Beni Suef University
Faculty of Veterinary Medicine
Department of Bacteriology, Mycology and Immunology

Program Specification for Master Degree
2017-2018

A-Basic information:

1- Program title: *MVSC.*
2- Program type: *Single*
3- Department offering program: Bacteriology, Mycology and Immunology
4-Academic year: 2017-2018
5-Approval date of Department Council:
6-Approval date of Faculty Council:
7-External evaluator: *Ahmed Mohamed Ahmed Ammar*

B-Professional information:

1- Overall aims of the program:

1) Program Aims to:

1. Provide the students with the basics of bacteriology, mycology and immunology, including pathogenicity processes at the cellular and molecular level.
2. Comprehend the modern scientific knowledge necessary for the perfection of practice of Microbiology according to the international standards.
3. Acquire skills essential for diagnosis of microorganisms.
4. Provide the students with the basic background about serological reactions and their application.
5. Be familiar with basic molecular methods of diagnosis.
6. Manage prevention and control of microbial diseases.
7. Assess literature in context to their present research and suggest new postulates related to their research
8. Have ethical principles according to community cultures.
9. Write the dissertation, scientific papers and apply for scientific project.
10. Enhance the ability for self and continued learning via future outstanding and scientific research.

2- Intended Learning Outcomes (ILOs):

a- Knowledge and Understanding:

- **The Master's program graduate must be able to:**

a1- Recognize the basic background of microbial genetics and application of molecular biology techniques in research.

a2- Clarify the means of transmission of pathogenic microorganisms and how the microorganism is maintained in host and environment.

a3- Recognize up-to-date veterinary research in the field of microbiology.

a4- Distinguish various diseases associated with pathogenic types of bacteria and fungi.

a5- Identify the structure, components and disorders of the immune system.

a6- Recall scientific research principals and ethics.

b- Intellectual Skills:

- **The Master's program graduate must be able to:**

b1- Master differential diagnoses of various infections caused by different bacteria and fungi.

b2- Solve problems of lab diagnosis.

b3- Integrate different knowledge to solve clinical laboratory problems effectively.

b4- Conduct a research study and / or write a scientific article on a research problem in the field related to his/her thesis

b5- evaluate the risk of bacterial and fungal infection.

b6- Explain important mechanisms of microbial pathogenesis, basic concepts of molecular immunology, immunity to infection and outcomes of infections.

b7- Make a decision for prevention and control of infectious disease.

c- Professional and Practical Skills:

The Master's program graduate must be able to:

c1- Design a laboratory experiments with an awareness of security procedures in a Microbiology lab.

c2- Recognize the methods used for the collection, transport and microbiological analysis of different clinical specimens.

c3- Perform the isolation and preservation of specific microbes.

c4- Identify the pathogen by its specific growth characteristics, distinguishing biochemical tests, its morphological and/or staining characteristics, and immunological or nucleic acid-based tests.

c5- Analyze and interpret laboratory data related to the cases of bacteriology ,Mycology and Immunology and write scientific report.

c6- evaluate the available and required material, tools and equipment in the routine laboratory.

c7- Write efficiently scientific paper and dissertation according to the basics of scientific research.

d- General and Transferable Skills

- **The Master's program graduate must be able to:**

d1- Communicate effectively through oral presentations and written reports as well as using of information technology.
d2- asses information from different sources.
d3- Utilize different sources of information and knowledge in the field of his/her thesis.
d4- Issue the regulations and indicators for performance evaluation
d5-Manage time efficiently and work in research groups.
d6-Utilizes leadership skills that enable the students to organize work.
d7-Learn continuously and independently.

2- Academic standers:

* The faculty mission, vision and strategic objective are confirmed to the academic standard. The learning outcomes are inline with the department and the faculty mission.
* Postgraduates NARS (March 2009) Master 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, Beni-Suef University, Beni-Suef, Egypt are selected to confirm the appropriateness of the academic standards .

4- Program Structure and Contents

A- Program duration: At least two academic years from the approval of registration by the Faculty Council and maximum four years. The faculty council has the right to give the applicant another period not exceed two years according to the supervisor request

The first year for preliminary courses study, while the second year for researches and preparation of the Master Thesis.

B- Program structure: Hours/ week:

Basic course:-

Theoretical	4	Practical	7	Total	11

Subsidiary courses:-

Theoretical	4-8	Practical	6-8	Total	10-16

☒ **Master Thesis: completed during the second academic year.**

C- Program courses:

1- Basic courses

Code	Course title	Hours /week		Academic year	Teaching duration
		theoretical	practical		
	Master Principal course	3	4	Preliminary year	36 weeks
	Research methods	1	3	Preliminary year	36 weeks

2-subsidiary courses

Code	Course title	Hours /week		Academic year	Semester
		Theoretical	practical		
	Selected (3-5) courses depending on the thesis title from the various Faculty Master courses other than specialty of the Master.	5-6	6-9	Preliminary year	36 weeks

D- Courses contents

See master courses specification

5- Program Admission Requirements

a- According to the Faculty of Veterinary Medicine, Beni-Suef University, By laws for Post Graduate Programs, applicants should have BVSc., from an Egyptian University or equivalent degree from any approved university, with at least general grade (Good) and (Very Good) in the specialized subject.

b- Also if the student has postgraduate diploma in one specialization of total (3 hours) at least with general grade (Good) and (Very good) in the specialized subject.

c- According to Beni-Suef University requirements, all applicants for postgraduate studies should fulfill preliminary courses on the following subjects:
I- English language (Toefl or equivalent degree)
2- Computer skills (ICDL) or equivalent computer course.
d- Admission to the program is open during March and September annually after at least one year from the BVSc degree.

6. Regulations for Progression and Program Completion

After finishing the preliminary courses, the graduate student will be eligible to sit for the examination according to the following roles:

No. of course teaching hours/ week	Allowed time for written exam.	Degree	
		Theoretical	Practical and oral exam
≥ 3 hours	3 hours	50	50
≤ 3 hours	2 hours	25	25

- It is mandatory to pass all the courses each chance except biostatic (212)
-The passing mark in each exam is ⩾ 60%.
-The faculty council has the right to deprive the applicant from entering the exams if his attendance courses is less than 75% .

Qualification grades:

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

-After passing, the graduate starts research for Master Thesis at the beginning of the second year.
-The candidate will receive his degree after evaluating and approving the thesis by a committee according to University regulations.
-The applicant should publish at least one scientific papers from the thesis in local or international journals

7-Graduate student assessment

A: Assessment Tools

According the Faculty of Veterinary Medicine, Beni-Suef University Bylaws for Post Graduate, students should be assessed at the end of preliminary year and the thesis should be evaluated and approved by a committee according to University

regulations.

1-Preliminary year

Assessments methods for each course	practical exam	Oral exam	Written exam
Time of Assessments	By the end of the year	By the end of the year	By the end of the year
Marks	25	25	50

2-Master Thesis:

All master-degree students should prepare a thesis in, bacteriology, mycology or immunology.

