scope and limitations of statistics, data collection and presentation, measures of central tendency and dispersion, grouping and graphing data sets. Origin and development of statistics, scope and limitations of statistics, data collection and presentation, measures of central tendency and dispersion, grouping and graphing data sets, poisson distribution, estimation theory, tests of statistical hypotheses including t – test an F – test, Chi-Square test, analysis of least squares method, correlation and regression analysis, sampling methods, design of experiments, etc.</p>	2.0
AQS 101	<p>Basic Fisheries Technology History and development of fisheries in Nigeria, Fish Production in Inland waters, Roles of various sectors in Fisheries Exploration, Relationship between Hydrography and Fisheries, Establishment of fish farm, Construction procedures of ponds. Culture of brackish and freshwater fish, fish harvesting in ponds, Types of fishing crafts, Fish preservation, and processing and distribution methods.</p>	3.0

AOQ 102	Practise of Management Management principles, functions of a manager, purpose of the organizing function, selection of employees and managers, appraisal of managers, management development, control process and techniques as well as current issues in change management.	2
FIT 111	Basic Fisheries Technology History and development of fisheries in Nigeria, Fish Production in Inland waters, Roles of various sectors in Fisheries Exploration, Relationship between Hydrography and Fisheries, Establishment of fish farm, Construction procedures of ponds. Culture of brackish and freshwater fish, fish harvesting in ponds, Types of fishing crafts, Fish preservation, processing and distribution methods.	3.0
COM 111	Computer Science (See curriculum of GNS)	2.0
?	Basic Skill Acquisition This course is practical and it focuses on teaching students the basic skills required in aquaculture business. It focuses on basic skills required to make fish nets, hook making, crayfish business, canoe construction and boat repairs.	3.0
	TOTAL CREDITS	25

DEPARTMENT OF AQUAPRENEURSHIP
NATIONAL DIPLOMA (ND) YEAR 1
SECOND SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
AQT 123	<p>Basic Aquaculture Meaning and scope of Aquaculture, history of Aquaculture in Nigeria, various types of fish culture systems, fish pond preparation for stocking purposes, Roles of natural foods and supplementary feeding in ponds, production and packaging of feed pellets, Principles and methods of fish seed production, Natural food production techniques, Aquatic weeds and control methods, fish predators and control methods, common fish diseases and prevention, various methods of fish harvesting, transportation and marketing.</p>	3.0
FIT 122	<p>Biology of Fishes The basic principles of fish taxonomy. External morphology of bony fish. Fish anatomy. Food and feeding habits of fish. Environmental behaviour of fish. Age and growth studies in fish. The respiratory, Osmo – regulatory and reproductive systems in fish. Fish population dynamics.</p>	3.0
FIT 124	<p>Fishing Gear and Craft Technology I Basic principles of designing, constructing and use of common fishing gears and crafts in Nigeria, classification of fishing gears, Netting materials for gear construction, physical and chemical characteristics of synthetic fibres, Basic processes of net construction, Types of fishing crafts/ boats.</p>	3.0

AQS 104	<p>Element of Agribusiness</p> <p>Nature and Scope of Agribusiness, Initiating a New Business - Planning the New Business (Market survey, deciding on the characteristics of the product, competition etc), The Business Plan, Managing the Business, The Agribusiness Manager - Concept of Management, Management Theories, Definition of a Manager, Characteristics of Management, Objectives of Management, Functions of Management, Elements of Good Management, Agribusiness Leadership - Concept and Functions of Planning, Concept and Functions of Organizing Concept and Functions of Directing, Concept and Functions of Coordinating, Concept and Functions of Control and Constraints to Agribusiness Development in Nigeria</p>	2.0
GNS 102	<p>Communication in English (See curriculum of GNS)</p>	2.0
AQS 113	<p>Elements of Macroeconomics</p> <p>The concept of macroeconomics, basic economic problems, national income accounting including elementary models of income and employment, money and banking, employment and unemployment, public finance including government budgets, international trade, balance of payments and commercial policies.</p>	2.0

EED 126	Introduction to Entrepreneurship (See curriculum of EED)	3.0
AQS 124	Introduction to Transport and Maritime Economics introduction, basic notion on Transport and Maritime Economics, transport and Maritime Market, Externalities and market characteristics, land transport, sea transport, air transport, Demand and Supply in maritime and transport services, Long and Short Shipping Cycles, and Elasticity in Transport Market.	2
AQT 224	Fish Farm and Personnel Management I Concept of personnel management, Nature and purpose of communication and motivation in organizational management, Concept of supervision and supervisor role in organizations, Principles of Industrial relations and the role of trade unions in organization, Procedure of employment, Wages and salary determination, role of discipline in personnel management.	2.0
	TOTAL CREDITS	22

**DEPARTMENT OF AQUAPRENEURSHIP
NATIONAL DIPLOMA (ND) YEAR 2
FIRST SEMESTER**

COURSE CODE	COURSE DESCRIPTION	UNITS
GNS 201	Use of English II (See curriculum of GNS)	2.0
AQS 201	Basic Mathematics for Agriculturist Brief review of algebraic operations, factoring, linear equations in one unknown, fractions and functions, systems of linear equations, interest, annuities, sinking fund, the derivative and some applications. All topics are to include relevant agricultural applications.	2.0
AGT 231	Statistics and Field Experimentation (See curriculum of AGT)	2.0
FIT 222	Fisheries Management Scope of fisheries management. Fisheries management practices in Nigeria. Sources and methods of data collection in fisheries. Status of Nigeria fisheries resources. Socio-economic impact of fisheries management in Nigeria. Aquatic productivity in fisheries. Stock assessment in fisheries.	2.0
FIT 216	Practical Fishing I Necessary preparation for fishing trips, Fish detection equipment and methods, Fish legislative and regulatory laws, Swimming exercises, Seasonal variation and fish distribution, Fish catching devices, Conservation methods in management techniques.	2.0

EED 216	Practice of Entrepreneurship (See curriculum of EED)	3.0
AQS 214	Entrepreneur Venture and Change Management Overview of leading Change, managing change, advocacy, stakeholder analyses in food security, leadership skills for change initiatives, and managing resistance to change	2
AQS 215	Basic accounting concepts, procedures and practices of bookkeeping (books of primary entry, ledgers, bank reconciliation statements, etc), the trial balance, uses of suspense accounts, and preparation of financial statements. profit and loss accounts, balance sheets of a sole trader, accounting treatment of control accounts and bank reconciliation.	2
AQS 216	Skill Acquisition II This course is practical and it focuses on teaching students the basic skills required in aquaculture business. It focuses on basic skills required to make fish nets, hook making, crayfish business, canoe construction, boat repairs and other aquatic infrastructure.	3
	TOTAL	20

