PROGRAMME SPECIFICATIONS
Diploma of Fishdiseases and managemen

University: Beni-Suef
Faculty: veterinary medicine
A- Administrative Information
1. Programme title: Diploma of Vet. Med. Sciences (Diploma of Fishdiseases and management)
2. Award/degree: Diploma
3. Department responsible: Department of Fish Diseases and Management
4. Coordinator:
5. External evaluator(s): Ismail Abdel-MoniumEssa (professor of fish diseases and management-Suez Canal University.
6. Date of most recent approval of programme specification by the Faculty Council:

B- Professional Information
1. Programme aims: The Diploma program support the postgraduate student ability to:
1.1. Enhancement of Knowledge related to fish diseases & management with respect to problems definition and solutionssuggestionsto them.
1.2. Mastering the skills of diagnosis and treatment of fish diseases by using suitable technological techniques.
1.3. Development of communication, making decisions and leadership skills for diagnosis and treatment of fish diseases & managementin the light of available information.
1.4. Increase the awareness of his role in community development, maintenance of the environment and using available resources efficiently.

2. Intended learning outcomes (ILOs) for programme
a- Knowledge and understanding:
By the end of the Diploma program, the postgraduate must be able to:
a.1.Outline the basic theories and specialized knowledge in the field of fish diseases & management.
a.2. Improve moral , legal, basics of quality in professional practice principles in the field of fish diseases & management.
a.3.Master the professional practice of diagnosing and treating of fish diseases on the environment and act on its maintenance.

b- Intellectual skills

By the end of the Diploma program, the postgraduate must be able to:

b.1.Identify , analyze and solve problems in the field of fish diseases & management and arrange them according to their priority.
b.2.Practice the analytical reading of researches and topics related to fish diseases & management.
b.3.Do risk assessment of professional practice in the field of diagnosis and treatment of fish diseases.
b.4.Make decisions associated with fish diseases & management in the light of available knowledge.

c- Professional and practical skills

By the end of the Diploma program, the postgraduate must be able to:

c.1.Apply professional skills in the field of fish diseases & management.
c.2.Write reports on the results of the examination and analysis in fish diseases & management

d- General and transferable skills

By the end of the Diploma program, the postgraduate must be able to:

d.1.Practice different kinds of effective communication.
d.2.Use information technology to serve the development of the practice of diagnosis & treatment of fish diseases.
d.3.Apply self-assessment and identify personal learning needs.
d.4.Use different sources for obtaining information and knowledge.
d.5.Lead and work in a teamfor diagnosis and treatment of fish diseases.
d.6.Practice continuous self- learning.

3- Academic standards

* The faculty mission, vision and strategic objective are confirmed to the academic standard. The learning outcomes are online with the department and the faculty mission.
* Postgraduates NARS (February 2009) Diploma degree chapter issued by national authority for quality assurance and accreditation of education (NAQAAE) and Veterinary medicine post graduate academic standards (ARS) for the faculty of veterinary medicine, BeniSuef University, BeniSuef, Egypt are selected to confirm the appropriateness of the academic standards .

4 – Curriculum structure and content.

5.1) Programme duration: 1years
5.2) Programme structure:

Title	Lecture	Practical	Total
1-fish pathology	2	1	3
2-management and feeding of fish	2	2	4
3-fish microbiology	1	1	2
4-fish parasitology	1	1	2
5- fish diseases	1	2	3
6- fish physiology	1	1	2

5- Programme – course ILOS Matrix

Title	Hours	Knowl-edge and Unders tandin g	Intell ectua l Skills	Practic al and Profess ional Skills	Genera l & Transf erable Skills	Hours	Know ledge and Unde rstan ding	Intellec -tual Skills	Practical and Profession -al Skills	General & Transfer -able Skills	hours	
1- **Introduction, stress & its relation to diseases in fish**		1	2	3	1		1	2	3	1		
2- **Parasitic diseases of fish**	6	**X**	**X**			6	**X**	**X**			6	
3- **Bacterial diseases of fish**	38			**X**	**X**	38			**X**	**X**	38	
4-**Mycotic diseases of fish**	34			**X**	**X**	34			**X**	**X**	34	
5- **Viral of fish**	14			**X**	**X**	14			**X**	**X**	14	
6- **Non infectious diseases of fish**	26			**X**	**X**	26			**X**	**X**	26	
7- **Students activities** **- Collect fish specimens.** **-Writing assays.** **Farm visit**	38		**X**	**X**	**X**	38		**X**	**X**	**X**	38	

6. Program aims – ILOS Matrix for the Diploma program (DVSc) مصفوفة اهداف البرنامج مع مخرجات التعلم المستهدفة

Program aims		Program aims			
Program ILOS		1.1. Enhancement of Knowledge related to fish diseases & management with respect to problems definition and solutions suggestions to them.	1.2. Mastering the skills of diagnosis and treatment of fish diseases by using suitable technological techniques.	1.3. Development of communication, making decisions and leadership skills for diagnosis and treatment of fish diseases & management in the light of available information.	1.4. Increase the awareness of his role in community development, maintenance of the environment and using available resources efficiently.
Knowledge and understanding	a.1.Outline the basic theories and specialized knowledge in the field of fish diseases & management.	√			
	a.2.Improve moral , legal, basics of quality in professional practice principles in the field of fish diseases & management.				√
	a.3. Master the professional practice of diagnosing and treating of fish diseases on the environment and act on its maintenance.		√	√	
	a.4.Increase the awareness of his role in community development, maintenance of the environment and using available resources efficiently.				√
Intellectual skills	b.1.Identify , analyze and solve	√	√	√	

	problems in the field of fish diseases & management and arrange them according to their priority.				
	b.2.Practice the analytical reading of researches and topics related to fish diseases & management.	√			
	b.3.Do risk assessment of professional practice in the field of diagnosis and treatment of fish diseases		√	√	
	b.4.Make decisions associated with fish diseases & management in the light of available knowledge body.				√
Practical and professional skills	c.1.Apply professional skills in the field of fish diseases & management.		√	√	
	c.2 Write reports on the results of the examination and analysis in fish diseases & management .			√	
General and transferable skills	d.1.Practice different kinds of effective communication.			√	√
	d.2.Use information technology to serve the development of the practice of diagnosis & treatment of fish diseases.		√	√	
	d.3.Apply self-				

	assessment and identify personal learning needs. .				√
	d.4.Use different sources for obtaining information and knowledge.	√			
	d.5.Lead and work in a team for diagnosis and treatment of fish diseases.			√	√
	d.6.Practice continuous self-learning.			√	√

7- **Programme admission requirement:**

1- Obtaining a bachelor degree in veterinary medicine sciences from one of the Egyptian universities or equivalent degree from another recognized scientific institute with any grade

2- The bachelor degree must be obtained at least one year prior to registration

3- The applicant must have regular attendance in his courses according to the schedule of the faculty.

4- Registration will be during September of each year.

8 - Regulations for progression and programme completion.

1- Registration period is one year for diploma and the applicant not exceed a period of registration for two year.

2- The examinations of the diploma are 2 times / year in December & April.

3- The faculty council has the right to deprive the applicant from the exam if his attendance courses are less than 75%.

4- in case of failure, the exams will be hold 2 times / year and reexamination in all courses each time.

9-System of examination for postgraduate studies as follow:

 Time of written exams, 3 hours for each curriculum have 3 hours or more for theoretical / practical hours/ week. If the curriculum less than 3 hours / week, the time of ex. is 2 hours only.

