DEPARTMENT OF FISHERIES MANAGEMENT

The Department offers a graduate program leading to MS degree.

Equipment and facilities are available for research in fundamental and applied research in the field of fisheries management. The Fisheries Management Department has major research thrust on (i) observation and numerical modeling on hydrodynamic processes and water quality in pond, estuary, coastal systems and Bay of Bengal, (ii) open water (rivers, floodplains, haors, baors and beels) fisheries management, (iii) costal and mangrove ecosystem monitoring, (iv) climate change impacts on fisheries, (v) fish population dynamics (vi) estuary-ocean/bay exchange process and mixing in tropical estuarine and mangrove systems, and (vii) fish diseases.

Faculty members: Mrs. Farhana Haque, Associate Professor; Dr. Dinesh Chandra Shaha, Associate Professor; Md. Nurunnabi Mondal, Assistant Professor; Mrs. Tasmina Akter, Assistant Professor; Dr. Md. Emranul Ahsan, Assistant Professor; Dr. Mst. Rubia Banu, Assistant Professor.

Adjunct faculty: Dr. Shahroz Mahean Haque, Professor, Faculty of Fisheries, BAU; Dr. Md. Jasim Uddin, Professor, Faculty of Fisheries, BAU; Dr. Md. Shahjahan, Professor, Faculty of Fisheries, BAU; Dr. Raju Ahmed, DoF, Dhaka; Dr. Harunur Rashid, Professor, Faculty of Fisheries, BAU.

Research supervisor: Dr. Mst. Kaniz Fatema, BAU; Dr. Mohammad Muslem Uddin.

COURSES

FMG 501 Fisheries Resource Management (3 Cr.): Physical resources of Bangladesh; Biological resources; Present status of waterbodies, nature and extent of utilization, potentials for future management, sectoral policies and programs on fisheries and wetland habitats of different ministries and departments; Relations of flood and monsoon to inland and marine capture fisheries of Bangladesh, changes of water bodies due to natural influences and human activities and their impacts of fish population or stocks, GIS and agro-ecological zoning system, surface water modeling, mapping of vulnerable areas for fisheries; Fisheries resource survey system (FRSS) of Bangladesh; Existing problems in inland fisheries, its mitigation measures, management techniques for sustainable fisheries management and conservation measures.

FMG 503 Water Quality and Environmental Impacts (3 Cr.): Concept on water quality; Water quality deterioration; Water quality and culture systems: water quality characteristics in different freshwater production systems; Water quality requirements of cultured species; Water quality in fertilized and fed systems; Eutrophication and algal management; Water quality and secondary production; Water quality problems in coastal aquaculture, Special problems in coastal aquaculture and management measures.

FMG 504 Community Based Fisheries Management (3 Cr.): Overview of community based fisheries management (CBFM) in Asian countries, its relevance to Bangladesh; Models of community based fisheries management; Ownership of water and land; Leasing arrangements; Users rights, inter-sectoral cooperation etc.; Factors to be considered for CBFM; Organization and motivation of fishers, villagers and other stakeholders for community based fisheries management; CBFM in Oxbow Lakes, floodplain – river systems, beels, lakes and reservoirs; CBFM in the coastal and marine fisheries management; Present status, nature and extent of implementation of CBFM in the countries and states along the Bay of Bengal; Role of fishermen, fisherwomen and other communities in CBFM and their livelihoods. Implications of culture-based fishery and wild fishery; Economic and Social impacts of the CBFM.

FMG 505 Fisheries Resources Legislation (3 Cr.): Monitoring, Control and Surveillance (MCS) systems for capture fisheries; Guidelines for operation of Bangladesh deep sea fishing vessels in Bangladesh EEZ, Maritimes Zones of Bangladesh Act, Marine Fisheries Policy; Inland Fisheries Regulation and Development: Inland fisheries governance, Inland Fisheries Act, leasing policies for water bodies, National Water Policy, fishing rights in open waters; and role of fisheries cooperatives, aqua/ecotourism.

FMG 516 Fish Pathology (3 Cr.): Anatomy and physiology of teleost Integumentary, respiratory,

circulatory, renal, excretory and digestive systems; Pathophysiology: Stress and general adaptation syndrome, inflammatory response, necrosis and types, stages; Integumentary system: Cuticular, epidermal dermal and hypodermal changes, hyperplasia and ulceration, Blood vascular system: Pathology of heart, vessels, blood composition, cellular components of blood and haemopoietic tissue. Digestive system: Digestive tract and its pathology; hepatic necrosis, lipid infiltration, hepatic granuloma, cirrhosis, pancreatic atrophy, neoplasia; epithelial sloughing of intestine. Systemic pathology in shrimp: Integument, respiratory, digestive and nervous system and its pathology.

FMG 517 Fish Immunology (3 Cr.): Introduction to fish immunology and terminologies; historical developments; Lymphoid tissues and cellular components of immune system; Nonspecific humoral and cellular defence mechanisms; Specific defence mechanisms; Antigens and antigenicity; structure of antibody. Types of antibodies, Theories of antibody formation, Antibody mediated immune response: general characteristics, immunoglobulin classes, structure and function and Synthesis; Phagocytic systems; Lymphoid systems; Antigen processing; Cell mediated immune response and its components; Fish vaccination.