The department council must approve the protocol (plan) of the research. The thesis is supervised by one or more staff members and may include other specialties according to the nature of the research. The thesis should be evaluated and approved by a committee according to University regulations. The applicant should publish at least one scientific paper from the thesis in local or international journals

B- Matrix alignment of the measured ILOs

Assessments methods	Matrix alignment of the measured ILOs			
	K&U (a)	**I.S (b)**	**P&P. S (c)**	**G&T. S (d)**
Written exam	a1,a2, 4,a5,a6	b1,b2,b5, b6, b7	c1,c2,c3	-
Practical exam	a3	b2	c4,c5,c6	d2
Oral exam	a1,a2, a4, a5	b1- b7	c1- c4	d3

Course Coordinator

Dr. Hala Sayed Hassan

Ass. Prof. of Bacteriology, Mycology and Immunology, Faculty of Veterinary Medicine,
Beni-Suef University

Head of the department

Prof. Dr. Ismail Abd El-Hafeez Radwan

Professor and Head of Bacteriology, Mycology and Immunology department, Faculty of Veterinary Medicine, Beni-Suef University

Master Program Specification Matrix (Program ILOS with Academic standers ARS)

Academic standers / Program ILOs		Knowledge and understanding						Intellectual skills							Professional and practical skills				General and transferable skills						
		a1	a2	a3	a4	a5	a6	b1	b2	b3	b4	b5	b6	b7	c1	c2	c3	c4	d1	d2	d3	d4	d5	d6	d7
Knowledge and understanding	a1	×																							
	a2		×																						
	a3			×																					
	a4				×		×																		
	a5					×	×																		
	a6						×																		
Intellectual skills	b1							×																	
	b2								×																
	b3									×															
	b4										×														
	b5											×													
	b6												×												
	b7													×											
Professional and practical skills	c1														×										
	c2														×										
	c3														×										
	c4														×										
	c5															×	×								
	c6																×								
	c7																	×							
General and transferable skills	d1																		×						
	d2																			×					
	d3																				×				
	d4																					×			
	d5																						×		
	d6																							×	
	d7																								×

Master Program Specification Matrix (Program Courses with ILOS)

Program ILOs		courses
K&U (a)	a1	master basic course ,42
	a2	90,97, 197,195
	a3	master basic course,170,172,185,140
	a4	61,140,141, 185,170,172
	a5	master basic course,72,78
	a6	thesis
Intellectual skills	b1	master basic course,170,172,185,140
	b2	master basic course ,79,178 and thesis
	b3	master basic course ,79,178
	b4	61,72,110,114,125,146,170,185,196 and thesis
	b5	190,196,117
	b6	42,61,72,140,141,146,149
	b7	183,187,188, 189,195,196 and thesis
Professional and practical skills	c1	47,145,194,196,213 and thesis
	c2	Master basic course and thesis
	c3	Master basic course and thesis
	c4	Master basic course,42 and thesis
	c5	Master basic course and thesis
	c6	Master basic course,79 and thesis
	c7	Master basic course, 61,72,110,114,125,146,170,185, 196 and thesis
General and transferable skills	d1	Al l selected courses
	d2	Al l selected courses
	d3	Al l selected courses
	d4	Al l selected courses
	d5	Al l selected courses
	d6	Al l selected courses
	d7	Al l selected courses

Program aims – ILOS Matrix for the Master program (M. V. Sc)

Program aims / Program ILOS		Program aims									
		1 Provide the students with the basics of bacteriology, mycology and immunology, including pathogenicity processes at the cellular and molecular level.	2. Comprehend the modern scientific knowledge necessary for the perfection of practice of Microbiology according to the international standards.	3. Acquire skills essential for diagnosis of microorganisms.	4. Provide the students with the basic background about serological reactions and their application.	5. Be familiar with basic molecular methods of diagnosis.	6. Manage prevention and control of microbial diseases.	7. Assess literature in context to their present research and suggest new postulates related to their research	8. Have ethical principles according to community cultures.	9. Write the dissertation, scientific papers and apply for scientific project.	10. Enhance the ability for self and continued learning via future outstanding and scientific research.
Knowledge and understanding	a.1- Recognize the basic background of microbial genetics and application of molecular biology techniques in research.	√	√	√		√					
	a2- Clarify the means of transmission of pathogenic microorganisms and how the microorganism is maintained in host and environment.	√					√				
	a3- Recognize up-to-date veterinary research in the field of microbiology.		√			√		√			
	a4- Distinguish various diseases associated with pathogenic types of bacteria and fungi.			√							
	a5- Identify the structure, components and disorders of the immune system.	√	√		√		√				

Program aims / Program ILOS		Program aims									
		1 Provide the students with the basics of bacteriology, mycology and immunology, including pathogenicity processes at the cellular and molecular level.	2. Comprehend the modern scientific knowledge necessary for the perfection of practice of Microbiology according to the international standards.	3. Acquire skills essential for diagnosis of microorganisms.	4. Provide the students with the basic background about serological reactions and their application.	5. Be familiar with basic molecular methods of diagnosis.	6. Manage prevention and control of microbial diseases.	7. Assess literature in context to their present research and suggest new postulates related to their research	8. Have ethical principles according to community cultures.	9. Write the dissertation, scientific papers and apply for scientific project.	10. Enhance the ability for self and continued learning via future outstanding and scientific research.
	a6- Recall scientific research principals and ethics.							√	√	√	√
Intellectual skills	b1- Master differential diagnoses of various infections caused by different bacteria and fungi.			√	√	√					
	b2- Solve problems of lab diagnosis.			√	√	√					
	b3-Integrate different knowledge to solve clinical laboratory problems effectively.	√		√	√	√					
	b4- Conduct a research study and/or write a scientific article on a research problem in the field related to his/her thesis.							√	√	√	√
	b5- Evaluate the risk of bacterial and fungal infection.		√				√				
	b6- Explain important mechanisms of microbial pathogenesis, basic concepts of molecular immunology, immunity to infection and outcomes of infections.	√	√		√	√					

Program aims / Program ILOS		Program aims									
		1 Provide the students with the basics of bacteriology, mycology and immunology, including pathogenicity processes at the cellular and molecular level.	2. Comprehend the modern scientific knowledge necessary for the perfection of practice of Microbiology according to the international standards.	3. Acquire skills essential for diagnosis of microorganisms.	4. Provide the students with the basic background about serological reactions and their application.	5. Be familiar with basic molecular methods of diagnosis.	6. Manage prevention and control of microbial diseases.	7. Assess literature in context to their present research and suggest new postulates related to their research	8. Have ethical principles according to community cultures.	9. Write the dissertation, scientific papers and apply for scientific project.	10. Enhance the ability for self and continued learning via future outstanding and scientific research.
	b7- Make a decision for prevention and control of infectious disease.						√				
Practical and professional skills	c1- Design a laboratory experiments with an awareness of security procedures in a Microbiology lab.			√	√	√					√
	c2- Recognize the methods used for the collection, transport and microbiological analysis of different clinical specimens.	√	√	√	√	√					
	c3- Perform the isolation and preservation of specific microbes		√	√							
	c4- Identify the pathogen by its specific growth characteristics, distinguishing biochemical tests, its morphological and/or staining characteristics, and immunolo-gical or nucleic acid-based tests.	√		√	√	√					
	c5- Analyze and interpret laboratory data related to the cases of bacteriology ,Mycology and Immunology and write scientific report.			√	√	√		√		√	√

Program aims / Program ILOS		Program aims									
		1 Provide the students with the basics of bacteriology, mycology and immunology, including pathogenicity processes at the cellular and molecular level.	2. Comprehend the modern scientific knowledge necessary for the perfection of practice of Microbiology according to the international standards.	3. Acquire skills essential for diagnosis of microorganisms.	4. Provide the students with the basic background about serological reactions and their application.	5. Be familiar with basic molecular methods of diagnosis.	6. Manage prevention and control of microbial diseases.	7. Assess literature in context to their present research and suggest new postulates related to their research	8. Have ethical principles according to community cultures.	9. Write the dissertation, scientific papers and apply for scientific project.	10. Enhance the ability for self and continued learning via future outstanding and scientific research.
	c6- Evaluate the available and required material, tools and equipment in the routine lab.			√	√	√					
	c7- Write efficiently scientific paper and dissertation according to the basics of scientific research.							√	√	√	√
General and transferable skills	d1- Communicate effectively through oral presentations and written reports as well as using of information technology.		√					√		√	√
	d2- Asses information from different sources.		√					√			√
	d3- Utilize different sources of information and knowledge in the field of his/her thesis.		√					√	√		√
	d4- Issue the regulations and indicators for performance evaluation.							√			√
	d5-Manage time efficiently and work in research groups.								√		√
	d6-Utilizes leadership skills that enable the students to organize								√		√