 The final degree of each curriculum which have 3 hours (theoretical & practical) per week is 100 & less than 3 hours 50 degree & divided into 50 % for written ex. and 50 % for practicle and oral ex.

10-Grades of graduation are as follow:

Excellent	**> 90**
Very good	**> 80**
Good	**>70**
Pass	**>60**
Failed	**45 to less than 60 weak**
	Less than 45 very weak

The programme specification should have attached to it all course specifications listed in the matrix.

Programme coordinator:
Name: Dr. Mortada Mohamed Abdel-Hamid Hussein
Signature..... Date

Head of the Department: Prof. Dr. Manal Adel Ahmed Essa
Name: ……
Signature..... Date ,

Beni-Suef University
Faculty of Veterinary Medicine

Course specification

A- Administrative Information:

Course Code:	
Course title :	Microbiology of Fish
Program title:	Diploma of Fish Diseases
Contact hours/ week	2 hours per week (1hr lecture and 1hr practical).
Date of course approval:	

B-Professional information

1- Overall aims of course:

Overall aims of course:

This course aims to:

1- Recognize the requirements for the growth of different fish pathogens.

2- Enumerate the bacterial and viral agents causing diseases and/or outbreaks in fishes.

3- Elicit the molecular genetics of bacterial and viral fish pathogens.

5- Identify different fish bacterial pathogens, detecting their virulence factors and antimicrobial resistance genes.

6- Diagnose different fish bacterial and viral infections by conventional and advanced techniques.

7- Find solutions for the problems concerning with different fish bacterial and viral affections and prevent the spread of the infection in aquaculture and human food (fish origin).

2- Intended learning outcomes of course (ILOs)

a-Knowledge and understanding:

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

a1-Isolate bacterial and viral fish pathogens using specific media.

a2-Enumerate the by-products of bacterial fish pathogens.
a3. Detect the antigenic structure of bacterial and viral fish pathogens.
a4- Elicit the molecular genetics of bacterial and viral fish pathogens.
a5- Recognize the factors associated with the virulence of fish pathogens, its exaltation and attenuation.
a6- Describe how genetic characters of fish bacteria could be expressed, transferred and changed.
a7-Conclude factors leading to fish bacterial pathogens resistance & virulence.
a8- List the extensively updated immunologic laboratory tests and new methods aid in rapid clinical diagnosis.

b-Intellectual skills:

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

b1- Diagnose different bacterial and viral fish diseases.
b2- Assess the infective potential of environmental materials to prevent the spread of the infection in the aquaculture and food of fish origin.
b3- Suggest the solutions of the problems concerning with different fish bacterial and viral affections.

c-Professional and practical skills

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

c1- Collect the suitable specimens at the suitable time from fishes for bacteriologicaland virologicalexamination.
c2- Identify the causative microorganism depending on morphological, cultural and biochemical characters as well as serology.
c3- Determine the sensitivities of infected organism to antimicrobial drugs.
c4-Design control program for microbial diseases of fish .

d-General and transferable skills

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

d1- Work in a teamwork and manage time.
d2- use the internet to get information.
d3- Exhibits the sense of beauty and neatness.

3-Topics and contents

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Course	Topic	No. of hours	Lectures	Practical
	General bacteriology (morphology, anatomy , virulence factors, and bacterial growth)	12	12	-
	Sampling and cultivation of bacteria	2		2
	Biochemical identification	4	-	4
	Serological tests	4	-	4
	Antimicrobial susceptibility	2	-	2
Bacteriology 2hours/week (Lec. 1hr/wk, Pr1hr/wk) Systematic Bacteriology	-Gram positive cocci: Staphylococcus epidermidis – Streptococcus spp.	2	1	1
	- Anaerobic pathogens: Clostridium botulinum, Eubacteriumtarantellus	2	1	1
	-Aerobic Gram positive rods: Mycobacterium spp. – Renibacteriumsalmoninarum	2	1	1
	-Enterobacteriaceae: Edwardsiellaictaluri – E. tarda – Yersinia ruckeri	4	2	2
	Gram negative pigmented rods characterization of the disease conditions	2	1	1
	Pseudomonads : P. anguilliseptica – P. fluorescens	2	1	1
	Vibrios: V. anguillarum (Listonellaanguillarum) – V. damsel – V. ordalii V. vulnificus	2	1	1
	-Aeromonads: Aeromonassalmonicida, Motile aeromonads	2	1	1
	Diagnosis of Bacterial fish pathogens	6	3	3
Systemic virology	Birna viruses (infectious pancreatic necrosis and associated aquatic Birna viruses	4	4	-
	Rhabdo viruses Infectious haematopiotic necrosis virus Viral haemorrhagic septicemia)- Spring viraemia virus of carp	4	4	-
	Herpes viruses (cyprinid herpes virus	2	2	-

	Vaccination against fish viral disease	2	2	
Diagnostic virology	Isolation of fish viruses	4	-	4
	Serological identification of fish viruses (ELISA-IFA-AGPT_SNT)	4	-	4
	Molecular identification of fish viruses(Nucleic acid extraction _amplification techniques –Agarose gel electrophoresis)	4	-	4
Total		**72**	**36**	**36**

4-Teaching and learning methods

5.1- Lectures (brain storming, discussion) using board and data shows.

5.2- Self learning Electronic learning, Presentations, Essays or Seminars by scientific search on related websites, international, national and local journals, related books in faculty library.

5.3- Practical sections.

- Microscopical and colonial examination of microorganisms.
- Antimicrobial sensitivity testing.
- -serological tests for virus identification
- -Basis of molecular diagnostic virology

5.4- Field visits: Visits to diagnostic and references lab and aquariums.

5-Student assessment

5.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	**I.S**	**P&P.S**	**G.S**
Final Exam	**a1 to a7(all)**	**b1to b3 (all)**	**c1, c4**	
Practical Exam	**a1, a2, a3, a7**	**b1to b3 (all)**	**c1, c2, c3, c4**	

Oral Exam	**a1 to a8 (all)**	**b1 tob3 (all)**	**c1 to c4 (all)**	**d3**

5.2. Assessment schedules/semester:

Method	Week(s)
Practical exams	45-48
Final exams	45-48
Oral Exams	45-48

5.3. Weight of assessments:

Assessment	Weight of assessment
writing exam	50%
practical exam	25%
Final exam	25%
Total	100%

6- List of references

6.1. Notes and books:

Departmental notes on:

6.1.1- Notes on Bacteriology, Mycology and Immunology.

6.1.2- Notes on Practical Bacteriology, Mycology and Immunology.

6.1.3- Notes on Veterinary Microbiology.

6.1.4-.3- Notes on Veterinary virology

6.2. Essential books:

6.2.1. Bacterial Fish Pathogens Diseases of Farmed and Wild Fish. 4th E.Brian**Austin** and Dawn **Austin**;Praxis Publishing, Chichester, UK **2007**

6.2.2. Fish Diseases and Disorders Volume 3 Viral, Bacterial and Fungal Infections. P.T.K. **Woo** and D.W. **Bruo**. CABI Publishing Suite New York , USA **1998**.

6.2.3.Bergey's Manual of Systematic Bacteriology, 4th Edition Noel R. Krieg, John G. Holt, and Murray R. G. E. 1984.