**DEPARTMENT OF AQUAPRENEURSHIP
NATIONAL DIPLOMA (ND) YEAR 2
SECOND SEMESTER**

COURSE CODE	COURSE DESCRIPTION	UNITS
GNS 128	Citizenship Education II (See curriculum of GNS)	2.0
FIT 212	Fish Processing and Storage Technology II Introduction to fish handling, preservation, processing and storage techniques, Importance of fish in human nutrition, common fish handling equipment, causes of fish spoilage, Techniques to determine the freshness of fish, signs of spoilt fish, methods for preserving fish, Losses in cured fish, Roles of insects and rodents during storage of cured fish	3.0
AGT 124	Rural Sociology (See curriculum of AGT)	3.0
FIT 214	Fishing Gear and Craft Technology II Use of twines and ropes in gear construction, safety rules while working on twines, various types of knots in net mending, names of fishing twines and ropes, design and construction methods of various fishing gears, Functions of fishing gears accessories, system of ordering netting materials, basic maintenance of fishing gears.	3.0
AQS 216	Introduction to Natural Resource Management Basic concept of natural resources, types of natural resources, characteristics of	2

	renewable natural resources, rational use of resources and the concept of sustainable development, the concept and requirements of sustainable development and its implications, population and pressure on resource utilization, management of natural resources, management and administration of natural resources in Nigeria.	
FIT 213	Elementary Navigation and Seamanship Basic concepts of navigation and seamanship in marine and inland waters, meaning of navigation and seamanship in fishing and shipping operations, Various terminologies in Navigation, use of navigation aids, roles of Stars and Moon in Navigation, use of nautical almanac, Types of fishing vessels, equipment and their maintenance. Various engines used in fishing vessels, Safety procedures in fishing vessels, use of fire fighting equipment in fishing vessels.	3.0
AQS 226	Final Year Project	6
	TOTAL	21

**DEPARTMENT OF AQUAPRENEURSHIP
HIGHER NATIONAL DIPLOMA (HND) YEAR 1
FIRST SEMESTER**

COURSE CODE	COURSE DESCRIPTION	UNITS
GNS 302	English Language and Communication Principles of writing formal and informal letters, Basic principles of logic, Principles of continuous writing in expository logical and coherent issues, Technical project report writing, General and specific uses of words, Theory and process of communication, Concept of organizational communication.	2
AEM 311	Agricultural Mathematics Input – output analysis, instantaneous rate of change: the derivative, rules for finding derivatives, curve sketching (maxima and minima, the first and second derivative tests, concavity and inflection points), partial differentiation and integration. All topics should have relevant application to agriculture.	2
AEM 312	Microeconomics Scope of Economics, Micro-economics Tools and Terms, Role of Economic Theory, Demand and Supply, Market Equilibrium, Laws of Demand and Supply, Effects of Changes in Demand and Supply, Concept of Elasticity, Coefficients of various Types of Elasticity, Utility and Indifference Curves, Assumptions for Utility and Indifference Curves, Factors Influencing	2

	Consumer's Behaviour, Changes in Price and Income, Substitution and Income Effect on Price Changes, Equilibrium and Derivation of Demand Curves, Production and Cost Functions, Relationship between Production and Cost Functions, Law of Diminishing Return and Production Process, Theory of Cost in the Short-and Long Run, Determination of Optimum Level of Input, Elements of Market Structure, Pricing and Output Policies in Perfectly Competitive Market, Pricing and Output Policies of a Monopoly, Imperfect market.	
AEM 316	General Farm Practice 1 Farm establishment and maintenance, reconnaissance survey, cropping history, preparation of farmland by plowing, , harrowing, rotating and ridging, weeding operation, fertilizer application, fertilizer rate and mix in preparation for application, seed drilling, broadcasting, transplanting, application of chemical, herbicides, pesticides, fungicides and on farm.	3
AEM 313	Resource Economics Scope of Resource Economics, Location Map of Nigeria, Nigeria Climatic Environment, Vegetation, Drainage and Population, Concept of Land and Land Economics, Nigerian Land Tenure System, Problem of Land Tenure, Development Schemes and Institutions,	2

	Land Law, Water Right and Policy Framework, Forestry and Wild-Life resource Law, National Issues of Nigeria's Law.	
AGR 302	Field Experimentation and Data Analysis Duncan Multiple Range Test, Nature of Statistics and field experimentation, experiment and research, experimental designs, types of experiments, control of variability, in field experiment, experimental error and how to manage experiments, data organization, correlation and regression, LSD.	3
AEM 314	Extension Method Communication Process and Change, Adult Education/Learning, Theory of Group Dynamics, Extension Methods, Role of Extension Worker and Learner, Result and Method Demonstration, Importance of Audio-visuals and Information, Communication and Technology in Extension, Power Structure in Village Organization, Identifying Effective Leadership.	2
AQS 311	Feasibility and Business Planning Meaning of a feasibility study , importance of feasibility study sources of information for feasibility studies ,definition of business plan , the body of the business plan, the market plan, and generation of data for feasibility studies.	2

AQS 312	Venture Creation and Growth Business Enterprise, Definitions of Entrepreneurship, Concept of Entrepreneurship, Location of Business, Entrepreneurship's Need for Capital, Sources of Financing New Business Venture, Intellectual Property. The Strength of Small Business Venture, Importance of Entrepreneurship, and government Policies on Entrepreneurship.	3
AQS 313	Social Responsibility and Community Development Concept of Social Entrepreneurship, Concept of Community Development, Poverty and the Need for Social Entrepreneurship, Social Capital and Social Impact , Social Enterprise, Social Innovation, Creating a Social Business Model, Social Investment (Funding Options for Social Enterprises) and Social Returns on Investment	3
	TOTAL	24

**DEPARTMENT OF AQUAPRENEURSHIP
HIGHER NATIONAL DIPLOMA (HND) YEAR 1
SECOND SEMESTER**

COURSE CODE	COURSE DESCRIPTION	UNITS
AEM 321	General Farm Practice II Nursery establishment and maintenance techniques, Soil sterilization in the nursery, Raising of seedlings of plantation crops, Vegetative propagation of plantation crops-oil palm seedlings, cocoa seedlings, cashew seedlings, pawpaw seedlings. Farm practice II for Livestock should be added	3
AGR 302	Farm Management Meaning and scope of farm management, principles of farm management, nature of production resources in agriculture, theory of production, meaning of risk and uncertainty, meaning of farm records, sensitive analysis, farm budgeting, valuation and depreciation of farm inventory, farm business analysis and appraisal.	2
AGR 401	Research Methods Research theory and hypothesis, Formulating hypothesis and variable identification, Design and administration of questionnaire, Methodology of research, Method of data collection, Parametric and non-parametric test statistics, Reporting research findings and way of presentation, Concept of	2

	hypothesis testing, Correlation and regression analysis.	
FIT 321	<p>Fish Nutrition</p> <p>Differences between natural food and artificial feed, common feed stuffs used in fish feed manufacturing, Proximate composition of common feedstuffs, Factors affecting fish feed production, Pearson square method of feed production, Use of linear programming in feed production, Various types of fish feed, Nutrients requirement of fish species, Feeding techniques in Aquaculture, Feed storage technology, Digestibility measurement in fish nutrition, Signs of nutrients deficiency in fish, Natural food production.</p>	3
FIT 324	<p>Fishing Gear And Craft Technology III</p> <p>Identification of various materials used in boat building, Strength of ropes and twines. Twines and ropes specifications for different fishing gears, Use of ferrocement and fibre – glass in fishing craft technology, Design and Construction of boats with different cabins, Maintenance of fishing gears and crafts.</p>	3
EED 326	<p>Entrepreneurship Development</p> <p>Meaning and importance of entrepreneurship, identification of agribusiness enterprises, types of agribusiness ownership, legal forms of agribusiness organization, elements of</p>	2

