



University of Sadat City
Faculty of Veterinary Medicine
Dept. of Aquatic Animal Medicine and Hygiene
(2014-2015)



Aquaculture

(815M)

MVSc COURSE SPECIFICATION

A. BASIC INFORMATION

| | |
|--|--|
| University: | University Sadat City |
| Faculty: | Veterinary Medicine |
| Program on which the course is given: | Master in Veterinary Medical Sciences (Aquatic Animal Medicine and Hygiene) |
| Department offering the Course: | Aquatic Animal Medicine and Hygiene |
| Course code: | 815M |
| Course title: | Aquaculture |
| Lecture (hr/week): | 3 |
| Practical (hr/week): | 1 |
| Course coordinator: | Dr. Mouhammed Khallaf |

B. PROFESSIONAL INFORMATION

1) Overall aims of course

Upon successful completion of the course, the student will be able to:

-) Identify and discuss the different types and principles of aquaculture.

2) Intended learning outcomes of course (ILOs)

a) KNOWLEDGE AND UNDERSTANDING

By the end of this course, the graduate should be able to:

- a.1. Recognize the basic terminology, characters and types of aquaculture.
- a.2. Describe with the etiology and risk factors of major diseases in open system aquaculture.
- a.3. Describe the methods of diagnosis of aquatic diseases commonly encountered in Egyptian fish farms as closed system aquaculture.
- a.4. List the treatment protocols for the different aquatic diseases under study as Levels of aquaculture
- a.5. Discuss the prevention and control measures of aquatic diseases.

b) INTELLECTUAL SKILLS

By the end of this course, the student should be able to:

- b.1. Diagnose clinical signs of aquatic animal distress and correlate them with the laboratory finding to reach accurate diagnosis.
- b.2. Select the most suitable and economic way of treatment and prevention of disease conditions in aquatic animals.
- b.3. Arrange the steps of control measures in case of aquatic disease out breaks on levels of aquaculture.

c) PROFESSIONAL AND PRACTICAL SKILLS

By the end of this course, the student should be able to:

- c.1. Investigate sampling, labeling and preservation of aquatic animals samples.
- c.2. Determine post mortem examination of aquatic animals
- c.3. Calculate drug doses accurately on a pond basis according to fish size intensity and severity of disease with microscopical examination of the causative agent of closed system aquaculture
- c.4. Assign different water quality parameters as ammonia, sulphate and salinity with laboratory and gram staining of levels of aquaculture
- c.5. Investigate fish samples bacteriologically and parasitologically.

d) GENERAL AND TRANSFERABLE SKILL

By the end of this course, the student should be able to:

- d.1. Plan effectively as part of a team.
- d.2. Create different resources for self-learning such as libraries, scientific periodicals, internet and various scientific associations.
- d.3. Incorporate effectively.
- d.4. Modify time perfectly.

3) Topics and contents

| Topic | No. of hours | | |
|---------------------------|--------------|-----------|-------|
| | Lectures | Practical | Total |
| Principals of aquaculture | 6 | 2 | 8 |

| | K.U (a) | I.S (b) | P.P.S (c) | G.S (d) | |
|--|----------------|----------------|------------------|----------------|------------|
| Design of aquaculture facilities | | | 9 | 3 | 12 |
| Systems of aquaculture | | | 6 | 3 | 9 |
| Freshwater aquaculture | | | 6 | 2 | 8 |
| Marine aquaculture | | | 6 | 2 | 8 |
| Integrated aquaculture | | | 6 | 2 | 8 |
| Biosecurity in aquaculture | | | 6 | 2 | 8 |
| Genetic manipulation in aquatic animals | | | 6 | 1 | 7 |
| Hatchery management | | | 6 | 2 | 8 |
| Handling and transportation of aquatic animals | | | 9 | 1 | 10 |
| Tilapia culture | | | 6 | 2 | 8 |
| Carp culture | | | 6 | 2 | 8 |
| Eel culture | | | 6 | 2 | 8 |
| Catfish culture | | | 6 | 2 | 8 |
| Mullet culture | | | 6 | 2 | 8 |
| Seabass and sea bream culture | | | 6 | 2 | 8 |
| Tunna culture | | | 6 | 2 | 8 |
| Coldwater fish culture | | | 6 | 2 | 8 |
| Crustacean aquaculture | | | 6 | 2 | 8 |
| Molluscan aquaculture | | | 6 | 2 | 8 |
| Frog culture | | | 3 | 2 | 5 |
| Crocodile and alligator culture | | | 3 | 2 | 5 |
| Total | | | 132 | 44 | 176 |

4) Teaching and learning methods

- 4.1. Lectures.
- 4.2. Practical.
- 4.3. Self-learning activities.