6.2.4. Prescott, Harley and Klein's Microbiology. J. M. Willey, L. M. Sherwood, and C. J. Woolverton – 17th Ed., International Edition, 2008,

McGraw Hill
6.2.5.Bergey's Manual of Determinative Bacteriology, 9th Edition John G. Holt, 1993

6.2.6. Diagnostic Microbiology, 2nd Edition 2000 Connie R. Mahon and George Manuselis.

6.3. Recommended textbooks:

6.3.1- Clinical Veterinary Microbiology, P.J. Quinn, M.E. Carter, B. Markey and G.R. Carter, 6th Editio2004

6.3.2- Veterinary Microbiology, Dwight C. Hirsh and Yuan Ghung Zee, 1999

6.3.3- Medical Microbiology, R. Cruickshank 1986.

6.3.4- Mackie and McCartney Medical Microbiology, 14thEd. 1992 (J. P. Duguid, B.P. Marmion and R. H. A. Swain).

6.3.5- Medical Mycology, 1992 K. J. Kwon-Chung and John E. Bennett.

6.3.9- Topley& Wilson microbiology and microbial infections, 9th Ed.

6.4. Journals, Websites ……..etc

Journal of Bacteriology
Microbiology
Microbiology and Immunology
Journal of Microbiology, Immunology and Infection
BMC Microbiology
Brazilian Journal of Microbiology
Microbiology and Molecular Biology Reviews
Internet Journal of Microbiology
Polish Journal of Microbiology
Journal of Microbiology and Biotechnology
African Journal of Microbiology Research
International Journal of Microbiology

Websites

http://www.sciencedirect.com.
http://www.Pubmed.

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http://www.AltaVista.
http://www.cellsalive.com.
http://www.textbook of bacteriology.net.

Course Coordinators

Dr. Hala Sayed Hassan
Ass. Prof. of Bacteriology, Mycology Immunology, Faculty of Veterinary Medicine,
Beni-Suef University

Dr. Ahmed Saad mostafa
Ass. Prof. of Virology, Faculty of Veterinary Medicine, Beni-Suef University

Head of Department

Prof. Dr. Ismail Abd El-Hafeez Radwan
Professor and Head of Bacteriology, Mycology and Immunology department, Faculty of Veterinary Medicine,
Beni-Suef University

Prof Dr. Sabry Mohamed Tamam
Professor and Head of Virology department, Faculty of Veterinary Medicine, Beni-Suef University

Beni-Suef University
Faculty of Veterinary Medicine

Topic		Week	Intended learning outcomes of course (ILOs)			
			K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
General Bacteriology	General bacteriology (morphology, anatomy , virulence factors, and bacterial growth)	1st w-12th w	1,2,3,5,7	1,3	1	1,2,3
	Sampling and cultivation of bacteria	1st w-2nd w	1,3	1,2	1	
	Biochemical identification	3rd w-6th w	3,4	1	2	
	Serological tests	7th w-10th w	8	1	2	
	Antimicrobial susceptibility	11th w-12th w	8	1	3	
Systematic Bacteriology	-Gram positive cocci: Staphylococcus epidermidis – Streptococcus spp.	13th w	1,2,3,4,5,6,7	1,2,3	1,2,3,4	1,2,3
	- Anaerobic pathogens: Clostridium botulinum, Eubacteriumtarantellus	14th w	1,2,3,4,5,6,7	1,2,3	1,2,3,4	
	-Aerobic Gram positive rods: Mycobacterium spp. – Renibacteriumsalmoninarum	15th w	1,2,3,4,5,6,7	1,2,3	1,2,3,4	
	-Enterobacteriaceae: Edwardsiellaictaluri – E. tarda – Yersinia ruckeri	16th w-17th w	1,2,3,4,5,6,7	1,2,3	1,2,3,4	
	Gram negative pigmented rods characterization of the disease conditions	18th w	1,2,3,4,5,6,7	1,2,3	1,2,3,4	
	Pseudomonads : P. anguilliseptica – P. fluorescens	19th w	1,2,3,4,5,6,7	1,2,3	1,2,3,4	
	Vibrios: V. anguillarum (Listonellaanguillarum) – V. damsel – V. ordalii V. vulnificus	20th w	1,2,3,4,5,6,7	1,2,3	1,2,3,4	
	-Aeromonads: Aeromonassalmonicida, Motile aeromonads	21st w	1,2,3,4,5,6,7	1,2,3	1,2,3,4	
	Diagnosis of Bacterial fish pathogens	22nd -24th w	1,2,3,4,5,6,7	1,2,3	1,2,3,4	
Systemic virology	Birna viruses (infectious pancreatic necrosis and associated aquatic Birna viruses	25nd -28th w	3,4,8	,3	3	1,2,3
	Rhabdo viruses Infectious haematopiotic necrosis virus Viral haemorrhagic septicemia)- Spring viraemia virus of carp	29th w-32nd w	3,4,8	,3	3	1,2,3

	Herpes viruses (cyprinid herpes virus)	33rd w-34th w	3,4,8	3	3	1,2,3
	Vaccination against fish viral disease	35th w-36th w	8	1,2,3	3	1,2,3
Diagnostic virology	Isolation of fish viruses	25th w-28th w	1,4,8	1,2	1,2	1,2,3
	Serological identification of fish viruses (ELISA-IFA-AGPT_SNT)	29th w-32nd w	1,4,8	1,2	1,2	1,2,3
	Molecular identification of fish viruses(Nucleic acid extraction _amplification techniques –Agaros gel electrophoresis)	33rd w-36th w	1,4,8	1,2	1,2	1,2,3

National Authority For Quality Assurance and Accreditation of Education

Beni-Suef University
Faculty of Veterinary Medicine
Department of Nutrition and Clinical Nutrition
Course Specification

1- Basic information:		
Code No.: D8-B	Course title: fish husbandry and nutrition	Academic Year: 1st
Teaching Hours: Lecture: 2 Practical: 2 Total: 4		Specialization: Postgraduate Diploma of fish diseases and husbandry

2- Overall aims of the Course:

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

- Apply acquired scientific knowledge in the field of fish nutritional requirements.
- Detect the current problems related to fish nutrition.
- Apply all professional skills and use the appropriate technological means in diagnosis of deficiency disorders in fish.
- Communicate effectively and lead teamwork efficiently.
- Take decisions using the available information.
- Effectively use the available facilities and resources.
- Aware of his/her role in community development and environmental conservation regarding diseases of wild and migratory birds and risks they carry to domestic birds.
- Commit the moral and legal rules of handling wild and migratory birds.
- Aware of the importance of self development and continuous learning in the field of ration formulation and full calculation of requirements.
- Summarize nutritional concepts and fish feeding.
- Recognize aspects of clinical nutrition and how to solve problems.

3- Intended Learning Outcomes:

a- Knowledge and Understanding

By successful completion of the course, the student should be able to:

a1. Knowing information about technical terms related to fish nutrition and feeding.

a2. Outline specialized theories and knowledge in the field of wild fish nutrition and related sciences.

a3. Identify the legal and moral rules in practices selection of suitable and economic feeding programs.

a4. Understand different nutritional factors when handling fish rations.