Program aims / Program ILOS		Program aims									
		1 Provide the students with the basics of bacteriology, mycology and immunology, including pathogenicity processes at the cellular and molecular level.	2. Comprehend the modern scientific knowledge necessary for the perfection of practice of Microbiology according to the international standards.	3. Acquire skills essential for diagnosis of microorganisms.	4. Provide the students with the basic background about serological reactions and their application.	5. Be familiar with basic molecular methods of diagnosis.	6. Manage prevention and control of microbial diseases.	7. Assess literature in context to their present research and suggest new postulates related to their research	8. Have ethical principles according to community cultures.	9. Write the dissertation, scientific papers and apply for scientific project.	10. Enhance the ability for self and continued learning via future outstanding and scientific research.
	work.										
	d7-Learn continuously and independently.										√

University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	
Course title :	**Master basic course**
Program title:	MVSc
Contact hours/ week	**7 hr/week (3hr theoretical and 4hr practical).**
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1. Apply the analytical approach and its use in the field of bacterial and fungal diseases in veterinary practice.
2. Show awareness of current problems and recent theories in the field of bacterial and fungal diseases.
3. Master different professional skills and techniques in diagnosis, prevention and control of bacterial and fungal diseases.
4. Diagnose different veterinary bacterial infections by different traditional and recent methods.
5. Control the problems concerning with different veterinary bacterial and fungal affections and prevent the spread of the infection in the community.
6. Perform academic and professional self-development and continuous learning.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Recall information about bacterial diseases.
a.2. Outline specialized knowledge in the field of bacterial diseases and related sciences.
a.3. Outline principles and morals of scientific research and the bases of designing an experimental work using bacterial isolate.
a.4. Employ the acquired knowledge about the nature and anatomy of bacterial and fungal cells in relation to their functions
a.5. Classify bacteria and fungi in comparison with other microorganisms.
a.6. Recognize the optimal requirements for the growth and reproduction of both bacteria and fungi.
a.7. Enumerate the factors associated with the virulence of the microorganisms, its exaltation and attenuation.
a.8. Enumerate the by-products of pathogenic microorganisms.
a.9. Describe how genetic characters of bacteria could be expressed, transferred and changed.
a.10. Conclude factors leading to bacterial resistance & virulence.
a.11. List the extensively updated immunologic laboratory tests and advanced methods aid in rapid clinical diagnosis.

b- Intellectual skills:

Course specification of postgraduate

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

b.1. Analyze and evaluate knowledge related to diagnosis, prevention and control of bacterial and fungal diseases in veterinary practice and interpret it to solve the related problems.

b.2. Assess the infective potential of environmental materials to control the infection in the community.

b.3. Suggest the solutions of the problems concerning with different veterinary bacterial affections.

b.4. Write and evaluate scientific papers.

c- Professional and practical skills

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

c.1. Master different conventional and advanced skills and techniques used in diagnosis, prevention and control of bacterial and fungal diseases in veterinary practice.

c.2. Assess different available tools and methods applied in diagnosis of bacterial and fungal diseases in veterinary practice.

c.3. Collect the suitable specimens at the suitable time from animals, poultry and fish for their examination.

c.4. Recognize the precautions and handling for each sample.

c.5. Identify the causative microorganism depending on morphological, cultural and biochemical characters as well as serology and molecular techniques.

c.6. Determine the sensitivities of infected organism to antimicrobial drugs.

d- General and transferable skills

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

d.1. Work in a team work and manage time.

d.2. Communicate effectively using different means.

d.3. Properly use the information technologies for development of his/her professional abilities.

d.4. Use different facilities for gaining knowledge and information.

d.5. Understand the significance and means of continuous self learning.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
7 hr/week (3hr theoretical and 4hr practical).	General bacteriology	18	12	8
	Molecular biology	12	12	-
	Basic immunology	24	12	8
	Systematic bacteriology	36	24	8
	General mycology	18	12	8
	Systematic mycology	36	24	8

	Writing review article about the research project	6	6	-
	Bases of writing a thesis and research plan	6	6	-
7 hr/week (3hr theoretical and 4hr practical).	–Microscopy	4	-	4
	–Bacterial Motility	4	-	4
	–Sterilization and disinfection.	8	-	8
	–In-vitro antimicrobial sensitivity.	4	-	8
	–Staining of bacteria.	8	-	8
	–Bacteriological culture media.	4	-	8
	–Cultivation and isolation of pure culture of bacteria.	8	-	8
	–Biochemical identification of bacteria.	8	-	8
	–Serological and immunological tests.	16	-	16
	–Genetic engineering techniques and nucleic acid hybridization.	16	-	16
	–PCR, real-time PCR, Gene sequencing	16	-	16
Total		**252**	**108**	**144**

5-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 different bacteria.
- Biochemical tests for identification of different bacteria.
- Immunological and serological tests for identification of bacteria.

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
writing Exam	**a1 to a11(all)**	**b1 to b6 (all)**	**c1, c2, c3,c4,**	**d5**
Practical Exam	**a1, a2, a3, a7**		**c1 to c4 (all)**	
Oral Exam	**a1 to a11 (all)**		**c1 to c4(all)**	

6.2. Assessment schedules

Method	Week(s)
Practical exam	45-48

writing exam	45-48
Oral Exam	45-48

6.3. Weight of assessments

Assessment	Weight of assessment
Writing exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	**100%**

7- List of references

7.1. Notes and books

Departmental notes on:

7.1.1- Notes on Bacteriology, Mycology and Immunology.

7.1.2- Notes on Practical Bacteriology, Mycology and Immunology.

7.1.3- Notes on Veterinary Microbiology.

7.2. Essential books:

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

7.2.2- Prescott, Harley and Klein's Microbiology. J. M. Willey, L. M. Sherwood, and C. J. Woolverton – 17th Edition, International Edition , 2008, Mc Graw Hill

7.2.3- Bergey's Manual of Determinative Bacteriology, 9th Edition John G. Holt, 1993

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

7.3. Recommended text books:

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

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

7.3.3- Medical Microbiology, R. Cruickshank 1986.

7.3.4- Mackie and McCartney Medical Microbiology, 14th Edition 1992 (J. P. Duguid, B.P. Marmion and R. H. A. Swain). (The bock present in the faculty library)

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

7.3.6- Introductory Mycology, 3rd Edition 1979, C.J. Alexopoulos and C.W. Mims.

7.3.7- Immunology, 1986 D. M. Weir.

7.3.8- Medical Immunology, 1977, Malcolm S. Thaler, M. D. and Richard D.

7.3.9- Topley & Wilson microbiology and microbial infections, 9 th edition

7.4. 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
Iranian Journal of Microbiology

Websites

http://www.sciencedirect.com.
http://www.Pubmed.
http://www.AltaVista.
http://www.cellsalive.com.
http://www.textbookofbacteriology.net.
http://www.ourfood.com/General_bacteriology.html
http://www.Veterinary Microbiology
http://www.Immunology and Immunopathology

Course Coordinator

Dr. Hala Sayed Hassan

Ass. Prof. of Bacteriology, Mycology and Immunology, Faculty of Veterinary Medicine, Beni-Suef University

Head of the department

Prof. Dr. Ismail Abd El-Hafeez Radwan

Professor and Head of Bacteriology, Mycology and Immunology department, Faculty of Veterinary Medicine, Beni-Suef University

