

# Short Certificate Courses



## Course Outline

**CENTRE OF EXCELLENCE IN  
MARINE BIOLOGY  
UNIVERSITY OF KARACHI**

## **SHORT CERTIFICATE COURSES**

The Centre is going to conduct different short certificate courses of eight weeks duration (*classes will be held on **Friday & Saturday : 02 hours duration per class***) in the following field to strengthen manpower in the field of Marine Biology :

1. Biological Laboratory Tolls & Techniques
2. Fisheries Statistics Tools
3. Sea Food Quality & Packaging
4. Aquaculture Techniques
5. Aqua Feed Technology
6. Marine Environmental Assessment
7. Scientific Diving
8. Scientific Writing
9. Introduction to Shore Field Ecology

### **SHORT CERTIFICATE COURSES (Course Outline)**

#### **SCMB 1.1 Biological Laboratory : Tools & Techniques**

The in hand practice on different Laboratory equipment and some biological analyses are included in the course. Some basic biological techniques; Microscopy, Spectrophotometer, Histology, Electrophoresis and Introduction to PCR included in this course. The preparation of Fixative, Stock and working solutions and fixation as well as preparation and analyses of samples are included in this course.

#### **SCMB 1.2 Fisheries Statistics Tools**

Introduction of Fisheries, importance, need and Use of Fishery information along with Fishery data collection, types, methods, strategies are included in this course. Data handling, arrangements, analyses and presentation through practice on MS excel, Minitab, SPSS and FISAT software's. Probability, distribution: Binomial, and Exponential and their application in fisheries, population and growth parameters, Multivariate normal distribution, Multiple and Partial correlation and regression analyses with graphical presentation included as a laboratory exercise.

### **SCMB 1.3 Sea Food Quality & Packaging**

This course contents includes; Introduction to fisheries types with focus of commercial fisheries and sea food; Taxonomy and Life History Traits of Commercially Important Fin Fishes and Shell Fishes. Different techniques Freezing, Canning and Packaging Technology; International Trade and Development Food Safety; International Marketing and Analytical methods for Seafood Quality Assurance and Economics of Seafood Production and Marketing. The field visits and study tours are also included in this course.

### **SCMB 1.4 Aquaculture Technology**

The course consists of introduction to aquaculture, types of aquaculture, techniques used in Finfish and shellfish culture. Fattening, Harvesting, procurement of Seeds and fry rearing techniques including Farming operation and management with various lab analyses and practical handling of Seed collection, sorting and placement along with monitoring of water parameters in hatchery, ponds and nurseries are the main focus of this course. The field visits are also included in the course.

### **SCMB 1.5 Aquafeed Technology**

This course comprise of Nutrition, importance of balanced feed and nutritional energetic with nutritional requirements of Finfish and Shellfish at various stages of life. Advanced feed technologies, Brood stalk nutrition along with feeding and water quality assessment and maintenance are the main areas covered in this course. Laboratory work based on proximate composition of different feeds with balanced formulation and preparation.

### **SCMB 1.6 Marine Environmental Assessment**

This course provides an introduction to marine environment, pollution type of pollution and their impact on marine environment and marine food web. The details of monitoring, conservation and restoration strategies are also included. Field survey for water, fauna, flora sampling and various pollution analyses as well as how level of contamination hazard can determined in water quality, sediments and various level of food chain are also including in the lab work.

## **SCMB 1.7 Scientific Diving**

The basic purpose of this course is to introduce and enable the students to implement the scientific methods for surveying and monitoring of underwater environment and biodiversity. The course will be comprised from class room sessions (i.e Physical fitness, safety, basic requirement and methodology of diving and physiology) to field work and visits.

## **SCMB 1.8 Scientific Writing**

This course includes an introduction to scientific writing, difference between scientific and academic writing. The writing of research proposal (Synopsis) with particular reference to citation and literature review as well as research paper and thesis writing are included in this course. Information and class exercise about plagiarism and paraphrasing are also included in this course.

## **SCMB 1.9 Introduction to Shore field Ecology**

To understand the basic principles and processes related to shore ecology is the main objective of this course. However types and structure of Sea shore, features of communities' ecology with main focus of intertidal habitat, distribution, types and adaptations of Fauna. The preparation of preservatives and field visits for sampling and preservations of fauna; and identification of Fauna through identification of Keys are also a part of laboratory practices.