	<p>an agribusiness plan, , creating an agribusiness plan:, identifying and meeting market needs, creating financial plan, identifying sources of finance and insurance, choice of agribusiness location and acquisition of equipment and supplies, marketing the agribusiness (identifying product mix, distribution channels, pricing and promotion methods), hiring and managing staff, managing business finances, understanding the legal and ethical environment of agribusiness.</p>	
AEM 435	<p>Agricultural Marketing Concept of Agricultural Marketing, Marketing Functions, Marketing Agencies, Demand and Supply Process in Agricultural Market, Elasticity and Agricultural Marketing, Role of Market Price, Theory of Consumer Behaviour, Different Market Structures/Margins, Qualitative Techniques in Agricultural Marketing, Theories and Institutions of International Trade.</p>	2
AQS 322	<p>Business Finance Meaning and goals of finance in business, mathematics of finance, capital budgeting, cash flow forecasting technique for project evaluation, cost of capital, capital structure theories, risk analysis and measurement, equity markets and stock valuation, capital market history, efficient market hypothesis, dividends and dividends policy.</p>	2

FIT 327	Ornamental Fishery And Aquarium Technology History of Aquarium technology. Design, construction and maintenance of various aquaria. Major indigenous and exotic ornamental fishes and their distribution in Nigeria. Ornamental fish breeding, nutrition and management. Parasites and diseases of aquarium fishes	2
	TOTAL	21

**DEPARTMENT OF AQUAPRENEURSHIP
HIGHER NATIONAL DIPLOMA (HND) YEAR 2
FIRST SEMESTER**

COURSE CODE	COURSE DESCRIPTION	UNITS
AEM 433	Farm Records and Accounting Scope of Farm Records and Accounting, Basic Concepts of Accounting, Principles of Book Keeping, Trial Balance and Final Accounts, Adjustments of Financial Entries, Farm Inventory and Valuation, Principles of Financial Statements, Preparation and Analysis of Financial Statement, Income tax, Data Processing in Farm Business Accounting.	2
AEM 431	Macroeconomic Theory Definition and Scope of Macro-Economics, Importance of Macro-Economic Models, National Income Accounting, Consumption and Savings, Investments, Full Employment and Unemployment, Money and Nigerian Financial Institutions, Money Supply and Price Level, Demand and Supply of Money, Monetary and Fiscal Policies, International Trade Theory and Balance of Payment, Goals and Importance of Socio-Economic International Organizations, Economic Growth and Development.	2
AGR 402	Agricultural Personnel Management Concept of personnel management, Nature of industrial organization, Organizational structure, Motivation and factors it, Types of employment, Concept of industrial relations, Wages and salary administration in relation to condition of employment.	2

GNS 401	Communication in English Language IV (See curriculum of GNS)	2
CPT 441	Produce/Post-Harvest Management (See Engineering curriculum)	3
FIT 432	Fish processing Technology Concepts of post – harvest technology, Principles of fish spoilage, subjective and objective assessment of fish quality, Fish preservation and processing techniques, Differences between fish preservation and processing, Preparation of fish by-products, Common agents of spoilage in processed and stored fish, Quality control measures in cured fish.	3
AQS 323	Event Management Topics to be covered are overview of what an even is and the parties involved, the roles of stakeholders in events management; requirements for events success; events packaging and post events activities.	2
FIT 436	Integrated Fish Farming Reasons for Integrated fish farming, Energy relationships in grazing and detritus food chain in integrated fish farms, Pond water quality assessment in integrated fish farming, Types of integrated fish farms and management techniques.	2
	TOTAL	18

**DEPARTMENT OF AQUAPRENEURSHIP
HIGHER NATIONAL DIPLOMA (HND) YEAR 2
SECOND SEMESTER**

COURSE CODE	COURSE DESCRIPTION	UNITS
AGR 402	Agricultural Personnel Management Concept of personnel management, Nature of industrial organization, Organizational structure, Motivation and factors it, Types of employment, Concept of industrial relations, Wages and salary administration in relation to condition of employment.	2
GNS 128	Citizenship Education II (See curriculum of GNS)	2
AQS 343	Historical Presentations of the Family Business, economic importance of family business, the competitiveness of family businesses, governance in the family business, family relationships and family business succession planning, and conflict management.	2
AEM 432	Agricultural Business Law Sources, Nature and Meaning of law, Nigerian Land Law, Right of Alienation Procedure, Water Right Laws, Forestry and Wild-life Resource Law, Property Law, Law of Succession and Executorship, Law of Tort, Law of Contract, Legal Principle of Agency, Legal Aspect of Sales and Hire Purchase, Types of Partnerships, Company Law.	2
AQS 344	Transport and Maritime Economics Introduction, basic notion on Transport and Maritime Economics, transport and Maritime Market, Externalities and market characteristics, monopoly, oligopoly, competition in the transport market, land transport, sea transport, air transport,	2

	combined transport, Short Sea Shipping, Tramp and Liner Shipping, Demand and Supply in maritime and transport services, Long and Short Shipping Cycles, Elasticities in Transport Market, and costs in transport and maritime services.	
AQS 345	E – Business Concept definition, overview of internet and mobile telecommunication, importance of e-business, website design, internet advertisements, achieving competitive advantages using e –advert, online sales, e-payments, ATM, debit and credit cards, etc.	2
AQS 346	Entrepreneurship and Gender Issues Overview and evolution of entrepreneurship, entrepreneurial theories, female entrepreneurs in Nigeria, gender studies, history of entrepreneurship in Nigeria, Social entrepreneur, social entrepreneurship and social enterprise, and the role of entrepreneurship in an economy.	2
AQS 446	Project for final year students	6
	TOTAL	20

DEPARTMENT OF FISHERIES
TECHNOLOGY

NATIONAL DIPLOMA (ND) AND HIGHER NATIONAL DIPLOMA (HND) IN FISHERIES TECHNOLOGY

Programme Goal:

The National Diploma Programme in Fisheries Technology is designed to produce technicians who will be able to apply modern technology to rear fish and other aquatic animals at commercial levels, participate in freshwater and marine fisheries management, fishing process, storage and marketing of fish in large scale production value chain for human consumption, other purposes for the graduates to be self-reliant.

Programme Objectives:

1. Assist in determining suitable environment, planning, layout, construction and development of fish pond/ farm.
2. Carry out all aquacultural practices
3. Employ modern techniques in stocking, feed preparation, nutritional and preparation, nutrition and associated management practices in fishing enterprise.
4. Assist in the construction and operation of simple fish processing and preservation equipment.
5. Construct fishing gears
6. Operate and maintain different types of simple fishing gears and crafts (nets, traps, lines, outboard engines etc.)
7. Assist in Fisheries extension and cooperation
8. Acquire computer skills and entrepreneurial knowledge enough to engage or set up a meaningful fishery related business.

