

COURSE OUTLINE DETAILS

1. Subject: Fisheries Biology and Management (Sinh học và Quản lý Nguồn lợi Thủy sản)

- **Code:** AQ308

- **Credits:** 3

- **Hours:** 30 theory hours, 30 practice hours

2. Management Unit:

- **Department:** Fisheries Management and Economics

- **Faculty:** College of Aquaculture and Fisheries

3. Requisites:

- **Prerequisites:** No

- **Corequisites:** No

4. Course Objectives

| Objectives | Descriptions | Program Outcomes |
|------------|--|------------------|
| 4.1 | Give to students the knowledge on fisheries resources, fish population dynamics, fisheries assessment and monitoring and fisheries management. | 2.1.3a |
| 4.2 | To train the students for estimation of the abundance of fisheries resources and population parameters. | 2.2.1a |
| 4.3 | To guide the students for group discussion and working on fisheries management. | 2.2.2 |
| 4.4 | To protect fisheries resources for sustainable use and help local communities in fisheries management. | 2.3 |

5. Course learning outcomes:

| COs | Descriptions | Objectives | POs |
|-----|---|------------|--------|
| | Knowledge | | |
| CO1 | To describe the main groups of fisheries resources. | 4.1 | 2.1.3a |
| CO2 | To obtain the principles of fish population dynamics | 4.1 | 2.1.3a |
| CO3 | To assess the fish abundance | 4.1 | 2.1.3a |
| CO4 | To describe the principles of fisheries management | 4.1 | 2.1.3a |
| | Skills | | |
| CO5 | To identify the common fisheries resources | 4.2 | 2.2.1a |
| CO6 | To estimate the fish abundance | 4.2 | 2.2.1a |
| CO7 | To estimate the fish population parameters and management | 4.2 | 2.2.1a |
| CO8 | To train students the skills of group working | 4.3 | 2.2.2 |
| | Attitudes/Autonomy/Responsibilities | | |
| CO9 | To be aware of sustainable use of fisheries resources. | 4.4 | 2.3 |

6. Brief description of subject content:

This subject provides for students the knowledge on: i) main kinds of fisheries resources such as molluscs, crustaceans, fishes; ii) methods for estimation of fish abundance such as swept area, mark-recapture and depletion method; iii) fish population parameters such as growth, natural mortality, fishing mortality and recruitment; and iv) objectives of fisheries management and regulations. In practice, students can determine the cohorts, growth parameters (L_{∞} , K and t_0), mortalities (total, natural and fishing mortalities), and exploitation rate (E) of a fish stock.

7. Course structure:

7.1. Theory

| | Content | Hours | COs |
|-------------------|--|----------|-------------------------------|
| Chapter 1. | Fisheries Resources | 5 | |
| 1.1. | Molluscs | 1 | CO1 |
| 1.2. | Echinoderms | 1 | CO1 |
| 1.3. | Crustaceans | 1 | CO1 |
| 1.4. | Fishes | 1 | CO1 |
| 1.5. | Others | 1 | CO1 |
| Chapter 2. | Fishing Gears | 6 | |
| 2.1. | Traps | 1 | CO1 |
| 2.2. | Hooks and lines | 1 | CO1 |
| 2.3. | Stationary nets | 1 | CO1 |
| 2.4. | Trawl nets | 1 | CO1 |
| 2.5. | Surrounding nets | 1 | CO1 |
| 2.6. | Fish aggregation devices | 1 | CO1 |
| Chapter 3. | Fish Population Biology | 9 | |
| 3.1. | Introduction | 1 | CO2; CO3; CO4; CO5, CO6 |
| 3.2. | Distribution and abundance | 2 | CO2; CO3; CO4; CO5, CO6 |
| 3.3. | Growth | 2 | CO2; CO3; CO4; CO5, CO6 |
| 3.4. | Mortality | 1 | CO2; CO3; CO4; CO5, CO6 |
| 3.5. | Reproduction and recruitment | 1 | CO2; CO3; CO4; CO5, CO6 |
| 3.6. | Length-frequency analysis | 2 | CO2; CO3; CO4; CO5, CO6 |
| Chapter 4. | Fisheries Assessment and Monitoring | 6 | |

| | | | |
|-------------------|--------------------------------------|----------|---------------|
| 4.1. | Introduction | 1 | CO5; CO6; CO7 |
| 4.2. | Data requirements | 1 | CO5; CO6; CO7 |
| 4.3. | Data collection | 1 | CO5; CO6; CO7 |
| 4.4. | Data analyses and stock assessment | 1 | CO5; CO6; CO7 |
| 4.5. | Fisheries monitoring | 1 | CO5; CO6; CO7 |
| Chapter 5. | Fisheries Management | 4 | |
| 5.1. | Introduction | 1 | CO7, CO8 |
| 5.2. | Management objectives and strategies | 1 | CO7, CO8 |
| 5.3. | Fisheries regulations | 2 | CO7, CO8 |

