Specification for Aquatic animals culturing and Management course 2025/2026

1-Basic information

1.	**Course title**	Aquatic Animals Diseases and Management (Aquatic animals Management and aqua culturing)							
2.	**Course code**	**507(A) I**							
3.	**Department offering the course**	Aquatic Animals Medicine							
4.	**Number of hours**	**Theoretical**	**2**	**Practical**	**2**	**Other**	**0**	**Total**	**4**
5.	**Course Type**	√ **Obligatory** **Elective**							
6.	**Level**	5th year							
7.	**Semester**	First semester							
8.	**Academic program**	Bachelor Veterinary medicine (BVM)							
9.	**Faculty**	Faculty of Veterinary Medicine							
10.	**University**	Benha University							
11.	**Name of course coordinator**	Prof. dr. Amel El Asely							
12.	**Course Specification Approval Date**	Faculty council/ 27-8-2025							
13.	**Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)**	Department council/ 5-8-2025							

2-Course overview

- **Course contents written in the program bylaw:**
  Aquatic animals biology; introduction to aquaculture; site selection, water parameters and water pollution; aquatic animals rearing facilities; stocking rate and pond productivity; aquatic animals hatcheries; fertilization and manuring of ponds; breeding and nursing of aquatic animals; integrated aquaculture; biosecurity measures at aquatic animals farms; daily routine work at aquatic animals farms; ecological diseases.

3- Intended learning outcomes of the course (ILOs):

	NARS ILOS		Course ILOS	
	Code	**Text**	**Code**	**Text**
Knowledge and	**2.2.**	Basics of normal behavior, management, breeding,	**a1**	Recognize biology of most cultured fish and shellfish species, biology of

understanding		veterinary economics and health maintenance of domestic animals, laboratory animals, poultry, and fish.		reproduction of each species and its control
			a2	Identify basis of aquaculture, history, advantage and disadvantage of fish farming.
			a3	Characterize importance of environmental aspect of site selection for aquaculture systems.
			a4	Enumerate fish and shellfish culture techniques (according to rearing facilities, availability of water, technology of production (intensification), number of cultured species and integration strategies) and advanced methods of their development.
	2.5.	Principle of welfare, production and health maintenance of food producing and pet animals, sporting animals, wildlife , poultry and fish.	**a5**	Estimate breeding and nursing of most cultured fresh, marine, ornamental fishes and shellfish species (brood stock management and hatchery processes including larval rearing, hatchery operations and management).
	2.6	Basics of nutrition and feeding practices of healthy and diseased animals.	**a6**	Recognize aquaculture managements of pond to be able to stocked, farm condition affect fish and shellfish and their products as program of fertilization and manuring, Feeding, daily routine work and harvesting.
	2.11.	The most appropriate diagnosis and differential diagnosis of animals, poultry and fish diseases	**a7**	Outline problems associated with farm and the best management practices
Intellectual skills	**4.1.**	Foster critical thinking and scientific curiosity.	**b1**	Determine the impact of aquaculture activities on the environment.
			b2	Detect appropriate rearing facilities and the most suitable species for culturing using the available data.
			b3	Interpret the collected data and synthesis creative solution for problems associated with fish and shellfish farming conditions.
	4.4.	Proficiently secure diagnostic reasoning, develop problem lists and differential diagnosis in order to deductively and critically reach the most appropriate solution (s) and management of the addressed clinical problems	**b4**	Evaluate rearing management system, integrated farming approaches, hatchery processes and create conditions for development
			b5	Analyze results of pond management assessment and identify, prioritize and generate a list of potentials needs.

			b6	Create solutions for problems associated with farm and environmental conditions
Practical skills	**3.1.**	Employ all the gained knowledge and understanding in clinical practice in a skillful pattern.	**c1**	Allocate the gained knowledge to identify species of fish and shellfish and their position in the market place.
	3.7.	Assess and advise about animal management, nutrition under conditions of health and disease, and reproductive efficiency.	**c2**	Manipulate pond and fish effectively to increase the yield production, field samples collection and processes, and use different methods to determine water quality parameters.
			c3	construct rearing cage and tanks using available materials and managing them.
	3.8.	Skillfully and appropriately gain and use new information remain current with the emerging biomedical knowledge and therapeutic options.	**c4**	Demonstrate fish, ornamental fish and shellfish breeding procedures and techniques according to standards, perform emergency care to fish and use appropriate safety procedure to protect themselves and co-workers.
	3.13.	Minimize the risk of contamination, cross infection and predisposing factors of diseases.	**c5**	Ascertain, collect, record and archive fish farm data effectively, and write a technical report.
Transferable skills	**5.1.**	Work under pressure and / or contradictory conditions	**d1**	Describe professional responsibility towards communities and create solutions for environmental condition associated with aquaculture.
	5.2.	Function in a multidisciplinary team.	**d2**	Collaborate effectively within team
	5.3.	Communicate appropriately verbally and nonverbally	**d3**	Communicate effectively with other relevant using variety of media
	5.4.	Organize and control tasks and resources.	**d4**	Effectively manage tasks and resources as well as, work in stressful environment.
	5.5.	Search for new information and technology as well as adopt life–long self learning ethics	**d5**	Search for information and demonstrate lifelong learning and self-learning in the field of Aquatic animals Management and aqua culturing.