A5.Underline the role of his/her professional practices in community

development and environmental conservation.
A6. Recognize essentiality of all nutrients and importance of fish nutrition, nutritional problems and suggest solutions.
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b- Intellectual Skills

By successful completion of the course, the student should be able to:
b1. Detect and analyze problems related to or caused by fish under nutrition and arrange them according to their priorities.
b2. Suggest the appropriate solutions for field problems in the area of fish nutrition.
b3. Make scientific reading and analysis of research papers and topics related to fish feeding.
b4. Asses di erent nutritional factors for each practice related to feeding fish.
b5. Take decisions using the available information.
b6. Plan for diagnostic scheme for disorders related to fish nutrition.

c- Professional and Practical Skills:

By successful completion of the course, the student should be able to:
c1. Apply different professional skills and techniques in identification of the fish feedstuffs and different ration combinations.
c2. Describe the nutritional problems based on the performance inspection and ration examination.
C3. Perform complete physical and chemical analysis; prepare a sheet for complete evaluation of fish diets and write report.

d- General and Transferable Skills:

By successful completion of the course, the student should be able to:
d1. Communicate effectively using different means.
d2. Properly use the information technologies for development of his/her professional abilities.
d3. Assess him/her to learn how to detect his/her learning requirements.
d4. Use different facilities for gaining knowledge and information.
d5. Learn how to work effectively as part of a team and properly manage the time.
d6. Lead teamwork e ectively.
d7. Understand the signi cance and means of continuous self learning.

4- Course Contents:

Week	Course description	Total (hr)	Lectures (hr)	Practical (hr)
1-6	**Course description** **Introduction- Body composition ands its food** **- Water requirements and its metabolism** **- Carbohydrates and its metabolism**	12	12	-

	- Protein and its metabolism **- Lipids and its metabolism.** **- Minerals and its metabolism** **Macroelements** **Microelements** **- Vitamins and health** **Fat soluble** **Water soluble**			
7-12	**Feeding standards and nutritional requirements for:** **-maintenance** **-growth** **-fattening** **-reproduction and lactation**	12	12	-
13-16	**-Feeding fish** **-Nutritional requirements**	8	8	-
17-26	**- feed intake and factors affecting** **-digestion and digesibility**	20	20	-
27-29	**- Ration formulation programs**	6	6	-
30-31	**- Fish feeds evaluation and safety (factors affecting evaluation and interpretation of results).**	4	4	-
32-33	**- Feed processing**	4	4	-
34-36	**- Feed additives used in fish feed**	6	6	-
1-5	**- Feedstuffs classification, examination and evaluation.**	10	-	10
6-7	**- Microscopical inspection**	4	-	4
8-10	**- Physical inspection of feeds with results interpretation.**	6	-	6
9-12	**- Nutrition terminology -**	12	-	12
13-15	- Carbonaceous concentrates	6	-	6
15-18	- Plant protein conc.	8	-	8
18-21	**- Deleterious factors**	8	-	8
21-24	**- Animal protein conc.**	8	-	8
22-25	**- Deleterious factors**	8	-	8
26-29	**- Application of ration formulation**	8	-	8
30-33	**- Quality control of fish feed**	8	-	8
34-36	**Contaminants of fish feed and safety management -**	8	-	8
	Student activities: - **Writing assays** - **Internet search**	-	-	-
	Total	144	72	72

5- Teaching and Learning Methods:	• **Lectures:** Depends on the sharing efforts of the students and supported with macromedia and multimedia aids. • **Practical sections:** - Identification of feedstuffs and their evaluation. - Laboratory feed inspection and chemical analysis. - Requirements calculation and ration formulation.. - Antimicrobial sensitivity testing. • **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library. • **Assays and reviews** • **Discussion groups**
6- Teaching and Learning Methods for Handicapped:	**Not applicable**

7- Students assessment:

Methods of assessments:	Schedule	Weighing (degrees)	Intended learning outcomes
a) **Written exam** by the end of 1st year	**Week: 37, 38, 39**	**50**	**a1 to a6 b1 to b6**
b) **Practical exam** by the end of 1st year	**Week: 36**	**30**	**a1 to a6 b1 to b6 c1 to c3**
c) **Oral exam** by the end of 1st year	**Week: 37, 38, 39**	**20**	**a1 to a6 b1 to b6 c1 to c3 d1 to d7**

8- List of References:

a- Course notes:	**Textbook of Fish Nutrition – part 1** **Practical of feedstuffs and ration formulation – part 1** **Textbook of Fish Nutrition – part 2**

	Practical of feedstuffs and ration formulation – part 2 **Notes on fish nutrition and requirements** **Textbook of Human Nutrition and Animal Byproducts.**
b- Essential books:	**a- McDonald, P.,R.A .Edwards and J.F.D. Greenhalgh (1987), Animal Nutrition, 4th edition .** **b- Cheeke , P.R.(1991): Applied Animal Nutrition, Feeds and Feeding.** **C- Pond, W. G., D.C. Church, and K .R. Pond (1995): Basic Animal Nutrition and Feeding, 4th edition.** **d- Gillespie, J.R.(1987): Animal Nutrition and Feeding.** **e- Church, D .C. (1991): Livestock Feeds and Feeding 3rd edition.**
c- Recommended books	**a- Cheeke, P.R. (1987): Rabbit Feeding and Nutrition.** **b- National Research Council (1988): Nutrient Requirements of Dairy Cattle, 6th rev .ed. Washington, D.C.: National Academy of Sciences.** **c- National Research Council (1985): Nutrient Requirements of Sheep, 6th rev. ed. Washington, D.C.: National Academy of Sciences.** **d- National Research Council (1996): Nutrient Requirements of Beef cattle, 7th rev. ed. Washington, D.C.: National Academy of Sciences.** **e- Frappe, D. (1998): Equine Nutrition And Feeding .2nd ed.**
d- Periodicals, websites,…….etc	Journals **- Journal of Nutrition** **- journal of aquarium** **-Journal of Animal Science** **-Journal of Agriculture Science** **-Nutrition Abstracts and Reviews** **-Journal of Poultry Science** **-Journal of small ruminant Nutrition** **-Veterinary Record** **-Journal of Dairy Science** **-American Journal of veterinary research** **- Research on veterinary Science** **- Web sites:-** **- www.google.com -www. FAO - www.Sciencedirect.com**

	- www. Net veterinary resources - Agricultural sites – www. Veterinary and agricultural web resources, livestock and poultry

The programme specification was discussed and assigned in the department council in: /2016

Course Coordinator **Head of Department**

Name: Dr. Ibrahim M. Ibrahim **Prof. Dr. Elham Saleh**
Sig. :

Date :

National Authority For Quality Assurance and Accreditation of Education

Beni-Suef University
Faculty of Veterinary Medicine
Department of Nutrition and Clinical Nutrition

Course title : fish husbandry and nutrition
Course code: D8-B

Course Matrix for Achievement of Intended Learning Outcomes

Topics		Wk	Knowledge and Understanding	Intellectual Skills	Practical and Professional Skills	General & Transferable Skills
1	**Course description** **Introduction- fish body composition ands its food** **- Water requirements and its metabolism** **- Carbohydrates and its metabolism** **- Protein and its metabolism** **- Lipids and its metabolism.** **- Minerals and its metabolism** **Macroelements** **Microelements** **- Vitamins and health** **Fat soluble** **Water soluble**	**1-6**	a1, a2, a3, a6	b1,b2,b3,b4,b6	-	d1, d2
2	**Feeding standards and nutritional requirements for:** **-maintenance** **-growth** **-fattening** **-reproduction**	**7-12**	a1, a2, a3	b1,b2,b3,b4	-	d1, d2
3	**-Feeding fish** **-Nutritional requirements**	**13-16**	a1, a2, a3, a6	b1,b2,b3,b4,b6	-	d1, d2, d3
4	**- feed intake and factors affecting** **- digestion and digestibility-**	**17-26**	a1, a2, a3	b1,b2,b3,b4	-	d1, d2, d3
5	**- Ration formulation programs**	**27-29**	a1, a2, a3, a6	b1,b2,b3,b4,b6	-	d3, d4, d5
6	**- Fish feeds evaluation and safety (factors affecting evaluation and interpretation of results).**	**30-31**	a1, a2, a3, a6	b1,b2,b3,b4	-	d2, d3, d4, d5
7	**- Feed processing**	**32-33**	a1, a2, a3, a6	b1,b2,b3,b4,b6	-	d3, d4, d5