Entry Requirements:

As provided by NBTE

Course Code and Description and Units: (See Tables)

DEPARTMENT OF FISHERIES TECHNOLOGY
NATIONAL DIPLOMA (ND) IN FISHERIES
TECHNOLOGY

YEAR 1 – FIRST SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRE REQUI SITE
STB 111	Cell biology	2	0	3	3.0	75	WASC/ GCE
MTH 101	General Mathematics	2	0	0	2.0	30	WASC/ GCE
GNS 127	Citizenship Education 1	2	0	0	2.0	30	WASC/ GCE
FIT 111	Basic fisheries technology	2	0	3	3.0	75	WASC/ GCE
PTD 111	Technical drawing	2	0	2	3.0	60	WASC/ GCE
AGR 101	Introduction to Agriculture	2	0	3	3.0	60	WASC/ GCE
CME 122	Basic work shop Practice	1	0	3	2.0	60	WASC/ GCE
GNS 101	Use of English 1	2	0	0	2.0	30	WASC/ GCE
BCH 111	General & Physical Chemistry	2	0	3	3.0	75	WASC/ GCE
STB 112	Morphology & Physiology of living things	2	0	3	3.0	75	WASC/ GCE
COM 111	Computer Science	1	0	3	2.0	60	WASC/ GCE
	TOTAL				28		

YEAR 1 – SECOND SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	C H	PRER EQUIS ITE
BCH 121	Organic & inorganic chemistry	2	0	3	3.0	75	BCH 111
FIT 122	Biology of fishes	2	0	3	3.0	75	FIT111
FIT 123	Basic aquaculture	2	0	3	3.0	75	FIT 111
AQT 125	Introduction to fish breeding and genetics	2	0	3	3.0	75	
GNS 224	Physical geography	2	0	0	2.0	30	WASC /GCE
FIT 124	Fishing gear & craft technology I	1	0	4	3.0	75	FIT 101
SUG 101	Basic Principles in land Surveying II	2	0	3	3.0	75	WASC /GCE
GNS 128	Citizenship Education ii	2	0	0	2.0	30	
GNS 102	Communication in English	2	0	0	2.0	30	
EED 126	Introduction to Entrepreneurship	2	0	3	3.0	75	
	TOTAL				27		

NATIONAL DIPLOMA (ND) FISHERIES TECHNOLOGY

YEAR 2 - FIRST SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRE REQUI SITE
FIT 211	Fish Farm Engineering	2	0	2	3.0	60	FIT 123
FIT 212	Fish Processing and Storage Technology II	2	0	3	3.0	75	FIT 101
FIT 213	Elementary Navigation & Seamanship	2	0	1	3.0	75	
FIT 214	Fishing Gear and Craft Technology	1	0	4	3.0	75	
FIT 215	Aquatic Ecology	1	0	3	2.0	60	FIT 101
FIT 216	Practical Fishing I	0	0	4	2.0	60	
AGR 216	Introduction to Agricultural Biotechnology	1	0	3	2.0	60	
AGT 231	Field Experimentation and Data Analysis	2	0	0	2.0	30	MTH 101
COM 201	Computer Package I	1	0	3	2.0	60	
AHP 225	Introduction to Animal Husbandry	2	0	3	3.0	75	
GNS 201	Use of English II	2	0	0	2.0	30	
	TOTAL				27		

YEAR 2 - SECOND SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRER EQUI SITE
FIT 221	Pond management	2	0	3	3.0	75	SSCE
FIT 222	Fisheries management	2	0	0	2.0	30	FIT 123
FIT 223	Practical Fishing II	0	0	4	2.0	60	FIT 122
FIT 224	Fish Farm & Personnel Management I	2	0	0	2.0	30	FIT 216
FIT 225	Introduction to Sustainable livelihood approach & code of conduct for responsible Fisheries	2	0	0	2.0	30	FIT 211
AGT 124	Rural Sociology	2	0	0	2.0	30	SSCE
SUG 102	Basic principles in Land Surveying II	1	0	4	3.0	75	TSL 101
EED 216	Practice of Entrepreneurship	2	0	3	3.0		
FIT 226	Final Year Project				6.0	-	ND1
	TOTAL				25		

COURSE SYNOPSIS
NATIONAL DIPLOMA (ND) IN FISHERIES
TECHNOLOGY
YEAR 1 – FIRST SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
STB 111	Cell Biology (See curriculum of SLT)	2.0
MTH 101	General Mathematics (See curriculum of GNS)	2.0
FIT 111	Basic Fisheries Technology History and development of fisheries in Nigeria, Fish Production in Inland waters, Roles of various sectors in Fisheries Exploration, Relationship between Hydrography and Fisheries, Establishment of fish farm, Construction procedures of ponds. Culture of brackish and freshwater fish, fish harvesting in ponds, Types of fishing crafts, Fish preservation, processing and distribution methods.	3.0
PTD 111	Technical Drawing (See curriculum of Engineering/ Architecture)	3.0
AGR 101	Introduction to Agriculture (See curriculum of AGT/ CRP)	3.0
CME 122	Basic Workshop Practice (See curriculum of Mechanical/ Engineering)	2.0
GNS 101	Use of English I (See curriculum of GNS)	2.0

GNS 127	Citizenship Education I (See curriculum of GNS)	2.0
BCH 111	General and Physical Chemistry (See curriculum of SLT)	3.0
STB 112	Morphology and Physiology of Living Things (See curriculum of SLT)	3.0
COM 111	Computer Science (See curriculum of GNS)	2.0
	TOTAL CREDIT UNITS	28

YEAR 1 - SECOND SEMESTER

- COURSE CODE	COURSE DESCRIPTION	UNITS
BCH 121	Organic and Inorganic Chemistry (See curriculum of SLT)	3.0
FIT 122	Biology of Fishes The basic principles of fish taxonomy. External morphology of bony fish. Fish anatomy. Food and feeding habits of fish. Environmental behaviour of fish. Age and growth studies in fish. The respiratory, Osmo – regulatory and reproductive systems in fish. Fish population dynamics.	3.0
FIT 123	Basic Aquaculture Meaning and scope of Aquaculture, history of Aquaculture in Nigeria, various types of fish culture systems, fish pond preparation for stocking purposes, Roles of natural foods and supplementary	3.0

	feeding in ponds, production and packaging of feed pellets, Principles and methods of fish seed production, Natural food production techniques, Aquatic weeds and control methods, fish predators and control methods, common fish diseases and prevention, various methods of fish harvesting, transportation and marketing.	
AQT 125	Introduction to Fish Breeding and Genetics Introduction to genetics and breeding, Principles of reproduction, Mendelian theory, Epistasis, Hormones in reproduction, Principles of brood stock selection, methods of breeding, Environmental factors affecting breeding.	3.0
GNS 224	Physical Geography (See curriculum of GNS)	2.0
FIT 124	Fishing Gear and Craft Technology I Basic principles of designing, constructing and use of common fishing gears and crafts in Nigeria, classification of fishing gears, Netting materials for gear construction, physical and chemical characteristics of synthetic fibres, Basic processes of net construction, Types of fishing crafts/ boats.	3.0
SUG 101	Basic Principles in Land Surveying I (See curriculum of Surveying/ Geoinformatics)	3.0
GNS 128	Citizenship Education II (See curriculum of GNS)	2.0