5) Student assessment

a. METHODS:

| | |
|--------------------------|---|
| 1- Written examination | For assessment of knowledge, back calling and Intellectual skills |
| 2- Practical examination | For assessment of practical and professional skill. |
| 3- Oral examination | For assessment of knowledge and Intellectual skills |
| 4- Student activities | For assessment of knowledge and general and transferable skills |

b. MATRIX ALIGNMENT OF THE MEASURED ILOs/ ASSESSMENTS METHODS:

| | | | | |
|--------------------|-----------|-------|-----------|-----|
| Written exam | 1,2,3,4,5 | 1,2,3 | | |
| Practical exam | | 2,3 | 1,2,3,4,5 | |
| Oral exam | 1,2,4,5 | 1,2,3 | | |
| Student activities | | | | 1-4 |

c. WEIGHT OF ASSESSMENTS:

| Assessment | Allocated Mark | Evidence |
|---------------------|----------------|---|
| Final written exam | 50% | Marked and signed written paper |
| Practical exam | 20% | Marked and signed practical exam paper |
| Oral exam | 20% | Signed list of oral exam marks |
| Student assignments | 10% | Representative samples of presented materials |

6) List of references

6.1. Essential books

-] Noga, E.J. (2010): Fish Disease: Diagnosis and Treatment. Wiley-Blackwell; 2 edition, USA.
-] Soderberg, R. W. (1994): Flowing Water Fish Culture. CRC Press, USA.
-] Tucker, J. W. (1998): Marine Fish Culture, Springer, USA.
-] McLarney, W. (1988): The Freshwater Aquaculture Book: A Handbook for Small Scale Fish Culture in North America., Hartley & Marks Publishers, USA.
-] Witman, R.N. (1982): Fish Bacteriology . 7th Ed., Upper Saddle River, New Jersey, USA.
-] Tood,J.R. (1977): Fish Health and Diseases . CAB International Wallingford, Oxon Ox10 8De, UK.
-] Amlacher,S.R. (1993):Bacterial disease diagnosis, 3rd Ed., Lea and Febiger, Philadelphia PA.
-] Michael, M.T. (1975):Crustacean diseases and management Iowa State University Press/ Ames, Iowa.

6.3. Periodicals

-] Index of fish Health and Production
-] Journal of fish disease
-] Indian journal of fish disease
-] Journal of fish bacteriology
-] Journal of virology

6.4. Web sites

-] animal-world.com/encyclo/fresh/.../Diseases.htm
-] www.fishyfarmacy.com
-] www.fishyfarmacy.com/symptoms.html

) www.aquaticcommunity.com/disease

) www.alnwadr.com/animals103

) www.fishlore.com/Disease.htm

7) Facilities required for teaching and learning

7.1 Data-show.

7.2 Network for technology transfer.

7.3 Computer.

| | Course coordinators | Head of department |
|------------------|------------------------------|------------------------------------|
| Name | Dr. Mouhammed Khallaf | Prof. Dr. Shaaban Gad Allah |
| Signature | | |

Matrix alignment of course topics and ILOs

| Topic | No. of hours /week | | Total hours | Hours for Lect. | Hours for Pract. | ILOs | | | |
|--|--------------------|--------|-------------|-----------------|------------------|-----------|---------|-----------|-----------|
| | Lect. | Pract. | | | | K.U (a) | I.S (b) | P.P.S (c) | G.T.S (d) |
| Principals of aquaculture | 3 | 1 | 8 | 6 | 2 | 1-5 | | | 1-4 |
| Design of aquaculture facilities | 3 | 1 | 12 | 9 | 3 | 2,3 | | | 1,2,3,4 |
| Systems of aquaculture | 3 | 1 | 9 | 6 | 3 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Freshwater aquaculture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Marine aquaculture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Integrated aquaculture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Biosecurity in aquaculture | 3 | 1 | 8 | 6 | 2 | 4,5 | 2,3 | 3,4 | 1,2,3,4 |
| Genetic manipulation in aquatic animals | 3 | 1 | 7 | 6 | 1 | 2,3 | 1,3 | 1,2,4 | 1,2,3,4 |
| Hatchery management | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Handling and transportation of aquatic animals | 3 | 1 | 10 | 9 | 1 | 1,2 | 1,5 | 1,2,4,5 | 1,2,3,4 |
| Tilapia culture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Carp culture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Eel culture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Catfish culture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Mullet culture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Seabass and sea bream culture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Tunna culture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Coldwater fish culture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Crustacean aquaculture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Molluscan aquaculture | 3 | 1 | 8 | 6 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Frog culture | 3 | 1 | 5 | 3 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Crocodile and alligator culture | 3 | 1 | 5 | 3 | 2 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 | 1,2,3,4 |
| Total | | | 176 | 132 | 44 | | | | |