4- Teaching and learning methods					
Lectures	√	**Discussion & seminar (self-learning)**	√	**Practical**	√
Presentation & movies	√	**Problem solving**	√	**Brain storming**	√

Others	Field trips

- Course contents:

Number of the Week	Scientific content of the course (Course Topics)	Expected number of the Learning Hours				
		Total Weekly hours	Theoretical teaching (lectures/discussion groups/ .....)	Training (Practical/ Clinical/ .....)	Self-learning (Tasks/ Assignments/ Projects/ ...)	Other
W1	Introduction to aquaculture ,soil characters and topography	**4**	**2**	**0**		**0**
	Fin Fish , crustacean and mollusks biology1		**0**	**2**		**0**
W2	- Fish rearing facilities and pond construction	**4**	**2**	**0**		**0**
	Fin Fish, crustacean and mollusks biology2		**0**	**2**		**0**
W3	Types of fish and shellfish management methods	**4**	**2**	**0**	**Formative quiz(self-learning)**	**0**
	Fin Fish, crustacean and mollusks biology3		**0**	**2**		**0**
W4	Types of fish and shellfish management methods	**4**	**2**	**0**		**0**
	Differentiation between Fish cultured spp.1		**0**	**2**		**0**
W5	Routine work in the farm	**4**	**2**	**0**		**0**
	Differentiation between Fish cultured spp.2		**0**	**2**		**0**
W6	Fertilization and manuring of fish pond and Intergraded fish farming	**4**	**2**	**0**	**Formative quiz(self-learning)**	**0**
	Determination of Water parameters and the relevant adverse conditions		**0**	**2**		**0**
W7	**Semester works and Mid-term exam**					
W8	Breeding and nursing of common and Chinese carp	**4**	**2**	**0**		**0**
	Breeding and nursing of cultured fish and shellfish. 1		**0**	**2**		**0**

W9	Breeding and nursing of tilapia	**4**	**2**	**0**	**Formative quiz(self-learning)**	**0**
	Breeding and nursing of cultured fish and shellfish. 2		**0**	**2**		**0**
W10	Breeding and nursing of African catfish**.**	**4**	**2**	**0**		**0**
	Breeding and nursing of cultured fish and shellfish. 3		**0**	**2**		**0**
W11	An introduction on ornamental fishes, breeding and nursing	**4**	**2**	**0**		**0**
	Routine work in the farm, determination of Water parameters and the relevant adverse conditions 1		**0**	**2**		**0**
W12	Breeding and nursing of marine fishes	**4**	**2**	**0**	**Formative quiz(self-learning)**	**0**
	Routine work in the farm, determination of Water parameters and the relevant adverse conditions 2		**0**	**2**		**0**
W13	Breeding and nursing of crustaceans	**4**	**2**	**0**		**0**
	Stocking density and pond productivity 1		**0**	**2**		**0**
W14	Climatic changes and environmental impacts on aquaculture	**4**	**2**	**0**		**0**
	Stocking density and pond productivity 2		**0**	**2**		**0**
W15	**Practical exam**					

5- Assessment timing and grading:

a- Assessment methods (summative and formative)

1. **Formative assessment**: including (weekly quizzes, homework assignments and surveys).
2. **Summative assessment** including (quizzes, class activates, Mid-term exam, practical exam, oral exams and final written exams).

b- Assessment schedule and weight

Assessment method	Timing	Grade	Percent
Mid-term exam	7th week	15	15%
Formative assessment	Throughout semester	-	-
Practical exam	15th week	20	20%
oral exam	End of semester	15	15%
Written exam	End of semester	50	50%
Total		100	100

6- Learning resources and supportive facilities:

Learning resources	**Main reference**	**Student handbook**
	Essential books (text books)	• John F. Morrissey (2018) Introduction to the biology of marine life . • Arvind N.Shukla (2009) Behaviour of Fishes • Lucas and Southgate (2003), Aquaculture farming aquatic animals and plants. a black well publishing LTD, UK. • Little D.C. and Edwards (2003) integrated livestock- fish farming systems, FAO. • B.R. Silvamani (2008). Freshwater fish farming. • Robert Stinckey (2005). Aquaculture: An introductory text.
	Periodicals, Web sites, . . . etc	• J www.elsevier. Com/locate/ aquaculture • Benha veterinary medical journal • www.ekb.eg
	Learning platform	Thinqi
Supportive facilities	**Devices & instruments**	As listing in device guideline
		• Well equipped Laboratory. • Data show and Computers • Equipped lecture hall • Glass jars contained preserved fishes as spots. • Alive Fishes, Data show • Pictures, posters and color plates.