GNS 102	Communication in English (See curriculum of GNS)	2.0
EED 126	Introduction to Entrepreneurship (See curriculum of EED)	3.0
	TOTAL CREDIT UNITS	27

**NATIONAL DIPLOMA (ND) IN FISHERIES TECHNOLOGY
YEAR 2 – FIRST SEMESTER**

COURSE CODE	COURSE DESCRIPTION	UNIT
FIT 211	Fish Farm Engineering Criteria for fish farm site selection, Introduction to fish farm engineering, design simple fish – farm structures, construction of fish holding structures, Introduction to re – circulatory aquaculture system (RAS), care of fish farm facilities, Concept of hatchery design	3.0
FIT 212	Fish Processing and Storage Technology Introduction to fish handling, preservation, processing and storage techniques, Importance of fish in human nutrition, common fish handling equipment, causes of fish spoilage, Techniques to determine the freshness of fish, signs of spoilt fish, methods for preserving fish, Loses in cured fish, Roles of insects and rodents during storage of cured fish	3.0

FIT 213	<p>Elementary Navigation and Seamanship</p> <p>Basic concepts of navigation and seamanship in marine and inland waters, meaning of navigation and seamanship in fishing and shipping operations, Various terminologies in Navigation, use of navigation aids, roles of Stars and Moon in Navigation, use of nautical almanac, Types of fishing vessels, equipment and their maintenance. Various engines used in fishing vessels, Safety procedures in fishing vessels, use of fire fighting equipment in fishing vessels.</p>	3.0
FIT 214	<p>Fishing Gear and Craft Technology II</p> <p>Use of twines and ropes in gear construction, safety rules while working on twines, various types of knots in net mending, names of fishing twines and ropes, design and construction methods of various fishing gears, Functions of fishing gears accessories, system of ordering netting materials, basic maintenance of fishing gears.</p>	3.0
FIT 215	<p>Aquatic Ecology</p> <p>Structure and function of aquatic ecosystems. Characteristics and classification of Aquatic Environments. Characteristics of freshwater, brackish and marine ecosystems. Ecological problems of aquatic fauna. Tropics relationships in an ecosystem.</p>	2.0
FIT 216	<p>Practical Fishing I</p> <p>Necessary preparation for fishing trips,</p>	2.0

	Fish detection equipment and methods, Fish legislative and regulatory laws, Swimming exercises, Seasonal variation and fish distribution, Fish catching devices, Conservation methods in management techniques.	
AGR 216	Introduction to Agricultural Biotechnology (See curriculum of AGT)	2.0
AGT 231	Field Experimentation and Data Analysis (See curriculum of AGT)	2.0
COM 201	Computer Package I (See curriculum of GNS)	2.0
AHP 225	Introduction to Animal Husbandry (See curriculum of Animal Science)	3.0
GNS 201	Use of English II (See curriculum of GNS)	2.0
	TOTAL CREDIT UNIT	27

YEAR 2 - SECOND SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
FIT 221	<p>Pond Management History of pond and water quality parameters, Processes in pre-stocking preparation of pond, Stocking of ponds, Procedure for feeding fish in pond, Common fish diseases, Pest, Weeds and their control, Management of fish nursery and grow-out ponds, Rescue operations during emergency in pond management, Methods of fish harvesting.</p>	3.0
FIT 222	<p>Fisheries Management Scope of fisheries management. Fisheries management practices in Nigeria. Sources and methods of data collection in fisheries. Status of Nigeria fisheries resources. Socio-economic impact of fisheries management in Nigeria. Aquatic productivity in fisheries. Stock assessment in fisheries.</p>	2.0
FIT 223	<p>Practical Fishing II Fish detection methods, Use of active and passive fishing gears, Fishing methods, Fish luring and baiting techniques, Recreational fishing method.</p>	2.0
FIT 224	<p>Fish Farm and Personnel Management I Concept of personnel management, Nature and purpose of communication and motivation in organizational management, Concept of supervision and supervisor role in organizations,</p>	2.0

	Principles of Industrial relations and the role of trade unions in organization, Procedure of employment, Wages and salary determination, role of discipline in personnel management.	
FIT 225	Introduction to Sustainable Livelihood Approach and Code of Conduct for Responsible Fisheries.	2.0
AGT 124	Rural Sociology (See curriculum of AGT)	3.0
SUG 102	Basic Principles in Land Surveying II (See curriculum of Surveying/ Geoinformatics)	3.0
EED 216	Practice of Entrepreneurship (See curriculum of EED)	3.0
FIT 226	Final Year Project Final year practical project assigned to each student under the supervision of Academic Staff. Project must be submitted and oral examination must be conducted.	6.0
	TOTAL CREDIT UNITS	25

DEPARTMENT OF FISHERIES TECHNOLOGY

HIGHER NATIONAL DIPLOMA (HND) IN FISHERIES TECHNOLOGY

YEAR 1 - FIRST SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRE REQUI SITE
STC 222	Introductory Biochemistry	2	0	3	3	75	STC 121
STB 211	Introductory Microbiology	2	0	3	3	75	STB 111
AGR 302	Field Experimentation & Data Analysis	2	0	3	3	75	AGT 231
FIT 311	Ichthyology	1	0	3	2	60	
CPT 313	Agro-climatology	0	0	2	2	30	GNS 224
AEM 313	Resource Economics	2	0	0	2	30	
GNS 302	Communication in English III	2	0	0	2	30	
AGR 305	Swine & Poultry MANAGEMENT	2	0	3	3	75	
	TOTAL				22		

YEAR 1 - SECOND SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PREREQUISITE
AGR 303	Farm Management	1	0	4	3.0	75	
FIT 321	Fish Nutrition	2	0	3	3.0	75	
AEM 314	Extension Methods	1	0	3	2.0	60	
FIT 322	Oceanography	1	0	3	2.0		
FIT 323	Fish Farm Engineering & Management I	1	0	3	2.0	60	
FIT 324	Fishing Gear & Craft Technology III	2	0	3	3.0	75	
FIT 325	Inboard & OutBoard Engine Maintenance	2	0	3	3.0	75	
FIT 326	Hydrobiology & Limnology	1	0	3	2.0	60	
FIT 327	Ornamental Fishery & Aquarium Technology	1	0	3	2.0	60	
GNS 401	Citizenship Education II	2	0	0	2.0	30	
EED 326	Entrepreneurship Development	2	0	3	3.0	75	
	TOTAL				28		