8	**- Feed additives used in fish feed**	**34-36**	**a1, a2, a3, a6**	**b1,b2,b3,b4,b6**	-	**d3, d4, d5,d6**
9	- **Feedstuffs classification, examination and evaluation.**	**1-5**	**a4, a5, a6**	**b1, b2, b5**	**c1, c2, c3**	**d2, d4, d5**
10	- **Microscopical inspection**	**6-7**	**a4, a5, a6**	**b1, b2, b5**	**c1, c2, c3**	**d2, d4, d5**
11	**- Physical inspection of feeds with results interpretation.**	**8-10**	**a4, a5, a6**	**b1, b2, b5**	**c1, c2, c3**	**d2, d4, d5**
12	**- Nutrition terminology -**	**9-12**	**a4, a5, a6**	**b1, b2, b5**	**c1, c2, c3**	**d2, d4, d5**
13	- Carbonaceous concentrates	**13-15**	**a4, a5, a6**	**b1, b2, b5**	**c1, c2, c3**	**d2, d4, d5**
14	- Plant protein conc.	**15-18**	**a4, a5**	**b1, b2, b5**	**c1, c2, c3**	**d2, d4, d5**
15	- **Deleterious factors**	**18-21**	**a4, a5**	**b1, b2, b5**	**c1, c3**	**d2, d4, d5**
16	- **Animal protein conc.**	**21-24**	**a4, a5, a6**	**b1, b2, b5**	**c1,c3**	**d2, d4, d5,d7**
17	- **Deleterious factors**	**22-25**	**a4, a5, a6**	**b1, b2, b5**	**c1, c3**	**d2, d4, d5,d7**
18	- **Application of ration formulation**	**26-29**	**a4, a5, a6**	**b1, b2, b5**	**c1, c3**	**d2, d4, d5,d7**
19	- **Quality control of fish feed**	**30-33**	**a4, a5, a6**	**b1, b2, b5**	**c1, c3**	**d2, d4, d5**
20	**Contaminants of fish feed and safety management -**	**34-36**	**a4, a5**	**b1, b2, b5**	**c1, c2, c3**	**d2, d4, d5**
Student activity		**Along the course**	**a1, a2, a3, a4**	**b1, b2, b3**	**c3, c4**	**d1, d2, d3, d4,d7**

Beni-Suef University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	**D8**
Course title :	**Fish diseases D8-E**
Program title:	**Diploma of fish diseases**
Contact hours/ week	**Lecture : 2hrs/week, practical 1hr/week**
Approval Date	

2-Professional information

Overall aims of course:

The main purpose of this course is introducing the academic background and practical experience about the keeping fishes in a state of good health.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- **Identify ichthyology**

a.2. Recall the relationship between sh health and aquatic environment

a.3. Describe causes, epizootiology, pathogenesis, diagnosis, prevention and control of fish diseases.

b-Intellectual skills

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

b.1. Score fish health

b.2. Discriminate fish diseases and suitable prevention & control measures.

c- Professional and practical skills

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

c.1. Collect & preserve of diagnostic specimens.

c.2. Perform Clinical, post-mortem, parasitological, bacteriological, mycological & virological examinations of fish.

c.3. Apply fish diseases treatment, hygienic disposal of diseased fish & disinfection of fish culture facilities.

c.4. Assess water & diet quality.

d- General and transferable skills

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

d1. **Use information technology & information resources.**

d.2. Practice continuous self-learning & self-evaluation.

d.3. Work in group.

d.4. Communicate with fish specialists.

d.5. Participate in private business.

4-Topics and contents

Course specification of postgraduate

Course	Topic	No. of hours	Lectures	Practical
(Lec. h./week, Pract h./week)	-Introduction, stress & its relation to diseases in fish	6	6	–
	-Parasitic diseases of fish	38	24	14
	-Bacterial diseases of fish	34	24	10
	-Mycotic diseases of fish	14	10	4
	-Viral diseases of fish	26	16	10
	-Non infectious diseases of fish	38	24	14
	Students activities - Collect fish specimens. -Computer search & class presentation - Field visits	–	–	–
	Total	156	104	52

5-Teaching and learning methods

5.1 **Lectures**

5.2. Practical sections

5.3. Self learning (computer search & class presentations)

5.4. **Field visits**

7-Student assessment

7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam	a.2-a.3	b.2		

Course specification of postgraduate

Practical Exam	a.1	b.1-b.2	c.1-c.2-c.3 c.4	d.1-d.2-d.3 d.4-d.5
Oral Exam	a.1- a.2-a.3	b.1-b.2		

7.2. Assessment schedules

Method	Week(s)
Practical exams	**Week 53th -**
Final exams	**week 54th -**
Oral Exam	**week 54th -**

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	30%
Final exams	50%
Oral Exam	20%
Total	100%

8- List of references

8.1. Notes and books

Departmental notes on:

None

8.2. Essential books:

- **Aquaculture farming aquatic animals and plants ,3rd Edition ,Edited by John slucas and Paulc Southgate, published by Black well publishing 2003 ,ISBN 0-85238-222-7**

***This book is found in the library of faculty of veterinary medicine , Beni-suef university.**

8.3. Recommended texts

- **Management for fresh water sh culture,1st Edition, (FAO training series) Published by Oxford & IBH publishing CO.PVT.LTD.1997,ISBN 18-204-1264-8**
- **Cage aquaculture, 2nd Edition ,(Malcolm C.M Beveridge) published by Fishing News Books1996, ISBN 0-85238-235-9**
- **Text book of sh culture breading and cultivation of sh, 2nd Edition, (Marcel huet) Published by Fishing News Books1994, ISBN 0-85238-219-7**
- **Breading and seed production of fin fish and shell fish(Dr. P.C Thomas) Published by Daya Publishing House2003,Indian reprint 2005,ISBN 81-7035-308-4**
- **Physiology of fishes ,2nd Edition , 1998, Published by CRC Press LLC, ISBNo-8493-8407-3**

Course specification of postgraduate

- **Nutrient requirement and feeding of sh for aquaculture,2002, Published by CABI, ISBN 0851995195**
- **Control of sh quality, 4th Edition,1995, Published by fishing news books ISBN 0-85238-226-4**

***These books are found in the library of faculty of veterinary medicine , Beni-suef university.**

8.4. Journal

- **Aquaculture**
- **Journal of fish diseases**
- **Journal of fish biology**
- **Fish & shellfish immunology**
- **Canadian Journal of fisheries & aquatic sciences**
- **Aquaculture researches**
- **Journal of aquatic animal health**

8.5. Websites

- **WWW.fishyfarmacy.com/Symptom**
- **WWW.Aqualink.com/disease/s-**
- **WWW.aquatec-solutions.com**
- **WWW.aquatececo.com**
- **WWW.fishdisease.net**
- **WWW.nationalfishpharm.com**
- **WWW.kiovet.com**
- **WWW.nosickfish.com**
- **WWW.aquariumfish.com**
- **WWW.candyfish.net**
- **WWW.fishreports.net**
- **WWW.fishthe.net**
- **WWW.fishnetdialynews.com**
- **WWW.fishseo.com**
- **WWW.ficklefish.net**
- **WWW.coloradofishing.net**
- **WWW.netmorefish.co.uk**
- **WWW.5 sh.net**
- **WWW.saltwetfish.net**