Course specification of postgraduate

Course specification Matrix

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
	–General bacteriology	1st w-4th w	4,5,6,7,8	1,2,3	3,4,5,6	all
	-Molecular biology	5th w -8th w	9,11	1,2,3	3,4,5,6	all
	– Basic immunology	9th w-12th w	4,5,6,7,8,11	1,2,3	3,4,5,6	all
	-Systematic bacteriology	13th w-20th w	1,2,3,4	1,2,3	3,4,5,6	all
	-General mycology	21st w-24th w	4,5,6,7,8	1,2,3	3,4,5,6	all
	–Systematic mycology	25th w-32nd w	1,2,3,4	1,2,3	3,4,5,6	all
	Writing review article about the research project	33rd w -34th w	1,2,3	1,2,3,4	1,2	all
	Bases of writing a thesis and research plan	35th w -36th w	1,2,3	1,2,3,4	1,2	all
	Practical					
	–General bacteriology	1st w-2nd w	4,5,6,7,8	1,2,3	3,4,5,6	all
	– Basic immunology	17th w-18hw	4,5,6,7,8,11	1,2,3	3,4,5,6	all
	-Systematic bacteriology	19th w-20thw	1,2,3,4	1,2,3	3,4,5,6	all
	-General mycology	21st w-22nd w	4,5,6,7,8	1,2,3	3,4,5,6	all
	–Systematic mycology	23rd w-24th w	1,2,3,4	1,2,3	3,4,5,6	all
	-Microscopy	3rd w	4,5	1,2,3	3,4,5,6	all
	-Bacterial motility	4th w	4,5	1,2,3	3,4,5,6	all
	–Sterilization and disinfection.	5th w -6th w	-	1,2,3	3,4,5,6	all

Course specification of postgraduate

	–In-vitro antimicrobial sensitivity.	7th w-8thw	5,6,7	1,2,3	3,4,5,6	all
	–Staining of bacteria.	9th w-10th w	5,6,7	1,2,3	3,4,5,6	all
	–Bacteriological culture media.	11th w-12th w	5,6,7	1,2,3	3,4,5,6	all
	–Cultivation and isolation of pure culture of bacteria.	13th w-14th w	5,6,7	1,2,3	3,4,5,6	all
	–Biochemical identification of bacteria.	15th w-16th w	5,6,7	1,2,3	3,4,5,6	all
	–Serological and immunological tests.	25th w-28th w	5,6,7	1,2,3	3,4,5,6	all
	–Genetic engineering techniques and nucleic acid hybridization.	29th w-32nd w	5,6,7	-	1,2	all
	–PCR, real-time PCR, Gene sequencing	33rd w-36th w	5,6,7	-	1,2	all

Beni-Suef University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	M-82
Course title :	General bacteriology
Program title:	MVSc
Contact hours/ week	3 hours per week (1 theoretical and 2 practical)
Approval Date	

2-Professional information

Overall aims of course:

Graduate master's program in any discipline should be able to:

1. Know the basics of bacteriology including pathogenicity processes at the cellular and molecular level.
2. Acquire skills essential for diagnosis of bacteria.
3. The application of specialized knowledge and its integration with relevant knowledge in the exercise of general bacteriology.
4. Understand the basic background about serological reactions and their application.
5. Be familiar with basic molecular methods of diagnosis.
6. Assess literature in context to their present research and suggest new postulates related to their research
7. Mastering the basics and methodologies of scientific research and the use of different tools.
8. The application of the analytical method and its use in the field of Bacteriology
9. Communicate effectively and the ability to lead teams
10. Decision-making in different professional contexts.

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 the nature , structure and classification of bacteria.

a2-know the nutritional and environmental requirements for growth and reproduction of bacteria.

a3- identify the factors associated with the virulence of the pathogenic bacteria, its exaltation and attenuation.

a4- Enumerate the by-products of pathogenic microorganisms.

a5- Conclude factors leading to bacterial resistance& virulence.

a6- Describe how genetic characters of bacteria could be expressed, transferred and changed.

a7- Outline principles and morals of scientific research and the bases of designing an experimental work using bacteria

b-Intellectual skills

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

b1- Assess the infective potential of environmental materials to prevent the spread of the infection in the community.

b2- Suggest the solutions of the problems concerning with different veterinary bacterial affections.

b3- Solve problems of lab diagnosis.

Course specification of postgraduate

b4-integrate different knowledge to solve clinical laboratory problems effectively.

C- Professional and practical skills

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

c1-Mastery of the basic professional skills and modern in the area of general bacteriology.
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-Writing and evaluation of bacteriological reports

d- General and transferable skills

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

d.1. Work in a team work and manage time.
d.2. Communicate effectively using different means.
d.3. Properly use the information technologies for development of his/her professional abilities.
d.4. Use different facilities for gaining knowledge and information.
d.5. Understand the significance and means of continuous self-learning.

4-Topics and contents

3 hours per week (1 theoretical and 2 practical)			
Lectures topic	**No. of hours**	**Practical**	**No. of hours**
• History of microbiology • Eukaryotes and Prokaryote	2	• Safety in the lab. • Microscopy and microbial examination	4
• Classification of bacteria and bacterial morphology	2	• Bacterial Motility	4
• Bacterial division and cell aggregates.	2	• Preparation of bacterial smear	4
• Bacterial structure and anatomy	6	• Sterilization and disinfection	12
• Bacterial sporulation.	2	• Differential stains	4
• growth cycle of bacteria	2	• special stains	4
• Nutrition and metabolism of bacteria	2	• Bacteriological culture media	4
• Bacterial Reproduction	2	• Cultivation of aerobic bacteria • isolation of bacteria in pure culture	4
• Relationships of the bacteria to the host and environment.	4	• Tests for the identification of bacteria • Cultivation of	8

Course specification of postgraduate

		anaerobes.	
• **Bacterial products**	2	• **Serological tests**	4
• **Bacterial infection and virulence.**	2	• **In-vitro antimicrobial sensitivity**	4
• **Koch's postulates and their exceptions**	2	• **Mininimal inhibitory concentration (MIC)**	4
• **Bacterial genetics.**	4	• **Methods of molecular biolgy.**	8
• **Bases of designing an experimental work.** .	2	• **Counting bacteria.** • **Enumeration of coliform bacteria and colony forming unit (cfu).**	4
Total	**36**		**72**

5-Teaching and learning methods

5.1- Lectures (brain storm, discussion) using board, data shows

5.2- Self learning by preparing essays and presentations (computer researches and library)

5.3- Practical (examining samples of stained bacterial films)

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	a1- a2- a3- a4-a5-a6	b1- b2-b3-b4	c1- c2-c3-c4	d1
Practical Exam	a1-a2- a5	b2-b3-b4	c1- c2-c3-c4	d1
Oral Exam	a1- a2- a3- a4-a5-a6-a7	b1- b2-b3-b4	c1- c2-c3	d1

7.2. Assessment schedules

Method	Week(s)
Writing exam	45-48
Practical exam	45-48
Oral exam	45-48

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
total	100%

8- List of references

Course specification of postgraduate

8.1. Notes and books:

Departmental notes on:

8.1.1- Notes on Bacteriology, Mycology and Immunology.

8.1.2- Notes on Practical Bacteriology, Mycology and Immunology.

8.1.3- Notes on Veterinary Microbiology

8.2. Essential books:

8.2.1- Prescott, Harley and Klein's Microbiology. J. M. Willey, L. M. Sherwood, and C. J. Woolverton – 17th Edition, International Edition , 2008, Mc Graw Hill

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

8.3. Recommended textbooks:

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

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

8.3.3- Medical Microbiology, R. Cruickshank 1986.