7.2. Practice

| | Content | Hours | COs |
|---------|---|-------|---------------|
| Unit 1. | Cohort estimation | 4 | CO6, CO7 |
| Unit 2. | Estimation of growth parameters (L_{∞} and K) | 4 | CO6, CO7 |
| Unit 3. | Estimation of growth parameters (t_0) | 4 | CO6, CO7 |
| Unit 4. | Estimation of natural and fishing mortality | 4 | CO6, CO7 |
| Unit 5. | Estimation of exploitation rates | 4 | CO6, CO7 |
| Unit 6. | Practical Test | 4 | CO6, CO7, CO9 |

8. Teaching method:

Combine two teaching methods: given lectures in the classroom and practice in the labs/field survey.

9. Duties of student:

Students have to do the following duties:

- To attend at least 80% hours of the given lectures
- To attend all the 6 units of practical lectures
- To attend two tests

10. Assessment of student learning outcomes:

10.1. Assessment

| No. | Point components | Rules and Requirement | Weights | COs |
|-----|------------------|--|---------|-------------------------|
| 1 | Practical test | To attend all the 5 units of practical lectures | 30% | CO5, CO6, CO7, CO9 |
| 2 | Final test | To attend at least 80% hours of the given lectures | 70% | CO1; CO2; CO3; CO4; CO8 |

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one

decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Materials:

| Materials information | Code number |
|---|----------------------|
| [1] King, M. (1995) Fisheries biology, assessment and management. Fishing News Books, 341 pages. | 639.2 K52/2nd |
| [2] Sparre, P., and Venema, S.C. (1992) Introduction to tropical fish stock assessment. Part I: Manual. FAO Fisheries Technical Paper 306/1, 337 pages. | 639.2 S737/P1 |
| [3] Tran, D.D., K. Shibukawa, P.T. Nguyen, H.P. Ha, L.X. Tran, H.V. Mai and K. Utsugi (2013) Fishes of the Mekong Delta, Vietnam, 174 pages. | 639.2 F453 |
| [4] Edwin, S. I. B., 1996, Living marine resources: Their utilization and management. Chapman & Hall, 403p. | 333.956 C121/N353 |

12. Self-study Guide:

| Week | Content | Theory (hours) | Practice (hours) | Students' duties |
|------|---|----------------|------------------|--|
| 1 | Chapter 1: Fisheries Resources 1.1. Molluscs 1.2. Echinoderms 1.3. Crustaceans | 3 | | Reading: Material [1] and [4] + Material [1]: 83-117 pages. + Material [4]: 27-42 pages |
| 2 | Chapter 1: Fisheries Resources (cont.) 1.4. Fishes 1.5. Others | 3 | | Reading: Material [1] and [3] + Material [1]: 118-139 pages. + Material [3]: 14-30 pages |
| 3 | Chapter 2: Fishing Gears 2.1. Traps 2.2. Hooks and lines 2.3. Stationary nets | 3 | | Reading: Material [1] and [4] + Material [1]: 140-143 pages. + Material [4]: 149-162 pages |
| 4 | Chapter 2: Fishing Gears (cont.) 2.4. Trawl nets 2.5. Surrounding nets 2.6. Fish aggregation devices | 3 | | Reading: Material [1] and [4] + Material [1]: 144-150 pages. + Material [4]: 162-175 pages |
| 5 | Chapter 3: Fish Population Biology 3.1. Introduction 3.2. Distribution and abundance | 3 | | Reading: Material [1] + Material [1]: 172-186 pages. |

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|----|--|---|--|---|
| 6 | Chapter 3: Fish Population Biology (cont.) 3.3. Growth 3.4. Mortality | 3 | | Reading: Material [1] and [2] + Material [1]: 188-207 pages. |
| 7 | Chapter 3: Fish Population Biology (cont.) 3.5. Reproduction and recruitment 3.6. Length-frequency analysis | 3 | | Reading: Material [1] + Material [1]: 211-219 pages. + Material [2]: 51-150 pages. |
| 8 | Chapter 4: Fisheries Assessment and Monitoring 4.1. Introduction 4.2. Data requirements 4.3. Data collection | 3 | | Reading: Material [1] + Material [1]: 239-241 pages. |
| 9 | Chapter 4: Fisheries Assessment and Monitoring (cont.) 4.4. Data analyses and stock assessment 4.5. Fisheries monitoring | 3 | | Reading: Material [1] + Material [1]: 249-256 pages. |
| 10 | Chapter 5: Fisheries Management | 3 | | Reading: Material [1] and [4] + Material [1]: 273-313 pages. + Material [4]: 241-260 pages. |

ON BEHALF OF RECTOR
DEAN OF COLLEGE


Vũ Ngọc Út

Can Tho, 30/.../.../2022
HEAD OF DEPARTMENT


Huỳnh Văn Hiến