Course Coordinator **Head of Department**

Course specification of postgraduate

Beni Suef University
Faculty of Veterinary Medicine

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	**-Introduction, stress & its relation to diseases in fish**	6	a.1, a.2.			
2	**-Parasitic diseases of fish**	38	a.3	b.1., b.2.	c.1., c.3., c.4.	
3	**-Bacterial diseases of fish**	34	a.3	b.1., b.2.	c.1., c.3., c.4.	
4	**- Mycotic diseases of fish**	14	a.3	b.1., b.2.	c.1., c.3., c.4.	
5	**- Viral of fish**	26	a.3	b.1., b.2.	c.1., c.3., c.4.	
6	**-Non infectious diseases of fish**	38	a.2., a.3	b.1., b.2.	c.1., c.3., c.4.	
7	**Students activities** **- Collect fish specimens.** **-Writing assays.** **- Farm visit-**					**d.1., d.2., d.3., d.4., d.5.**

Beni-Suef University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	**D8**
Course title :	**Fish management D8-B**
Program title:	**Diploma of fish diseases**
Contact hours/ week	**Lecture : 1hr/week, practical 1hr/week**
Approval Date	

2-Professional information

Overall aims of course:

The main purpose of this course is introducing the academic background and practical experience about the management of cultured fish.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- **Recognize ichthyology**

a.2. Recall the relationship between sh health and aquatic environment

a.3. Illustrate artificial propagation of the cultured fish species in Egypt.

a.4. Outline the design and management of fish farms.

b-Intellectual skills

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

b1- **Differentiate fish species.**

b.2. Interpret water quality in fish pond and how to maintain and improve it.

b.3. Produce fish of good health.

C- Professional and practical skills

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

C1. **Identify the main cultivated fish species**

C.2. Prepare fish pond for fertilization & assess water quality and pond fertility

C.3. Perform Fish acclimation, feeding, anesthesia, harvesting , sorting and transportation

C.4. Assess the growth and sex of fish.

d- General and transferable skills

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

d1. **Use information technology & information resources.**

d.2. Practice continuous self-learning & self-evaluation.

d.3. Work in group.

d.4. Communicate with fish specialists.

d.5. Participate in private business.

Course specification of postgraduate

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
(Lec. h./week, Pract h./week)	-Regional anatomy & applied physiology of fish	16	8	8
	-Fish classification	4	2	2
	-Fish necropsy	4	2	2
	-Water quality examination	28	14	14
	-Natural & artificial propagation of cultured fish	18	9	9
	-Fish farming	34	17	17
	Students activities - Collect water & diet samples. -Computer search & class presentation. Field visits. -	–	–	–
	Total	104	52	52

5-Teaching and learning methods

5.1 **Lectures**

5.2. Practical sections

5.3. Self learning (computer search & class presentations)

5.4. **Field visits**

7-Student assessment

7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam	a.2-a.4	b.3		

Course specification of postgraduate

Practical Exam	a.1-a.3	b.1-b.2	c.1-c.2-c.3 c.4	d.1-d.2-d.3 d.4-d.5
Oral Exam	a.1- a.2-a.3-a.4	b.1-b.2-b.3		

7.2. Assessment schedules

Method	Week(s)
Practical exams	**Week 53th -**
Final exams	**week 54th -**
Oral Exam	**week 54th -**

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	30%
Final exams	50%
Oral Exam	20%
Total	100%

8- List of references

8.1. Notes and books

Departmental notes on:

None

8.2. Essential books:

- **Aquaculture farming aquatic animals and plants ,3rd Edition ,Edited by John slucas and Paulc Southgate, published by Black well publishing 2003 ,ISBN 0-85238-222-7**

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8.3. Recommended texts

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- **Cage aquaculture, 2nd Edition ,(Malcolm C.M Beveridge) published by Fishing News Books1996, ISBN 0-85238-235-9**
- **Text book of sh culture breading and cultivation of sh, 2nd Edition, (Marcel huet) Published by Fishing News Books1994, ISBN 0-85238-219-7**
- **Breading and seed production of fin fish and shell fish(Dr. P.C Thomas) Published by Daya Publishing House2003,Indian reprint 2005,ISBN 81-7035-308-4**
- **Physiology of fishes ,2nd Edition , 1998, Published by CRC Press LLC, ISBNo-8493-8407-3**

Course specification of postgraduate

- **Nutrient requirement and feeding of sh for aquaculture,2002, Published by CABI, ISBN 0851995195**
- **Control of sh quality, 4th Edition,1995, Published by fishing news books ISBN 0-85238-226-4**

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8.4. Journal

- **Aquaculture**
- **Journal of fish diseases**
- **Journal of fish biology**
- **Fish & shellfish immunology**
- **Canadian Journal of fisheries & aquatic sciences**
- **Aquaculture researches**
- **Journal of aquatic animal health**

8.5. Websites

- **WWW.fishyfarmacy.com/Symptom**
- **WWW.Aqualink.com/disease/s-**
- **WWW.aquatec-solutions.com**
- **WWW.aquatececo.com**
- **WWW.fishdisease.net**
- **WWW.nationalfishpharm.com**
- **WWW.kiovet.com**
- **WWW.nosickfish.com**
- **WWW.aquariumfish.com**
- **WWW.candyfish.net**
- **WWW.fishreports.net**
- **WWW.fishthe.net**
- **WWW.fishnetdialynews.com**
- **WWW.fishseo.com**
- **WWW.ficklefish.net**
- **WWW.coloradofishing.net**
- **WWW.netmorefish.co.uk**
- **WWW.5 sh.net**
- **WWW.saltwetfish.net**

Course Coordinator **Head of Department**

Course specification of postgraduate

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	-Regional anatomy & applied physiology of fish	16	a.1	b.1	_	_
2	-Fish classification	4	a.1	b.1	c.4	_
3	-Fish necropsy	4	a.1	b.1	c.1	_
4	-Water quality examination	28	a.2	b.2	c.2	_
5	-Natural & artificial propagation of cultured fish	18	a.3	b.3	c.4	_
6	-Fish farming	34	a.4	b.3	c.2 c.3 c.4	_
7	Students activities - Collect water & diet samples. -Computer search & class presentation. - Field visits.		_	_	_	d.1 d.2 d.3 d.4 d.5

Beni-Suef University
Faculty of Veterinary Medicine
Parasitology department

Course specification of postgraduate

1-Basic information

Course Code:	D8 - D
Course title :	Fish Parasites
Program title:	Diploma of Fish diseases
Contact hours/ week	2 hours per week (1hr theoretical and 1hr practical).
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

After completing the postgraduate course in fish disease the postgraduate student will be able to:

-Apply parasitology knowledge acquired by the graduate to professional practice.

- Develop the professional skills of criticism and analysis based on parasitology bases.

- have an effective role in community development and environment protection.

- Recognize the importance of fish parasites as a factor affecting fish hosts including human

- identify general morphological characters of different species of fish parasites.

- Deal with the pathogenesis and diseases caused by different parasitic species.

-Denote the different methods of diagnosis.

- Study the mode of transmission and methods of prevention and control of fish parasites.