8.3.4- Mackie and McCartney Medical Microbiology, 14th Edition 1992 (J. P. Duguid, B.P. Marmion and R. H. A. Swain). (The bock present in the faculty library)

8.3.5- Topley & Wilson microbiology and microbial infections, 9 th edition

8.4. 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
Iranian Journal of Microbiology

Websites

http://www.sciencedirect.com.
http://www.Pubmed.
http://www.AltaVista.
http://www.cellsalive.com.
http://www.textbookofbacteriology.net.
http://www.ourfood.com/General_bacteriology.html
http://www.Veterinary Microbiology

Course Coordinators
Dr. Hala Sayed Hassan
Ass. Prof. of Bacteriology, Mycology Immunology, 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

Course specification of postgraduate

Course specification matrix

Course specification

Topic	weeks	Intended learning outcomes of course (ILOs)			
		K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
• History of microbiology • Eukaryotes and Prokaryote • Safety in the lab. • Microscopy and microbial examination	1-2	a1	b1	c1	d1-d5
• Classification of bacteria and bacterial morphology • Bacterial Motility	3-4	a1	b1	c1,c2	d1-d5
• Bacterial division and cell aggregates. • Preparation of bacterial smear	5-6	a1,a2	b1	c1,c2	d1-d5
• Bacterial structure and anatomy • Sterilization and disinfection	7-12	a1,a2,a5	b1	c1,c2	d1-d5
• Bacterial sporulation. • Differential stains	13-14	a1,a2,a5	b1	c1,c2	d1-d5
• growth cycle of bacteria • simple stains	15-16	a1,a2	b1	c1,c2	d1-d5
• Nutrion and metabolism of bacteria • Bacteriological culture media	17-18	a2	b1	c1,c2	d1-d5
• Bacterial Reproduction • Cultivation of aerobic bacteria • isolation of bacteria in pure culture	19-20	a1,a2	b1,b3,b4	c1,c2	d1-d5
• Relationships of the bacteria to the host and environment. • Tests for the identification of bacteria • Cultivation of anaerobes.	21-24	a1,a2,a7	b1, b3,b4	c1,c2,c4	d1-d5

Course specification

• **Bacterial products** • **Serological tests**	25-26	a1,a4,a5,a7	b1,b2,b3,b4	c1,c2,c4	d1-d5
• **Bacterial infection and virulence.** • **In-vitro antimicrobial sensitivity**	27-28	a3,a5,a7	b1,b2,b4	c1,c3,c4	d1-d5
• **Koch's postulates and their exceptions** • **Mininimal inhibitory concentration (MIC).**	29-30	a1,a7	b1,b2,b4	c1,c3,c4	d1-d5
• **Bacterial genetics.** • **Methods of molecular biology.**	31-34	a6,a7	b2,b3,b4	c1,c4	d1-d5
• **Bases of designing an experimental work.** . • **Counting bacteria.** • **Enumeration of coliform bacteria and colony forming unit (cfu).**	35-36	a1,a3,a7	b1,b2,b3,b4	c1,c4	d1-d5

University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	**M-83**
Course title :	**Farm Animal Bacteriology**
Program title:	**Master of Animal Microbiology (M-MICR)**
Contact hours/ week	**5 hr/week (2hr theoretical and 3hr practical).**
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1. Provide the postgraduates with the knowledge, skills and attitudes that allow them to deal with bacterial diseases could affect farm animals.
2. Master different professional skills and techniques in diagnosis, prevention and control of bacterial diseases of farm animals.
3. Perform academic and professional self-development and continuous learning.
4. Apply the analytical approach and its use in the field of bacterial diseases of farm animals.
5. Employ the acquired knowledge about bacterial diseases of farm animals. together with other related topics in his/her professional practices.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Understand specialized knowledge in the field of bacterial diseases of farm animals and related sciences.

a.2. Outline theories and fundamentals related to the field of Microbiology, as well as in related areas.

a.3. Recognize the mutual influence between professional practice and its impacts on the environment.

a.4. Know the scientific developments in the area of farm animals Microbiology.

b- Intellectual skills:

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

b.1. Analyze and evaluate knowledge related to diagnosis, prevention and control of bacterial diseases of farm animals and interpret it to solve the related problems.

b.2. Assess the infective potential of environmental materials to control the infection in the community.

b.3. Suggest the solutions of the problems concerning with different bacterial affections in farm animals.

b.4. Write and evaluate scientific papers.

c- Professional and practical skills

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

c.1. Collect the suitable specimens at the suitable time from farm animals for bacteriological examination.

c.2. Recognize the precautions and handling for each sample.

c.3. Identify the causative microorganism depending on morphological, cultural and

biochemical characters as well as serology and molecular techniques.

c.4. Determine the sensitivities of infecting organism to antimicrobial drugs.

d- General and transferable skills

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

d.1. Work in a team work and manage time.

d.2. Communicate effectively using different means.

d.3. Properly use the information technologies for development of his/her professional abilities.

d.4. Use different facilities for gaining knowledge and information.

d.5. Understand the significance and means of continuous self learning.

4-Topics and contents

Course	Topic	No. of hours	Practical topic	No. of hours
Poultry and rabbit diseases (Lec. 2h./week, Pract 2h./week)	Introduction to bacteriology (classification, morphology and anatomy)	12	-Microscopes and microscopic examination. -Sterilization	18
	Bacterial growth, nutrition and virulence	12	Simple stains Differential stains.	18
	Bacterial products. Bacterial host relationship	6	Bacteriological media	9
	Gram positive bacteria affecting farm animals and their antimicrobial susceptibility.	18	Sampling and sample preparation Cultivation of bacteria Purification of bacterial culture	27
	Gram negative bacteria affecting farm animals and their antimicrobial susceptibility.	18	Biochemical identification of bacteria Antimicrobial susceptibility	27
	Bases of writing a thesis and research plan	6	Serological diagnosis	9
	Total	72		72

5-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 different bacteria.
- Biochemical tests for identification of different bacteria.
- Immunological and serological tests for identification of bacteria.

6-Student assessment

Course specification of postgraduate

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Written Exam	a1 to a4(all)	b1 to b4 (all)	c3,c4	d1
Practical Exam	a1, a3		c1 to c4 (all)	
Oral Exam	a1 to a4 (all)		c1 to c4 (all)	

6.2. Assessment schedules

Method	Week(s)
Practical exam	45-48
Written exam	45-48
Oral Exam	45-48

6.3. Weight of assessments

Assessment	Weight of assessment
Written exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	**100%**

7- List of references

7.1. Notes and books

Departmental notes on:

7.1.1- Notes on Bacteriology, Mycology and Immunology.

7.1.2- Notes on Practical Bacteriology, Mycology and Immunology.

7.1.3- Notes on Veterinary Microbiology.

7.2. Essential books:

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

7.2.2- Prescott, Harley and Klein's Microbiology. J. M. Willey, L. M. Sherwood, and C. J. Woolverton – 17th Edition, International Edition , 2008, Mc Graw Hill

7.2.3- Bergey's Manual of Determinative Bacteriology, 9th Edition John G. Holt, 1993

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

7.3. Recommended text books:

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

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

7.3.3- Medical Microbiology, R. Cruickshank 1986.

7.3.4- Mackie and McCartney Medical Microbiology, 14th Edition 1992 (J. P. Duguid, B.P. Marmion and R. H. A. Swain). (The bock present in the faculty library)

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

7.3.6- Introductory Mycology, 3rd Edition 1979, C.J. Alexopoulos and C.W. Mims.

7.3.7- Immunology, 1986 D. M. Weir.

7.3.8- Medical Immunology, 1977, Malcolm S. Thaler, M. D. and Richard D.

