Department of Fish Resource and Aquatic Animals
College of Agricultural Engineering Sciences
University of Salahaddin
Course Book: Third Stage
Academic Year: 2022/2023

Course book: Water quality and quantity

Course /Subject	Water quality and quantity	
Hours per week	2 hours theory, 3 hours practical section	
Instructor	Asst. Lec. Iman Sherzad Ali / Theory and Practical	
Faculty/Department	*College of Agricultural Engineering Sciences l Fish Resources and Aquatic Animals Department*	
Means of Contact	Tel. 0750 424 94 98	e-mail: iman.ali@su.edu.krd

Course Description:

This course is designed for 3rd year students of the *Fish Resources and Aquatic Animals Department*, college of *Agricultural Engineering Sciences*, Salahadden University. Understanding water quality is of prime important for aquaculture, therefore, investigating water quality frequently is compulsory. This course provides an overview of water quality and quantity parameters and conditions in general; physical and chemical properties of water; natural and anthropogenic pollutants; collecting and analyzing data related to water quality.

Aims and objectives:

The course is designed for about three primary objectives:

1) To provide students with a fundamental background in water quality and quantity.
2) To acknowledge students with the main water quality parameters.
3) To deliver students the knowledge of ways and instruments used in data collection and analyzing.
4) To supply students with the methods of organizing water quality monitoring system.

Course outcomes:

Upon completion of the course, students will be able to:

1. Understand basic physical and chemical characteristics of water
2. Comprehend main water constituents
3. Explain basic water quality from a physical perspective (e.g. color)
4. Interpret basic water quality data
5. Demonstrate knowledge of the basic techniques used in water quality data gathering.
6. Design a water quality monitoring system

Criteria for Evaluation:

In this course students will be evaluated based on active class participation, quizzes, attendance, and exams. Missing class or arriving late to class will negatively impact student's grade.

Available Points by Category :

Points based on attendance , meaningful participation and quizzes: **5 Marks**
Tests: **10 Marks**
Final Examination: **50 Marks**
Practical section: 35 Marks

Course Content: Theory Part

- Introduction to water quality
- Water quality assessment
- Chemical and physical properties of water: temperature, density…
- Dissolved gases: Nitrogen and Oxygen, The effects of temperature and salinity on the solubility, hydrogen sulfide.
- Water hardness , ionization of water , pH , alkalinity , carbon dioxide , carbonate and bicarbonate
- Salinity , chlorinity , conductivity and osmosis of water
- Pigments and organic matter in aquatic environments
- Water pollution : detergents
- Pesticides & sediments
- Boron, Mercury, Lead, Cadmium
- Bacterial (biological) Pollution
- Thermal Pollution , Treatment of waste waters
- Design of Water Quality Monitoring Systems
- Analysis of Water Quality Monitoring Data

Course Content: Practical Part

15. week	Topic
1	Introduction to water quality
2	Sample strategies
3	Dissolved oxygen
4	Carbon Dioxide (CO2) in water
5	First practical examination
6	Hardness
7	Most Probable Number (MPN)
8	Iron and Manganese
9	water quality index (WQI)
10	Second practical examination
11	Iron and Manganese
12	Chloride
13	Silica
14	Biotic index and family biotic index
15	Presentation seminar by students