Matrices:

A- Content and ILOs matrix:

Topics	a) Knowledge and understanding	b) Intellectual skills	c) Professional & Practical	d) General & Transferable

			skills	skills
1- Fin Fish , crustacean and mollusks biology	**a1**	**b1,b2**	**c1,c2**	**d1,d2,d4**
2- Introduction to aquaculture ,soil characters and topography	**a1,a2,a3**	**b1,b2**		**d5,d5**
3- Fish rearing facilities and pond construction	**a2**	**b1, b2,b4**		**d1,d2,d4,d5**
4-Types of fish and shellfish management methods	**a4**	**b4,b5,b6**		**d5**
5- Determination of Water parameters and the relevant adverse conditions	**a2,a7**	**b4**	**c2,c4,c5**	**d1,d2,d3,d4,d5**
6- Differentiation between Fish cultured spp and shellfish.	**a1**	**b2**	**c1,c2**	**d1,d2,d3,d4,d5**
7- Breeding and nursing of cultured freshwater fishes	**a4,a4,a6**	**b2,b3,b4**	**c2,c4**	**d1,d2,d3,d4,d5**
8-Breeding and nursing of shellfish.	**a4,a4,a6**	**b2,b3,b4**	**c2,c4**	**d1,d2,d3,d4,d5**
9- Breeding and nursing of cultured marine water fishes.	**a4,a4,a6**	**b2,b3,b4**	**c2,c4**	**d1,d2,d3,d4,d5**
10- An introduction on ornamental fishes, breeding and nursing	**a1,a2,a4**	**b1,b2,b3**	**c1,c4**	**d1,d2,d3,d4,d5**
11- Fertilization and manuring of fish pond and Intergraded fish farming	**a4 , a6,a7**	**b1,b4,b5,b6**		**d1,d2 ,d4**
12- Routine work in the farm	**a2,a6,a7**	**B3,b5,b6**	**c2,c5**	**d1,d2, ,d4,d5**
13- Stocking density and pond productivity	**a4,a6**	**b3**	**c2,c4**	**d1,d2, d4**
14- Climatic changes and environmental impacts on aquaculture	**a1,a2,a3**	**b1,b2**		**d5**

B- Teaching and learning methods and ILOs matrix:

Course ILOs		Teaching and Learning methods						
		L	P&M	D&s	P(TPL)	Ps	Bs	FTP
Knowledge & understanding	a1	√	√	√			√	
	a2	√	√	√			√	
	a3	√	√	√			√	
	a4	√	√	√			√	
	a5	√	√	√			√	
	a6	√	√	√			√	
	a7	√	√	√			√	
Intellectual skills	b1	√	√	√		√	√	√
	b2	√	√	√		√	√	√
	b3	√	√	√		√	√	√
	b4	√	√	√		√	√	√
	b5	√	√	√		√	√	√
	b6	√	√	√		√	√	√
Professional and practical skills	c1		√	√	√	√		√
	c2		√	√	√	√		√
	c3		√	√	√	√		√
	c4		√	√	√	√		√
	c5		√	√	√	√		√
General skills	d1	√		√		√		√
	d2	√		√	√			√
	d3			√	√			√
	d4	√		√		√		√
	d5	√		√		√		√

L: Lecture**, P&M:** Presentations & Movies**, D&S:** Discussions & Seminars (self-learning), **P(TPL):** Practical, **Ps:** Problem solving, **Bs:** Brain storming**, FTP:** field trip, Training, Project

C- Assessment methods and ILOs matrix:

Course ILOs		Assessment method				
		Formative assessment	Mid-term exam	Oral	Practical	Written
Knowledge & understanding	a1	√	√	√		√
	a2	√	√	√		√
	a3	√	√	√		√
	a4	√	√	√		√
	a5	√	√	√		√
	a6	√	√	√		√
	a7	√	√	√		√
Intellectual skills	b1	√	√	√		√
	b2	√	√	√		√
	b3	√	√	√		√
	b4	√	√	√		√

	b5	√	√	√		√
	b6	√	√	√		√
Professional and practical skills	**c1**	√			√	
	c2	√			√	
	c3	√			√	
	c4	√			√	
	c5	√			√	
General skills	**d1**	√				
	d2	√				
	d3	√		√		
	d4	√				
	d5	√				

Name and Signature
Course Coordinator

Prof. Dr. Amel El Asely

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