HIGHER NATIONAL DIPLOMA (HND) IN FISHERIES TECHNOLOGY

YEAR 2 - FIRST SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRER EQUI SITE
FIT 431	Fish Diseases	2	0	3	3.0	75	
FIT 432	Fish Processing Technology	2	0	3	3.0	75	
FIT 433	Nautical Knowledge	2	0	3	3.0	75	
FIT 434	Fisheries Management II	2	0	3	3.0	60	
FIT 435	Fish Farm Management II	2	0	3	3.0	75	
FIT 436	Integrated Fish Farming	1	0	3	2.0	60	
AEM 435	Agricultural Marketing	2	0	0	2.0	30	
GNS 401	Communication in English IV	2	0	0	2.0	30	
	TOTAL				21		

YEAR 2 - SECOND SEMESTER

COURSE CODE	COURSE TITLE	L	T	P	CU	CH	PRER EQUI SITE
FST 413	Food Legislation, Factory Laws Safety	1	0	0	1.0	15	
AGR 402	Agricultural Personnel Management	2	0	0	2.0	30	
AEM 446	Rural Sociology	2	0	0	2.0	30	
FIT 441	Practical Fishing	0	0	6	3.0	90	
AGR401	Research Methodology	2	0	3	3.0	75	
AGR 407	Farm records & accounting	2	0	0	2.0		
FIT 445	Seminar				2.0		
FIT 446	Project				6.0		
	TOTAL				21		

**DEPARTMENT OF FISHERIES TECHNOLOGY
COURSE SYNOPSIS (HND) YEAR 1
FIRST SEMESTER**

COURSE CODE	COURSE DESCRIPTION	UNITS
STC 222	Introductory Biochemistry (See curriculum of SLT)	3.0
STB 211	Introductory Microbiology (See curriculum of SLT)	3.0
AGR 302	Field Experimentation and Data Analysis (See curriculum of AGT/ CRP)	3.0
FIT 311	Ichthyology History of Ichthyology. General characteristics of fish. Classification, Evolution and Phylogeny of fishes. Zoogeographical distribution of fishes. Capture fisheries resources in the Freshwater, Estuarine and Marine environments in Nigeria. Adaptations in fishes. Economic Importance of fishes.	2.0
CPT 313	Agro-climatology (See curriculum of AGT/ CRP)	2.0
AEM 313	Resource Economics (See curriculum of AEM)	2.0
GNS 302	Communication in English III (See curriculum of GNS)	2.0
AGR 305	Swine And Poultry Management Methods of Swine classification, Principles of swine management, Pig nutrition and breeding, common pig	3.0

	diseases and control; Breeds and types of poultry, concepts of poultry production, poultry and pig housing construction, Brooding operation in poultry, Feeds and feeding in poultry management, Vaccination techniques, Disease management/ prevention; Record keeping and marketing.	
	TOTAL CREDIT UNITS	22

YEAR 1 - SECOND SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
AGR 303	Farm management (See curriculum of AGT/ CRP)	3.0
FIT 321	Fish Nutrition Differences between natural food and artificial feed, common feed stuffs used in fish feed manufacturing, Proximate composition of common feedstuffs, Factors affecting fish feed production, Pearson square method of feed production, Use of linear programming in feed production, Various types of fish feed, Nutrients requirement of fish species, Feeding techniques in Aquaculture, Feed storage technology, Digestibility measurement in fish nutrition, Signs of nutrients deficiency in fish, Natural food production.	3.0
AEM 314	Extension Methods (See curriculum of AEM)	2.0

FIT 322	<p>Oceanography Introduction to geological, chemical, physical and biological oceanography. Concepts of plate tectonics and evolution of basins. Physical and chemical characteristics of sea water, atmosphere – ocean coupling; two – and three – dimensional oceanic circulation, waves and tides, sedimentation, marine organisms, productivity, marine ecosystems, biological – physical coupling, biogeochemical cycles. Field trips to ocean sites.</p>	3.0
FIT 323	<p>Fish Farm Engineering And Management I Pre-requisites for fish farm selection, Profiling techniques, Determination of gradients/ slopes, Escavation and dyke construction, Construction of drainage and catch basin devices, Design of water recirculating system (WRS), Dyke management and siltation control, Preventive measures for enemies of fish, weed control measures.</p>	2.0
FIT 324	<p>Fishing Gear And Craft Technology III Identification of various materials used in boat building, Strength of ropes and twines. Twines and ropes specifications for different fishing gears, Use of ferrocement and fibre – glass in fishing craft technology, Design and Construction of boats with different cabins, Maintenance of fishing gears and crafts.</p>	3.0
FIT 325	<p>Inboard And Outboard Engine Maintenance Introductory thermodynamics, differences</p>	3.0

	between inboard and outboard engines, Principles and operations of engines of different strokes, Scavenging, different combustion engines and their maintenance, Trouble shooting, Prevention of Crankcase explosion, Engine rating techniques, Field trips to jetty	
FIT 326	Hydrobiology and Limnology Physical, chemical and biological features/ properties of fresh, brackish and marine waters. Thermal properties and stratification of marine and brackish waters. Hydrology and water cycle, Identification and study of the characteristics of fauna and flora of importance in tropical freshwater and coastal swamps. Ecology, utilization and management of aquatic fauna and flora. Ecological effects of aquatic weeds in water bodies. Control of aquatic weeds. Collection and identification of macro – invertebrates.	2.0
FIT 327	Ornamental Fishery And Aquarium Technology History of Aquarium technology. Design, construction and maintenance of various aquaria. Major indigenous and exotic ornamental fishes and their distribution in Nigeria. Ornamental fish breeding, nutrition and management. Parasites and diseases of aquarium fishes	2.0
GNS 401	Citizenship Education II (See curriculum of GNS)	2.0
EED 326	Entrepreneurship Development (See curriculum of AED)	3.0
	TOTAL CREDIT UNITS	28

**DEPARTMENT OF FISHERIES TECHNOLOGY
HIGHER NATIONAL DIPLOMA (HND) IN FISHERIES
TECHNOLOGY**

YEAR 2 – FIRST SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
FIT 431	Fish Diseases Introduction to etiology, virulence and epizootiology of fish diseases; effect of disease on fish production, Pathology of fish diseases, Role of fungi, bacteria, viruses, helminths and protozoa in fish pathology, Differences between infectious and non – infectious diseases, Major bacteria diseases of fish, Common viral diseases of fish, Major fish diseases caused by crustacean and nutrient deficiencies, Helminth parasites of fish and associated problems, Prophylactic and curative measures of disease control.	3.0
FIT 432	Fish processing Technology Concepts of post – harvest technology, Principles of fish spoilage, subjective and objective assessment of fish quality, Fish preservation and processing techniques, Differences between fish preservation and processing, Preparation of fish by-products, Common agents of spoilage in processed and stored fish, Quality control measures in cured fish.	3.0
FIT 433	Nautical Knowledge Differences between navigation and seamanship, Rules of navigation and seamanship, Usage of Navigation equipment and charts; small fishing vessels operation, Use of fish detection	3.0

