

Aquaculture**Department** Department of Zoology and Fisheries**Code** AEI04E**Subject head** Ing. Lukáš Kalous, Ph.D.**ECTS (3)****Lectures(hours)** 28**Seminars(hours)** 28**Study field****Type of exam** written and oral**Prerequisites** Chemistry, Zoology**Description and goals**

Aquaculture is the fastest growing part of food production in the world, especially in tropical and subtropical regions. Aquaculture, namely fish production, supplies main input of animal proteins for human nutrition in developing countries. The course will provide the students with information, which will serve as an essential base for their consequent studies of aquaculture concerning production of various aquatic organisms. The content of the course will be also useful for decision-making regarding food and agriculture policy in developing countries or relevant international institutions. The course is constructed to give students general information regarding problematic of aquaculture. The first lecture gives an overview of aquaculture production in worldwide scale. Two lectures are dedicated to aquatic environment including its physical and chemical characteristics. In one of the lectures students learn about primary production in aquatic environments and its management. In two lectures students are informed about the mollusc and crustacean cultures with biological basement of their breeding. Substantial part of the course covers studies of fish production with particular attention dedicated to biology, physiology and ecology of fish, reproduction and genetics, fish nutrition, which form the basis of extensive and intensive fish culture. There are also mentioned economy of fish production and environmental impacts.

Lectures topics

1. Status of Aquaculture from Global Perspective
2. Physical and Chemical Characteristic of Aquatic Environment
3. Production Biomass in Aquatic Environment
4. Aquaculture of Water Crops
5. Mollusc Culture
6. Crustacean Culture
7. Biology of Fishes
8. Reproduction and Genetics
9. Fish Nutrition
10. Aquaristics
11. Extensive Fish Culture
12. Intensive Fish Culture
13. Economy of Fish Production
14. Environmental Impacts of Aquaculture

Practicals / Seminars

1. Assigning Students Project (aquaculture production in tropical and subtropical countries)
2. Basic Physical Analyses (temperature, conductivity, flow velocity, radiation, hydrostatic pressure)
3. Basic Chemical Analyses (oxygen, pH, NO₃, NH₃, phosphorus, BCO)
4. Demonstration of Phytoplankton
5. Demonstration of Water Plants
6. Demonstration of Zooplankton
7. Demonstration of Representatives of Benthos
8. Dissection of Fish (Anatomy and Physiology)
9. Demonstration of Aquatic Organisms Kept in Aquaculture I
10. Demonstration of Aquatic Organisms Kept in Aquaculture II
11. Demonstration of Aquatic Organisms Kept in Aquaculture III

12.Diseases in Aquaculture

13.Results of student's projects: small symposium-individual presentation Part 1

14.Results of student's projects: small symposium-individual presentation Part 2

Study literature

1.FAO publications www.fao.org, especially Fishery statistics. FAO yearbook, Aquaculture production

2.G. Barnabé: Aquaculture-Biology and Ecology of Culture Species, Ellis Horwood, Paris 1991

3.Lawson,T.,B.: Fundamental of Aquaculture Engineering. Chapman & Hall,1995

4.Lellák, J., Kubíček, F.: Hydrobiologie. UK Praha, 1991, 257 s.

Core literature

1.FAO publications www.fao.org, especially Fishery statistics. FAO yearbook, Aquaculture production

2.Rana, K. and Immink, R. Trends in Global Aquaculture Production: :

<http://www.fao.org/fi/trends/aqtrends/aqtrend.asp>

3.G. Barnabé: Aquaculture-Biology and Ecology of Culture Species, Ellis Horwood, Paris 1991, p. 403

4.Welcome R. L. 2001: Inland Fisheries, Blackwell Science, FAO, p. 358

5.Lellák, J., Kubíček, F.: Hydrobiologie. UK Praha, 1991, 257 s

6.Baruš,M.,Oliva,O.: Fauna ČR a SR I a II, Academia Praha 1995, 623 s. a 698 s

7.Journal: Aquaculture Gall, G. A. E., and S. J. de Groot (Editors), Elsevier Science Publ. Co.

8.Gest editor: J.A.H. Benize, Section editor: G. Hulata: Genetics in Aquaculture, Elsevier volume 20 (3-4) 2002 s.517

9.Joseph S. Nelson, 1994: Fishes of the World, John Wiley and Sons, Inc. New York. 3rd edition. 600 pp.