FMG 532 Fish Health Management (3 Cr.): General principles and significance; Stress and diseases: stress management to prevent diseases. Effects of intensification on health; relationship between health and environment and management; Chemotherapy including antibiotics: Chemicals used in aquaculture; Theory of antibiotic use, the action of antibiotics and their application to the control of bacterial disease in aquaculture; Fish health control: Health control through management techniques; emergency response; procedures for basic fish health monitoring on the fish farm; sampling techniques appropriate for professional pathological diagnosis.

FMG 535 Fish Stock Assessment (3 Cr.): Stock concept; Estimation of growth parameters and mortality rates; Virtual population methods; Gear selectivity, Sampling of commercial catches; Yield per recruit model; Surplus production model, Swept area method - Fox model; Stock recruitment relationship; Multispecies, ecosystem and economic and social reference points, Eumetric fishing; Ecopath and Ecocism.

FMG 545 Marine Ecosystems, Biodiversity and Conservation (3 Cr.): Biology of selected endangered species of bivalves, fishes, turtles and marine mammals; IUCN criteria - Red List, Wild life protection act, International treaties and conventions, Marine Protected Areas, Sanctuaries and Biosphere reserves; Marine and Coastal Ecosystems – Overview; physico-chemical environment; ecological notions; plankton; benthos, mangroves; sea grasses and corals; Marine biodiversity - threats, planning and management, tools for conservation.

FMG 555 Estuarine and Coastal Dynamics (3 Cr.): Definition and classification of estuaries, mixing of fresh and salt water, Estuarine circulation, Estuarine residence time; The dynamics of estuary plumes and fonts, classifying coasts; coastal upwelling and down welling; Sediment deposition at distributary mouth; spatial and temporal distribution of nutrient, plankton and oxygen in relation to estuarine and coastal dynamics, effects of human activities on deltas.

FMG 560 Integrated Coastal Zone Management (3 Cr.): Coastal resources: Coastal natural resources systems: flora and fauna. Coastal Zone Management: Integrated Coastal Zone Management (ICZM): Its need and benefits, principles, goals and objectives of the ICZM program; Boundaries of the coastal zone, policies and planning for coastal resource management; Management mechanisms- Pollution control, Protected areas (sanctuaries), Protection from natural hazards; Socioeconomic impacts and its assessment, Disaster management for coastal environment; Coastal tourism: Beach resorts, restaurants and parks within the coastal zone as per existing rules and regulations. Impact of pollution on coastal resources.

FMG 564 Climate Change and Fisheries (3 Cr.): Introduction to climate change; Vulnerability to climate change and adaptation responses; Climate change: The physical basis in freshwater, brackish water and marine systems, ocean ecosystems, ocean acidification and changes in other chemical properties; Climate variability and changes on ecosystem and fish production processes; Climate change and capture fisheries;

Climate change and aquaculture; Global negotiations on climate change.

FMG 596 Reading and Conference (Credit to be arranged but not more than 3 Cr.): Special study assigned by the Major Professor on the recommendation of the Advisory Committee and/or the interest of the student.

FMG 597 Special Problems (Credit to be arranged but not more than 3 Cr.): Investigation of special problems in fisheries resource management not related to a thesis problem as assigned by the Major Professor.

FMG 598 Seminar (1 Cr.): Discussion on an assigned topic in the field of Fisheries Management.

FMG 599 Thesis Research (Credit to be arranged but not less than 12 Cr.): Original thesis research.

Note: Students having cumulative CGPA below 3.000 will not be allowed to enroll FMG 596, FMG 597 until he/she raises the cumulative CGPA to 3.000 or above.

Table 1. Minimum course and research requirement For MS degree[1]

Major courses		Credit	Minor courses		Credit
1a. **Core**		12	**2a. Core**		6
FMG 501	Fisheries Resource Management	3	AQC 501	Open water Aquaculture	3
FMG 532	Fish Health Management	3	STT 510	Design of Experiment	3
FMG 535	Fish Stock Assessment	3			
FMG 560	Integrated Coastal Zone Management	3			
1b. **Elective**		6	**2b. Elective**		6
FMG 503	Water Quality and Environmental Impacts	3	AER 501	Agricultural Extension & Communication	3
FMG 504	Community Based Fisheries Management	3	STT 501	Methods of Statistics	3
			AEC 511	Farm Management	3
FMG 505	Fisheries Resource Legislation	3	AQC 521	Aquafarm Operation	3
FMG 516	Fish Pathology	3	HRT 541	Research Methodology	3
FMG 517	Fish Immunology	3		Other Courses[2]	
FMG 545	Marine Ecosystems, Biodiversity and Conservation	3			
FMG 555	Estuarine and Coastal Dynamics	3			
FMG 564	Climate Change and Fisheries	3			
B. Seminar		1			
FMG 598	Seminar	1			
C. Thesis Research		12			
FMG 599	Thesis Research	Variable			
Total					**43**

[1] Degree requirements may be changed on the recommendation of the Board of Studies (BOS) and the Student's Advisory Committee

[2] Approved by the student's Advisory Committee