	equipment, First – aid treatment on board and on shore.	
FIT 434	Fisheries Management II Introduction to fisheries management, Aims and Objectives of fisheries management, Factors affecting aquatic productivity, Fish stock assessment methods, Age and growth determination in fish, sociological factors in fisheries management, Major fisheries sub – sectors in Nigeria; Fisheries regulations and laws in Nigeria, Major fisheries resources in Nigeria, Formation of fishing companies or enterprises, Principles of code of responsible fishing.	3.0
FIT 435	Fish Farm Management II Methods of fertilizing fish ponds, Types and application of lime in pond management, Methods of restoration and improvements of pond, Common aquatic weeds and method of control in ponds, Fish seed multiplication, Good nursery practices, Various fish production systems including integrated farming, Shell fish culture.	3.0
FIT 436	Integrated Fish Farming Reasons for Integrated fish farming, Energy relationships in grazing and detritus food chain in integrated fish farms, Pond water quality assessment in integrated fish farming, Types of integrated fish farms and management techniques.	2.0
AEM 435	Agricultural Marketing (See curriculum of AEM)	2.0
GNS 401	Communication in English Language IV (See curriculum of GNS)	2.0
	TOTAL CREDIT UNIT	21

YEAR 2 - SECOND SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
FST 413	Food Legislation, Factory Laws Safety (See curriculum of FST)	1.0
AGR 402	Agricultural Personnel Management (See curriculum of AGT/ CRP)	2.0
AEM 446	Rural Sociology (See curriculum of AEM)	2.0
FIT 441	Practical Fishing Fish detection methods, Use of common fish finding devices, Safety codes and regulations as applicable to fishing vessels, Various fish aggregating devices (FAD), Common fishing gears and fishing methods.	3.0
AGR 401	Research Methodology (See curriculum of AGT/ CRP)	3.0
AGR 407	Farm Records and Accounting (See curriculum of AGT/ CRP)	2.0
FIT 445	Seminar	2.0
FIT 446	Project	6.0
	TOTAL CREDIT UNIT	21

**DEPARTMENT OF MARINE
TECHNOLOGY**

NATIONAL DIPLOMA (ND) IN MARINE TECHNOLOGY

Curriculum and Course Specifications:

Programme Goals:

The National Diploma Programme in Marine Technology is designed to produce graduates who will be able to apply the broad field of marine science and interconnections among various aspects of oceanography, marine biology and ecology to enhance marine resources exploitation for human benefits.

Programme Objectives:

1. Assist in carrying out survey and determination of various coastal land forms e.g. beaches, salt marshes, tidal flats, sea cliffs etc.
2. Assess human impacts to the coastal zone and responses to the various changes through application of scientific knowledge, population and environmental requirements.
3. Employ integration of basic principles of physics and chemistry with an understanding of the marine ecosystems and effective operation of equipment and machine used in sustainable exploitation of marine resources.
4. Acquire skills in marine policy and fisheries management.
5. Assist in the exploitation and utilization of diverse marine resources for human benefits.
6. Acquire computer skills and entrepreneurial knowledge enough to engage or set up a meaningful fishery related business.

Entry Requirements:

As specified in the NBTE guideline.

Course Description and Code and Units: (See Tables)

DEPARTMENT OF MARINE TECHNOLOGY**NATIONAL DIPLOMA (ND) IN MARINE TECHNOLOGY****YEAR 1 - FIRST SEMESTER**

COURSE CODE	MODULE TITLE	L	T	P	CU	CH	PRER EQUI SITE
GNS 101	Use of English I	2	0	0	2	30	
GNS 127	Citizenship Education I	2	0	0	2	30	
BCH 111	General and Physical Chemistry	2	0	3	3	75	
BPH 111	Mechanics and Properties of matter and heat Energy	2	0	3	3	75	
MTH 112	Algebra and Elementary Trigonometry	2	0	0	2	30	
MEC 101	Technical Drawing	1	0	3	2	60	
MEC 103	Introduction to Mechanical Engineering	2	0	3	3	75	
MEC 105	Workshop Theory and Practice	1	0	3	2	60	
MEC 106	Introduction to Engineering Practice	2	0	0	2	30	
MEC 112	Introduction to Electrical Engineering	2	0	2	3	60	
EEC 241	Introduction to Computer Science	1	0	2	2	45	
	TOTAL				26		

YEAR 1 - SECOND SEMESTER

COURSE CODE	MODULE TITLE	L	T	P	CU	CH	PRER EQUI SITE
GNS 102	Communication in English I	2	0	0	2	30	
GNS 128	Citizenship Education II	2	0	0	2	30	
BCH 121	Organic and Inorganic Chemistry	1	0	3	2	60	
BPH 121	Optics, Waves, Electricity and Magnetism	1	0	3	2	60	
MTH 122	Trigonometry and Analytical Geometry	2	0	0	2	30	
MAT 102	Concepts in Oceanography	2	0	3	2	75	
MAT 104	Biology of Marine Organisms	2	0	3	3	75	
MAT 106	Physical Oceanography	1	0	2	2	45	
MAT 108	Nautical Sciences and Seamanship	1	0	3	2	60	
MAT 110	Electro Technology	1	0	3	2	60	
EED 126	Introductory Entrepreneurship	1	0	3	2	60	
LIB 001	Use of Library	2	0	0	2	30	
	TOTAL				25		

NOTE: SIWES Programme of 3 - 4 months at the end of second semester year 1

NATIONAL DIPLOMA (ND) IN MARINE TECHNOLOGY

YEAR 2: FIRST SEMESTER

COURSE CODE	MODULE TITLE	L	T	P	C U	CH	PRER EQUI SITE
GNS 201	Use of English II	2	0	0	2	30	
MAT 203	Introduction to Marine Policy and Management	2	0	0	2	30	
MAT 205	Introduction to Data Analysis and Computer Programming	2	0	0	2	30	
MAT 207	Marine Ecology	1	0	2	2	45	
MAT 209	Naval Architecture	1	0	2	3	45	
MAT 211	Marine Engines and Propulsion System	1	0	2	2	45	
MAT 213	Engineering Communication	0	0	2	2	30	
MAT 215	Beaches and Coast Formation	2	0	3	3	75	
EEC 242	Basic Electronics and Instrumentation	2	0	3	2	75	
EED 216	Entrepreneurship Practice	2	0	3	3	75	
	TOTAL				24		

YEAR 2: SECOND SEMESTER

COURSE CODE	MODULE TITLE	L	T	P	CU	C H	PRER EQUI SITE
GNS 202	Communication in English II	2	0	0	2	30	
MCH 224	Chemistry of Corrosion	1	0	3	2	60	
STA 111	Introduction to Statistics	2	0	0	2	30	
MEC 204	Development and Assembly Drawing	1	0	3	2	60	
MEC 208	Refrigeration and Air-conditioning	1	0	2	2	45	
MAT 202	Marine plant service and maintenance	2	0	3	3	75	
MAT 204	Marine Auxiliary machinery	2	0	2	3	60	
MAT 206	Shipyard Technology	2	0	2	3	60	
MAT 208	Introduction to Engineering Management	2	0	0	2	30	
MAT 226	Final Year Project				6		
	TOTAL				27		