3- Intended learning outcomes of course (ILOs)

This course aims to:

a- Knowledge and understanding:

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

a1. Recognize the medical and economic importance of fish parasites.
a2. Identify the different parasite species among fish hosts.
a3. Underline the different methods for diagnosis of parasite species.
a4. Define treat and control methodes parasites of fish.
a5. Illustrate the preventive measures of zoonotic fish parasites.

b. Intellectual skills

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

b1- Explain the economic importance of fish parasitic diseases.
b.2- Identify the morphology of parasites of fish.
b.3- Select the suitable diagnostic techniques.
b.4- Differentiate between symptoms of parasitic infection in fish.
b.5- Make a treatment decision based on the course understanding.

C- Professional and practical skills

Beni-Suef University
Faculty of Veterinary Medicine
Parasitology department

Course specification of postgraduate

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

c1-Interpret handling and preservation of samples from blood, faeces, internal organs as well as external body surface.

c.2- Detect the most prominent clinical and body lesions caused by parasitic infection in the different fish hosts.

c.3- Diagnose the different parasitic affections of the fish.

c,4- Detect the prevalence of certain parasitic disease based on the gained experience of identification.

d- General and transferable skills

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

d1. Work effectively in a team.

d2. Use efficiently source of knowledge.

d3. Able to transfer the experience to others.

d4. Characterize and differentiate various parasitic affections.

Course	Topic	No. of hours	Lectures	Practical
1-2	Understanding the medical and economic importance of fish parasites.	**4**	**2**	**2**
3-9	Classification of parasite species among fish hosts.	**14**	**7**	**7**
10-12	Identification, life cycle and pathogenesis of adult trematodes and their encysted metacercariae isolated from different species of fish.	**6**	**3**	**3**
13- 15	Identification, life cycle and pathogenesis of adult and larvae of cestodes isolated from different species of fish.	**6**	**3**	**3**
16- 17	Identification of adult and larvae of nematodes of fish, their life cycle and pathogenesis.	**4**	**2**	**2**
18, 20	General structure and identification of different species of acanthocephalan parasites infecting fish hosts, their mode of transmission and pathogenesis.	**6**	**3**	**3**
21-23	Morphology and life cycle of different species of external and internal protozoan parasites infecting fresh and salt water fish.	**6**	**3**	**3**
24-28	General structure, identification and life cycle of different species of crustacean parasites infecting fresh and salt water fish apply the different methods for laboratory and field diagnosis of different parasite species.	**10**	**5**	**5**
29-33	Treatment and control of both endoparasites and ectoparasites of fresh and salt water fish.	**10**	**5**	**5**
34-35	Pathogenesis of zoonotic fish parasites their prevention and control.	**4**	**2**	**2**
36	Precautions applied during handling and preparation of fish meal	**2**	**1**	**1**

Beni-Suef University
Faculty of Veterinary Medicine
Parasitology department

Course specification of postgraduate

5-Teaching and learning methods

1- Lectures using power point presentation.
2- Microscopic mount specimens, posters.
3- Collection of field samples for laboratory diagnosis.
4-Multimedia: Lectures will be supplemented with videos, presentations, and online information. Internet search, text books and practical notes.
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6-Student assessment

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	**I.S**	**P&P.S**	**G.S**
Final Exam	a1,a2, a3,a4, a5	B1,b4,b5,	c1, c2, , c4,	D4
Practical Exam	a2, a3	b2, b3,	C1,c2, c3, c4,	d1, d2, d3, d4,
Oral Exam	a1,a2,a3,a4,a5	b1,b2,b3,b4,b5	c1, c2, c3,c4,	d1,d2, d3,d4,

6.2. Assessment schedules

Method	Week(s)
Practical exams	Managed by department administration
Final exams	Managed by faculty administration
Oral Exam	Managed by department administration

6.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25%
Final exams	50%
Oral Exam	25%
total	100%

7- List of references

7.1. Notes and books

7.2. Essential books:

Protzoan parasites of fish: 2nd edition, Lom , Dykova, I. Institute of parasitology , Czech Academy of science , Ceske. Budejovice.(1992).
b- Systema Helminthum part IV Monogenea and Aspidocotylea: Yamaguti , S Interscience publ . N.Y . (1963).
c- Principal diseases of marine fish and shell fish :2nd ed.,Vol .1,Sindermann ,C. J . Academic press , Inc .,London mNew York ,Sydney. (1990).

7.3. Recommended texts

Course specification of postgraduate

7.3.1.a- Text book of fish diseases : Schaperclaus , W . ,A .A Balkema \ Roterdam .voume II .(1992).

b- Parasites , infection ,s and diseases of fish in Africa : Paperna ,I . CIFA technical paper No.7.(1980).

c- Diseases of fishes: Snieszko ,S .F. and Axelord , R .H. Book 1:Crustacea as enemies of fishes .T.F.H. publ.,Inc.Ltd. (1970).

7.4. Journals, Websites ……..etc

Journals: Parasitology Research.

Egyptian Veterinary Medical Society of Parasitology Journal.

Websites:

http://www.journals.elsevier.com/veterinary-parasitology/

http://www.parasitology.org

- **http://www. Parasite.biology.uiowa.edu**
- **http://www.nhm.ac.uk**

Course Coordinators **Head of Department**

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	Understanding the medical and economic importance of fish parasites.	1-2	1	2	3	
2	Classification of parasite species among fish hosts.	3-9	2-3	1,2	1	**2-4**
3	Identification, life cycle and pathogenesis of adult trematodes and their encysted metacercariae isolated from different species of fish.	10-12	1,2,3	2,4,5	2	
4	Identification, life cycle and pathogenesis of adult and larvae of cestodes isolated from different species of fish.	13- 15	1,2,4	4,5	1,2,3	
5	Identification of adult and larvae of nematodes of fish, their life cycle and pathogenesis.	16- 17	1.2,3	2,4,5	2,2	
6	General structure and identification of different species of acanthocephalan parasites infecting fish hosts, their mode of transmission and pathogenesis.	18, 20	**1,2,3**	**4,5**	**2,3**	**1,3**
7	Morphology and life cycle of different species of external and internal protozoan parasites infecting fresh and salt water fish.	**21-23**	**1,2,4**	**4,5**	**2,3**	**1,**
8	General structure, identification and life cycle of different species of crustacean parasites infecting fresh and salt water fish apply the different methods for laboratory and field diagnosis of different parasite species.	**24-28**	**1,2,3**	**5**	**2,3**	**1**
9	Treatment and control of both endoparasites and ectoparasites of fresh and salt water fish.	**29-33**	**1,3,4**	**3,4,5**	**2,3**	**1**
10	Pathogenesis of zoonotic fish parasites their prevention and control.	**34-35**	**1,3,4**			

University: Beni-Suef University, Egypt.

Faculty: Faculty of Veterinary Medicine.