7.3.9- Topley & Wilson microbiology and microbial infections, 9 th edition

7.4. 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
Iranian Journal of Microbiology

Websites

http://www.sciencedirect.com.
http://www.Pubmed.
http://www.AltaVista.
http://www.cellsalive.com.
http://www.textbookofbacteriology.net.
http://www.ourfood.com/General_bacteriology.html
http://www.Veterinary Microbiology
http://www.Immunology and Immunopathology

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

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

Course specification of postgraduate

Course specification Matrix

Course	Topic	weeks	Intended learning outcomes of course (ILOs)			
			K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Poultry and rabbit diseases (Lec. 2h./week, Pract 2h./week)	• Introduction to bacteriology • (classification, morphology and anatomy) • Microscopes and microscopic examination. • Sterilization	1-6	a1,a2,a3,a4	b1,b2,b3	c3	d1 to d5 (all)
	• Bacterial growth, nutrition and virulence • Simple stains • Differential stains.	7-12	a1,a2,a3,a4	b1,b2,b3	c3	d1 to d5 (all)
	• Bacterial products. • Bacterial host relationship • Bacteriological media	13-15	a1,a2,a3,a4	b1,b2,b3	c3	d1 to d5 (all)
	• Gram positive bacteria affecting farm animals and their antimicrobial susceptibility. • Sampling and sample preparation • Cultivation of bacteria • Purification of bacterial culture	16-24	a1,a2,a3,a4	b1,b2,b3	c1,c2,c3,c4	d1 to d5 (all)
	• Gram negative bacteria affecting farm animals and their antimicrobial susceptibility. • Biochemical identification of bacteria • Antimicrobial susceptibility	25-33	a1,a2,a3,a4	b1,b2,b3	c1,c2,c3,c4	d1 to d5 (all)
	• Bases of writing a thesis and research plan • Serological diagnosis	34-36	a1,a2,a3,a4	b1,b2,b3.b4	c3	d1 to d5 (all)

Course specification of postgraduate

****

1-Basic information

Course Code:	M-84
Course title :	Bacteriology of Poultry and rabbits
Program title:	MVSc
Contact hours/ week	4 hours per week (2 theoretical and 2 practical)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1. Provide the postgraduates with the knowledge, skills and attitudes that allow them to deal with bacterial diseases could affect poultry and rabbits.
2. Master different professional skills and techniques in diagnosis, prevention and control of bacterial diseases of poultry and rabbits.
3. Perform academic and professional self-development and continuous learning.
4. Apply the analytical approach and its use in the field of bacterial diseases of poultry and rabbits.
5. Employ the acquired knowledge about bacterial diseases of poultry together with other related topics in his/her professional practices.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1-Set the classification of bacteria in comparison with other microorganisms.

a2- Recognize the optimal requirements for the growth and reproduction of bacteria.

a3-Identify different bacterial pathogens detecting their virulence factors and antimicrobial resistance

a4-Recognize bacterial diseases of poultry and rabbits as well as their pathogenesis and interaction with other diseases.

b-Intellectual skills:

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

b.1. Analyze and evaluate knowledge related to diagnosis, prevention and control of bacterial diseases of poultry and interpret it to solve the related problems.

b.2. Merge the acquired knowledge about bacterial diseases of poultry to solve the professional problems.

b.3. Conduct a research study and/or write a scientific paper related to poultry sciences.

b.4. Properly plan for performance enhancement in diagnosis, prevention and control of bacterial diseases of poultry and rabbits.

c- Professional and practical skills:

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

c.1. Master different techniques used in diagnosis, prevention and control of bacterial diseases of poultry and rabbits.

c.2. Assess different available tools and methods applied in diagnosis of bacterial diseases of poultry and rabbits.

****

c.3. Suggest the solutions of the problems concerning with bacterial diseases of poultry and rabbits.

c.4. Write and evaluate scientific papers.

d- General and transferable skills:

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

d.1. Communicate effectively using different means.

d.2. Properly use the information technologies for development of his/her professional abilities.

d.3. Assess him/herself and learn how to detect his/her learning requirements.

d.4. Use different facilities for gaining knowledge and information.

d.5. Understand the significance and means of continuous self learning.

4-Topics and contents

Course	Topic	No. of hours	Practical topic	No. of hours
Poultry and rabbit diseases (Lec. 2h./week, Pract 2h./week)	Introduction to bacteriology (classification, morphology and anatomy)	12	-Microscopy -Sterilization	12
	Bacterial growth, nutrition and virulence	12	Bacterial Staining	12
	Bacterial products. Bacterial host relationship	6	Bacteriological media	6
	Gram positive bacteria affecting poultry and rabbits and their chemotherapy	18	Sampling and sample preparation Cultivation of bacteria Purification of bacterial culture	18
	Gram negative bacteria affecting poultry and rabbits and their chemotherapy	18	Biochemical identification of bacteria Antimicrobial susceptibility	18
	Bases of writing a thesis and research plan	6	Serological diagnosis	8
	Total	72		72

5-Teaching and learning methods

5.1. Lectures: Depend on the sharing efforts of the students and supported with macromedia and multimedia aids.

5.2. Practical sections:

- Clinical and necropsy examination of diseased and dead samples.
- Laboratory diagnosis of different poultry and rabbit diseases using suitable methods.
- Antimicrobial sensitivity testing.

5.3. Self-learning: Electronic learning, Seminars, scientific search on related websites, international,

****

national and local journals, and related books in faculty library.

5.4. Assays and reviews

5.5. Discussion groups.

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**
Writing exam	a1- a2- a3-a4	b1- b2- b4	c3- c4	d1
Practical exam	a2- a3	b2	c1- c2	d1
Oral exam	a1- a2- a3- a4	b1- b2- b4	c1- c2- c3	d1

6.2. Assessment schedules

Method	Week(s)
Writing exam	45-48
Practical exam	45-48
Oral exam	45-48

6.3. Weight of assessments

Assessment	Weight of assessment
Writing exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of references

7.1. Notes and books:

Departmental notes on:

7.1.1- Notes on Bacteriology, Mycology and Immunology.

7.1.2- Notes on Practical Bacteriology, Mycology and Immunology.

7.1.3- Notes on Veterinary Microbiology

7.2. Essential books:

7.2.1- Prescott, Harley and Klein's Microbiology. J. M. Willey, L. M. Sherwood, and C. J. Woolverton – 17th Edition, International Edition , 2008, Mc Graw Hill

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

7.3. Recommended textbooks:

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

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

7.3.3- Medical Microbiology, R. Cruickshank 1986.

****

7.3.4- Mackie and McCartney Medical Microbiology, 14th Edition 1992 (J. P. Duguid, B.P. Marmion and R. H. A. Swain). (The bock present in the faculty library)

7.3.5- Topley & Wilson microbiology and microbial infections, 9 th edition

7.4. 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
Iranian Journal of Microbiology

Websites

http://www.sciencedirect.com.
http://www.Pubmed.
http://www.AltaVista.
http://www.cellsalive.com.
http://www.textbookofbacteriology.net.
http://www.ourfood.com/General_bacteriology.html
http://www.Veterinary Microbiology
http://www.Immunology and Immunopathology

Course Coordinators
Dr. Hala Sayed Hassan
Ass. Prof. of Bacteriology, Mycology Immunology, 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

****

Course specification Matrix

Topic	weeks	Intended learning outcomes of course (ILOs)			
		K&U (a)	**I.S (b)**	**P.P.S (c)**	**G.T.S (d)**
• Introduction to bacteriology (classification, morphology and anatomy) • Microscopy • Sterilization	1-6	a1	-	c1	d4,d5
• Bacterial growth, nutrition and virulence • Bacterial Staining	7-12	a2	b4	c1	d4,d5
• Bacterial products. • Bacterial host relationship • Bacteriological media	13-15	a1,a2	b1,b2	c1,c2	d4,d5
• Gram positive bacteria affecting poultry and rabbits and their chemotherapy • Sampling and sample preparation • Cultivation of bacteria • Purification of bacterial culture	16-24	a1,a2, a3,a4	b1,b2, b3,b4	c1,c2, c3,c4	d1,d2,d3, d4,d5
• Gram negative bacteria affecting poultry and rabbits and their chemotherapy • Biochemical identification of bacteria • Antimicrobial susceptibility	25-33	a1,a2, a3,a4	b1,b2, b3,b4	c1,c2, c3,c4	d1,d2,d3, d4,d5
• Bases of writing a thesis and research plan • Serological diagnosis	34-36	a3,a4	b3	c4	d1,d4