COURSE SYNOPSIS

NATIONAL DIPLOMA (ND) IN MARINE TECHNOLOGY

YEAR 1 - FIRST SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
GNS 101	Use of English I (See curriculum of GNS)	2.0
GNS 127	Citizenship Education I (See curriculum of GNS)	2.0
BCH 111	General and Physical Chemistry (See curriculum of SLT)	3.0
BPH 111	Mechanics and Properties of Matter, and Heat Energy (See curriculum of SLT)	3.0
MTH 112	Algebra and Elementary Trigonometry (See curriculum of GNS)	2.0
MEC 101	Technical Drawing (See curriculum of Engineering/ Architecture)	2.0
MEC 103	Mechanical Engineering Science (See curriculum of Engineering/ Architecture)	3.0
MEC 105	Workshop Theory and Practice (See curriculum of Engineering/ Architecture)	2.0
MEC 106	Introduction to Engineering Practice (See curriculum of Engineering/ Architecture)	2.0
MEC 112	Electrical Engineering Science (See curriculum of Engineering/ Architecture)	3.0
EEC 241	Introduction to Computer Science (See curriculum of Engineering/)	2.0
	TOTAL CREDIT UNITS	26

YEAR 1 - SECOND SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNIT
GNS 102	Communication in English I (See curriculum of GNS)	2.0
GNS 128	Citizenship Education II (See curriculum of GNS)	2.0
BCH 121	Organic and Inorganic Chemistry (See curriculum of SLT)	3.0
BPH 121	Optics, Waves, Electricity and Magnetism (See curriculum of SLT)	2.0
MTH 122	Trigonometry and Analytical Geometry (See curriculum of GNS)	2.0
MAT 102	Concept in Oceanography Introduction to Oceanography, Basic concepts in physical, geological, chemical and biological Oceanography, Relationship between Ocean and atmosphere, Global changes in Oceanography, Application of basic Scientific principles of global changes in oceanography, Field trips.	2.0
MAT 104	Biology of Marine Organisms Diversity of forms and functions of marine Organisms, Ecological processes in relation to marine environment, Major groups of marine organisms (e.g. Algae, Plants and Animals), Relationship between their structures (Anatomy /Morphology) and functions (Physiology), Various habitats in marine ecosystems e.g. Estuaries, Salt-marches,	3.0

	Mudflats, Coral-reefs, Open oceans, Continental shelf and slope, Deep Sea, Measurement of physical factors in marine ecosystem, Biotic interaction (predations, Competition, Symbiosis) that influences marine ecosystem.	
MAT 106	Physical Oceanography (See curriculum of Maritime technology)	2.0
MAT 108	Nautical Sciences and Seamanship Identification of a ship's parts, Deck machinery, Use of boats and crafts, Merchant ship department organization, Various aspects of sea life, Navigation systems and aids, Functions of National and International Maritime Organisation	2.0
MAT 110	Electro Technology Electrical installations on ships, Marine electrical instruments, Basic electrical control systems, Fault-finding procedure and remedy, Maintenance procedure of electrical equipment.	2.0
EED 126	Introduction to Entrepreneurship (See curriculum of EED)	2.0
GNS 101	Use of Library (See curriculum of GNS)	2.0
	TOTAL CREDIT UNITS	25

**NATIONAL DIPLOMA (ND) IN MARINE TECHNOLOGY
YEAR 2 - FIRST SEMESTER**

COURSE CODE	COURSE DESCRIPTION	UNITS
GNS 201	Use of English II (See curriculum of GNS)	2.0
MAT 203	Introduction to Marine Policy and Management Production of marine policy and management, Concepts of fisheries management, Differences between marine policy and fisheries management, Ocean conservation and management, Factors affecting ocean conservation and management, Tools and policy approach for managing complex marine ecosystem, Current and historical challenges affecting Ocean Management, Role of Scientist and other stakeholders in Marine conservation, Ecosystem based management, fishing communities, collective action dilemma, and by-catch and gear technology, and marine protected areas and habitats, marine mammals and protected species conservations, Aquaculture-policies, and global climate change.	2.0
MAT 205	Introduction to Data Analysis and Computer Programming (See curriculum of GNS/ Computer Science)	3.0

MAT 207	Marine Ecology Ecological terms, Fundamentals of ecological principles and factors in marine ecosystem, Ecosystem concepts, Food web and tropic levels in marine environment, Tools for measuring ecological parameters of factors.	2.0
MAT 209	Naval Architecture Types and functions of merchant ships, Ship building terminologies, Ship calculations, Element of ship stability, Ship motion and structure, Element of ship resistance.	2.0
MAT 211	Marine Engines and Propulsion System Laws of thermodynamics and heat transfer, Concept of propulsion engines, Construction and operating principles of internal combustion engines, Steam boilers, Turbines and steam reciprocating engines, Propulsion systems.	2.0
MAT 213	Engineering Communication (See curriculum of GNS)	2.0
MAT 215	Beaches and Coast Formation Introduction of Beaches and Coast, Differences between Beaches and Coast, Coastal land forms, Principles and origin of beach formation, salt marshes, tidal flats and cliffs, Impact of humans to coastal zones including coastal erosion, land loss and Management, Principles of human	3.0

	response to sea-level changes, Field trip to beaches, salt marshes etc.	
EED 242	Basic Electronics and Instrumentation (See curriculum of Electrical Engineering)	2.0
EED 216	Entrepreneurship Practice (See curriculum of EED)	3.0
	TOTAL CREDIT UNITS	24

YEAR 2 - SECOND SEMESTER

COURSE CODE	COURSE DESCRIPTION	UNITS
GNS 202	Communication in English II (See curriculum of GNS)	2.0
MCH 224	Chemistry of Corrosion (See curriculum of Chemistry)	2.0
STA 111	Introduction to Statistics (See curriculum of GNS)	2.0
MEC 128	Development and Assembly Drawing (See curriculum of Mechanical Engineering)	2.0
MEC 208	Refrigeration and Air Conditioning (See curriculum of Mechanical Engineering)	2.0
MAT 202	Marine Plant Service and Maintenance (See curriculum of Mechanical Engineering)	3.0
MAT 204	Marine Auxiliary Machinery Classification of marine pumps, Principles of heat exchangers, Various types of marine compressors, Types of	3.0

	boilers and condensers, Layout of fresh water system in a ship, Different types of injectors, Types of valves and cocks, Steering and gears systems, Capstan, windlass and winches, Power generating machinery, Bunkering system.	
MAT 206	Ship yard Technology Structure of modern shipyards, Ship building materials, Hull processing and fabrication method, Technique of joining structural parts of a ship, Material preparation and corrosion prevention techniques, Method of installing machinery, Inspection, Launching and sea trial procedures for vessels, Safety precautions in shipyards.	3.0
MAT 208	Introduction to Engineering Management (See curriculum of Mechanical Engineering)	2.0
MAT 226	Final Year Project	6.0
	TOTAL CREDIT UNITS	27