Departments: Pathology

Course specification

A- Administrative Information:

Course Code:	**D8-A**
Course title :	Fish Pathology
Academic year:	Postgraduate students.
Program title:	Diploma of Vet. Med. Sciences (Fish diseases).
Degree:	Diploma.
Contact hours/ week	3 hours per week (1hr theoretical and 2hr practical).
Course coordinator:	Dr. El-Shimaanabil.
External evaluator(s)	Prof. Dr. Sary Khalil
Date of course approval:	

B-Professional information

1- Overall aims of course:

This course aims to:

At the end of this course, the student should be able to acquire knowledge and skills related to identifying the anatomical and histological changes associated with different pathological disorders of fish.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

At the end of this course, the student must able to:

a.1-Define the normal and abnormal anatomical structures of fish.

a.2- Distinguish the pathological changes associated with different diseases.

a.3- Enumerate the diseases of fish according to the causative agents.

b.**Intellectual skills:**

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

b.1-Analyze the available data to reach to the accurate diagnosis of the pathological case.

b.2-Differentiate between pathological disorders of fish**.**

b.3-Classify the diseases according to its causes.

b.4-Think creatively whilst still satisfying the needs of the study.

b.5- Develop observational skills in associating molecular and cellular events relevant to common fish diseases.

b.6- Evaluate suitable experimental methods for the investigation of fish diseases.**c-**

c.Professional and practical skills

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

c.1- Collect the tissue specimens of the affected parts.

c.2-Prepare a pathology report describing changes associated with different diseases.

c.3- Perform the various histological techniques.

c.4-Handle the microscope to examine the histological changes associated with diseases.

d- <u>General and transferable skills</u>

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

d1. Demonstrate the ability of problem definition

d.2. Utilize the computer, microscope and internet

d.3. Use data analysis and communication skills

d.4. Utilize various computer based instruction tools and E-learning of Pathology and utilize a variety of computer-based self assessment tools.

d.5 Use the sources of biomedical information available to remain current with advances in knowledge and practice

3- Topics and contents

Course	Topic	Total no. of hours	Lect.	Pract.
Postgraduate students fish Pathology 3 hours / weak (Lec. 1hr/wk - Pract. 2hr/wk)	1. Introduction in pathology and histopathological techniques	3	1	2
	2- General bases of pathological alterations (dist. In cell metabolism, Cell death, dist. In circulation, inflammation and healing and general tumors)	9	3	6
	3. Fish anatomy and histology	6	2	4
	4. Fish pathophysiology	3	1	2
	5. Pathological approach of fish diseases	6	2	4
	6-Pathology of Bacterial disease	6	2	4
	7-pathology of Parasitic diseases	6	2	4
	8-pathology Viral diseases	6	2	4
	9-pathology mycotic diseases	6	2	4
	10-Activities	3	1	2
	Total	52	26	26

4-Teaching and learning methods

5.1. Lectures (brain storming, discussion) in which one or more of the following facilities are used:

5.1.1. White board and data-show presentations.

5.1.2. Educational preserved specimens.

5.1.3. Illustrations, anatomical charts, CD's, PowerPoint slides and recorded anatomy videos.

5.2. Laboratory sessions in which one or more of the following facilities are used:

5.2.1. Tutor presentation followed by students' small group sessions.

5.2.2. Educational models.

5.2.3. Demonstrating formalin preserved tissues.

5.3. Independent (laboratory and home assignments supervised by tutor)

5.3.1. Writing reports and assignments (computer researches and faculty library attendance).

5.3.2. Preparation of colored posters and slide presentation.

5.3.3. Preparation of preserving specimens.

5.3.4. Group discussion.

5-Student assessment

5.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam	a1,a2, a3	B1, b2, b3,b4, b5,	c1, c2, c3, c4	d1
Practical Exam	a1, a2, a3	b1, b2, b3, b4, b5	c1, c2, c3, c4	d1, d2, d3 ,d4
Oral Exam	a1-a3	b1-b5	c1, c2c3, c4,	d1,d2, d3,d5

5.2. Assessment schedules/semester:

Method	Week(s)
Practical exams	Managed by department administration
Final exams	Managed by faculty administration
Oral Exams	Managed by department administration

5.3. Weight of assessments:

Assessment	Weight of assessment
Practical and oral exams	50%
Final exams	50%
Total	100%

6- List of references

8.1. Notes and books:

None

8.2. Essential books:

- **Jubb,K.V., P.C.Kennedy and N.Palmer (1993) Pathology of Domestic Animal, 6th ed. San Diego, New York**
- **Jones, T.C., Hunt, R.D. and King, N.W (2008) Veterinary pathology , 8th ed. Williams and wilkins, Waverly company (2008)**
- **Gallin, J. and Synder , R (2010), In ammation 3rd. ed. Lippincott Williams,Wilkins. Philadelphio**
- **Ramz-I S. and Kumar, V. and Collin, T. (1999) Pathological Basis of Disease , 6thed .**

These book is available in the library of faculty of Veterinary Medicine, Beni-Suef Univ.

8.3. Recommended textbooks:

8.3.1. R.S. Chauhan (2010) Text Book of veterinary pathology. *1st. ed. IBDC publishers *This book is available online.*

8.3.1 Jaap Van Dijk, Erik Gruys, and Johan Mouwen, COLOR ATLAS OF VETERINARY PATHOLOGY (2006) 2nd ed., Saunders Ltd

8.3.2. Richert, G and Epstein , M. (international review of experimental pathology)

8.4. Journals, Websites ……..etc

Journals

- **Egyptian Journal of Comparative Pathology and Clinical Pathology**
- **PathologiaVeterinaria**
- **American Journal of Pathology**
- **Journal of Pathology and Bacteriology**
- **Archive of Pathology**
- **Veterinary Record**

- Journal of Comparative Pathology
- Canadian Journal of comparative Medicine
- American Journal of veterinary research
- Research on veterinary Science
-Beni-Suef Veterinary Medical journal
http://www.bsuv.bsu.edu.eg/vetmed.aspx#

Websites

Google searchwww.google.com
Sciencedirecthttp://www.sciencedirect.com.
Pubmedhttp://www.Pubmed.
Colorado State university onlinehttp://www.online.colostate.edu/courses/VS/VS333.dot
The university of adelaidehttps://www.adelaide.edu.au/course-outlines/104377/1/sem-1/
VET Veterinary Educational Toolshttp://www.cvmbs.colostate.edu/vetneuro/
Education platformhttp://ivsascove.wix.com/eduplatform#!anatomy-hist-embr/ctsm
http/cms.nelc.edu.eg
www.asvp.asn.au.com
www.geneng news.com
www.altcancer.com

Course Coordinator
Dr. El-Shimaa Nabil
Lecturer of pathology
Faculty of Veterinary Medicine,
Beni-Suef University

Head of the department
Prof. Dr. Khalid Ali El-Nesr
Professor and Head of pathology department,
Faculty of Veterinary Medicine,
Beni-Suef University

Course specification Matrix

Topic		Week	Intended learning outcomes of course (ILOs)			
			K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Postgraduate students fish Pathology 2 hours / weak (Lec. 1hr/wk - Pract. 1hr/wk)	1. Introduction in pathology and histopathological techniques	1	1,3	1,2,3	1, 2,3,5	1-5
	2- General bases of pathological alterations (dist. In cell metabolism, Cell death, dist. In circulation, inflammation and healing and general tumors)	2-4	1,2,3,4,5	1,2,3,4,5	1, 2,3,4	
	3. Fish anatomy and histology	5-6	1,2,3,4,5	1,2,3,4,5	1, 2,3,4	
	4. Fish pathophysiology	7	1,2,3,4,5	1,2,3,4,5	1, 2,3,4,5	
	5. Pathological approach of fish diseases	8-9	1,2,3,4	1,2,3,4,5	1, 2,3,4	
	6-Pathology of Bacterial disease	10-11	1,2,3,5	1,2,3,4,5	1, 2,3,4,5	
	7-pathology of Parasitic diseases	12-13	1,2,3	1,2,3,4,5	1, 2,3,4,5	
	8-Pathology Viral diseases	14-15	1,2,3,5	1,2,3,4,5	1, 2,3,4,5	
	9-Pathology mycotic diseases	16-17	1,2,3,5	1,2,3,4,5	1, 2,3,4,5	
	10-Activities	18	1,2,3,5	1,2,3,4,5	1, 2,3,4,5	