Beni-Suef University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	M-85
Course title :	Bacteriology of fish
Program title:	MVSc
Contact hours/ week	3 hours per week (1 theoretical and 2 practical)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1. Provide the postgraduates with the knowledge, skills and attitudes that allow them to deal with bacterial diseases could affect fishes.
2. Master different professional skills and techniques in diagnosis, prevention and control of bacterial diseases of fishes.
3. Apply the analytical approach and its use in the field of bacterial diseases of fishes.
4. Control the problems concerning with different bacterial pathogens of fish and prevent the spread of the infection in the community.
5. Employ the acquired knowledge about bacterial diseases of fish together with other related topics in his/her professional practices.
6. Perform academic and professional self-development and continuous learning.
7. Outline the bases of designing an experimental work using the bacterial isolates.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- Set the classification of bacteria in comparison with other microorganisms.

a2- Recognize the optimal requirements for the growth and reproduction of bacteria.

a3- Elicit the molecular genetic of bacteria.

a4-Identify different bacterial pathogens detecting their virulence factors and antimicrobial resistance

a5- Recall information about bacterial diseases of fishes and their pathogenesis and interaction with other diseases.

a6- Outline specialized theories and knowledge in the field of bacterial diseases of fishes and related sciences.

a7- Outline principles and morals of scientific research and the bases of designing an experimental work using bacterial isolate.

b-Intellectual skills:

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

b.1. Analyze and evaluate knowledge related to diagnosis, prevention and control of bacterial diseases of fishes and interpret it to solve the related problems.

b.2. Merge the acquired knowledge about bacterial diseases of fishes to solve the professional problems.

Course specification of postgraduate

b.3. Conduct a research study and/or write a scientific paper related to fishes.
b.4. Assess different risk factors for each practice related to fishes.
b.5. Properly plan for performance enhancement in diagnosis, prevention and control of bacterial diseases of fishes.

c- Professional and practical skills:

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

c.1. Master different conventional and advanced skills and techniques used in diagnosis, prevention and control of bacterial diseases of fishes
c.2. Assess different available tools and methods applied in diagnosis of bacterial diseases of fishes
c.3. Suggest the solutions of the problems concerning with bacterial diseases of fishes.
c.4. Write and evaluate efficiently scientific paper and dissertation according to the basics of scientific research.

d- General and transferable skills:

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

d.1. Communicate effectively using different means.
d.2. Properly use the information technologies for development of his/her professional abilities.
d.3. Assess him/herself and learn how to detect his/her learning requirements.
d.4. Use different facilities for gaining knowledge and information.
d.5. Understand the significance and means of continuous self learning.
d.6. Create rules and indicators for evaluation of the performance of others.

4-Topics and contents

Course	Week	Topic (theoretical)	Hours	Practical topic	Hours
Bacteriology of fish (Lec. 1h./week, Pract 2h./week)	1-8	- Introduction - General bacteriology	8	- Sampling and sample preparation - Isolation of bacteria	8 8
	9-12	- Bacterial genetics	4	- Microscopy	8
	13-18	- Gram positive bacteria affecting fishes and their chemotherapy	6	- Serialization& disinfection - Antimicrobial sensitivity tests	8 4
	19-28	Gram negative bacteria affecting Fishes and their chemotherapy	10	- Staining of bacteria - Types of Bacterial culture media - Biochemical tests	6 6 8
	29-30	Bases of writing a thesis and research plan	3	- Serological tests	6
Total			31		62

5-Teaching and learning methods

5.1. Lectures: Depend on the sharing efforts of the students and supported with macromedia and multimedia aids.

Course specification of postgraduate

5.2. Practical sections:
- Clinical and necropsy examination of diseased and dead samples.
- Laboratory diagnosis of different fish diseases using suitable methods.
- Antimicrobial sensitivity testing.

5.3. Self-learning: Electronic learning, Seminars, scientific search on related websites, international, national and local journals, and related books in faculty library.

5.4. Assays and reviews

5.5. Discussion groups.

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**
Writing Exam	a1,a2,a3,a4,a5,a6	b1,b2,b4, b5	c1,c3,c4	-
Practical Exam	a1,a2,a4	b1,b2,b5	c1,c2,c3	-
Oral Exam	a1,a2,a3,a4,a5,a6,a7	b1,b2,b4, b5	c1,c2,c3	-

6.2. Assessment schedules

Method	Week(s)
Writing exam	45-48
Practical exam	45-48
Oral exam	45-48

6.3. Weight of assessments

Assessment	Weight of assessment
Writing exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of references

7.1. Notes and books:

Departmental notes on:

7.1.1- Notes on Bacteriology, Mycology and Immunology.

7.1.2- Notes on Practical Bacteriology, Mycology and Immunology.

7.1.3- Notes on Veterinary Microbiology

7.2. Essential books:

7.2.1- Prescott, Harley and Klein's Microbiology. J. M. Willey, L. M. Sherwood, and C. J. Woolverton – 17th Edition, International Edition , 2008, Mc Graw Hill

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

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

Course specification of postgraduate

7.2.4. 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**.

7.3. Recommended textbooks:

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

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

7.3.3- Medical Microbiology, R. Cruickshank 1986.

7.3.4- Mackie and McCartney Medical Microbiology, 14th Edition 1992 (J. P. Duguid, B.P. Marmion and R. H. A. Swain). (The bock present in the faculty library)

7.3.5- Topley & Wilson microbiology and microbial infections, 9th edition

7.4. 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
Iranian Journal of Microbiology

Websites

http://www.sciencedirect.com.
http://www.Pubmed.
http://www.AltaVista.
http://www.cellsalive.com.
http://www.textbookofbacteriology.net.
http://www.ourfood.com/General_bacteriology.html
http://www.Veterinary Microbiology
http://www.Immunology and Immunopathology

Course Coordinators
Dr. Hala Sayed Hassan
Ass. Prof. of Bacteriology, Mycology Immunology, 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

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)
*Introduction& General bacteriology	1-8	a1,a2,a4,a5	b1,	c1	1, 2,4,5
- Sampling and sample preparation - Isolation of bacteria		a1,a2,a4	b1,b2,b4	c1,c2,c3	
*Bacterial genetics	9-12	a3	b1	c1	1, 2,4,5
- Microscopy		a1,a4	b1,b2,	c1,c2,c3	
*Gram positive bacteria affecting fishes and their chemotherapy	13-18	a1,a2,a4,a5,a6	b1,b2,b5	c1,c3	1, 2,4,5
- Serialization& disinfection - Antimicrobial sensitivity tests		---	b2,b4	c2	
*Gram negative bacteria affecting Fishes and their chemotherapy	19-28	a1,a2,a4,a5,a6	b1,b2,b5	c1,c3	1, 2,4,5
- Staining of bacteria - Types of Bacterial culture media - Biochemical tests		a1,a4	b1,b2,	c1,c2,3	
*Bases of writing a thesis and research plan	29-31	a7	b3,b5	c4	1, 2,4,5
- Serological tests		a1,a4	b1,b2,	c1,c2,c3	

University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	**M-86**
Course title :	**Bacteriology of invertebrates**
Program title:	**MVSc**
Contact hours/ week	**3 hr/week (1hr theoretical and 2hr practical).**
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1. Employ the acquired knowledge about the nature and classification of invertebrates.
2. Provide the postgraduates with the knowledge, skills and attitudes that allow them to deal with bacterial diseases could affect invertebrates.
3. Master different professional skills and techniques in diagnosis, prevention and control of bacterial diseases of invertebrates.
4. Apply the analytical approach and its use in the field of bacterial diseases of invertebrates.
5. Control the problems concerning with different bacterial pathogens of invertebrates and prevent the spread of the infection in the community.
6. Employ the acquired knowledge about bacterial diseases of invertebrates together with other related topics in his/her professional practices.
7. Perform academic and professional self-development and continuous learning.
8. Outline the bases of designing an experimental work using the bacterial isolates.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Employ the acquired knowledge about the nature and classification of invertebrates.
a.2. Outline specialized knowledge in the field of bacteriology of invertebrates.
a.3. Recognize bacterial pathogenic agents of invertebrates.
a.4. Design the scheme of identification and lab diagnosis of these pathogens.
a.5. Outline principles and morals of scientific research and the bases of designing an experimental work using bacterial isolates from invertebrates.
a.6. Master different professional skills and techniques in diagnosis, prevention and control of bacterial diseases.
a.7. List the extensively updated immunologic laboratory tests and advanced methods aid in rapid clinical diagnosis.
a.8. Recall the relationship between diseased invertebrates and human health (zoonotic diseases) and their control.

b- Intellectual skills:

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

b.1. Differentiate between bacterial species affecting invertebrates.
b.2. Determine the virulence associated genes in pathogenic bacteria in the invertebrates.
b.3. Analyze and evaluate knowledge related to diagnosis, prevention and control of such diseases and interpret it to solve the related problems.
b.4. Assess the infective potential of environmental materials to control the infection in the community.
b.5. Discriminate bacterial diseases of invertebrates with public health importance.
b.6. Suggest the solutions of the problems concerning with zoonosis.
b.7. Write and evaluate scientific papers.

c- Professional and practical skills

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

c.1. Master different conventional and advanced skills and techniques used in diagnosis, prevention and control of bacterial diseases of invertebrates.
c.2. Assess different available tools and methods applied in diagnosis of bacterial diseases of invertebrates.
c.3. Collect the suitable specimens at the suitable time for bacteriological examination.
c.4. Recognize the precautions and handling for each sample.
c.5. Identify the causative agents depending on morphological, cultural and biochemical characters as well as serology and molecular techniques.
c.6. Determine the sensitivities of infected fungi to antimicrobial drugs.
c.7. Identify and determine the significance.

d- General and transferable skills

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

d.1. Work in a team work and manage time.
d.2. Communicate effectively using different means.
d.3. Properly use the information technologies for development of his/her professional abilities.
d.4. Use different facilities for gaining knowledge and information.
d.5. Understand the significance and means of continuous self-learning.

4-Topics and contents

Course	Week	Topic	Lectures	Practical
Bacteriology of Invertebrates (Lec. 1h./week, Pract 2h./week)	1-2	– Nature and classification of invertebrates	2	4
	3-5	– Introduction and Taxonomy of invertebrates' bacterial pathogens.	3	6
	6-8	– Bacteriology of Arthropods.	3	6
	9-11	– Bacteriology of Crustaceans.	3	6
	12-14	– Bacteriology of Mollusca.	3	6
	15-17	– Bacteriology of Helminthes.	3	6
	18-20	–Zoonotic bacterial disease transmitted by invertebrates.	3	6

	21-24	- Control of bacterial disease of invertebrates - Chemotherapy	4	8
	25-27	- Principles of scientific research and the bases of designing an experimental work. - Bases of writing a thesis and research plan	3	--
Total			27	48

5-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 different bacterial isolates.
- Biochemical tests for identification of different bacteria.
- Immunological and serological tests for identification of bacteria.

5.4- Field visits.

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
writing Exam	a1 to a12(all)	b1 to b4 (all)	c1, c2, c3,c4,c7	d3, d4, d5
Practical Exam	a1, a2, a3, a7		c1 to c7 (all)	
Oral Exam	a1 to a12 (all)		c1 to c7 (all)	

6.2. Assessment schedules

Method	Week(s)
Practical exam	45-48
writing exam	45-48
Oral Exam	45-48

6.3. Weight of assessments

Assessment	Weight of assessment
Writing exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	**100%**

7- List of references

7.1. Notes and books

Departmental notes on:

7.1.1- Notes on Bacteriology, Mycology and Immunology.
7.1.2- Notes on Practical Bacteriology, Mycology and Immunology.
7.1.3- Notes on Veterinary Microbiology.

7.2. Essential books:

7.2.1- Fish diseases & disorders, 1st Edition, (Edited by P.T.K woo) published by CAB international 1999, ISBN 0851991947
7.2.2- Prescott, Harley and Klein's Microbiology. J. M. Willey, L. M. Sherwood, and C. J. Woolverton – 17th Edition, International Edition, 2008, Mc Graw Hill
7.2.3- Diagnostic Microbiology, 2nd Edition 2000 Connie R. Mahon and George Manuselis.

7.3. Recommended text books:

7.3.1- Clinical Veterinary Microbiology, P.J. Quinn, M.E. Carter, B. Markey and G.R. Carter, 6th Edition2004

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

7.3.3- Medical Microbiology, R. Cruickshank 1986.

7.3.4- Mackie and McCartney Medical Microbiology, 14th Edition 1992 (J. P. Duguid, B.P. Marmion and R. H. A. Swain). (The bock present in the faculty library)

7.3.5- Topley & Wilson microbiology and microbial infections, 9th Edition

7.3.6- Fish medicine, 1st Edition, (Michael K. Stoskopf, D. V. M.) Published by W.B. Saunders Company 1996, ISBN 0-7216-2629-7

7.3.6- Fish diseases diagnosis and treatment, 1st Edition, (Edward J. Noga) Published by Mosby. Year Book1996, Editor: Lindal. Duncan, ISBN 1-55664-374-8

7.3.7- Diseases of carp, 1st Edition, Published by Fishing news books, 2002, ISBN 0-85238-252-9

7.4. 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
Iranian Journal of Microbiology

Journal of aquatic animal health
Canadian Journal of fisheries & aquatic sciences
Journal of fish biology
Journal of fish diseases

Websites

http://www.sciencedirect.com.
http://www.Pubmed.
http://www.AltaVista.
http://www.cellsalive.com.
http://www.textbookofbacteriology.net.
http://www.ourfood.com/General_bacteriology.html
http://www.Veterinary Microbiology
http://www.Immunology and Immunopathology
WWW.aquariumfish.com
WWW.nosickfish.com
WWW.kiovet.com
WWW.nationalfishpharm.com
WWW.fishdisease.net
WWW.aquatececo.com
WWW.aquatec-solutions.com
WWW.Aqualink.com/disease/s-

Course Coordinator

Dr. Hala Sayed Hassan

Ass. Prof. of Bacteriology, Mycology and Immunology, Faculty of Veterinary Medicine, Beni-Suef University

Head of the department

Prof. Dr. Ismail Abd El-Hafeez Radwan

Professor and Head of Bacteriology, Mycology and Immunology department, Faculty of Veterinary Medicine, Beni-Suef University

Course specification of postgraduate

Course specification Matrix

Week	Topic	Intended learning outcomes of course (ILOs)			
		K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
1-2	Nature and classification of invertebrates	1	-	-	1,2,3,4,5
3-5	Introduction and Taxonomy of invertebrates' bacterial pathogens.	2,3	1	1,2,5	
9-11	Bacteriology of Arthropods.	2,3,4,6,7	1,2,3	1,2,3,4,5,6, 7	
12-14	Bacteriology of Crustaceans.	2,3,4,6,7	1,2,3		
15-17	Bacteriology of Mollusca.	2,3,4,6,7	1,2,3		
9-11	Bacteriology of Helminthes.	2,3,4,6,7	1,2,3		
18-20	Zoonotic bacterial disease transmitted by invertebrates.	2,3,4,6,7,8	1,2,3,4,5,6		
21-24	- Control of bacterial disease of invertebrates - Chemotherapy	6,8	4,6		
25-27	- Principles of scientific research and the bases of designing an experimental work. - Bases of writing a thesis and research plan	4,5	7	-	-

University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	**M-87**
Course title :	**Diagnostic Bacteriology**
Program title:	**MVSc**
Contact hours/ week	**4 hr/week (2hr theoretical and 2hr practical).**
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1. Apply the analytical approach and its use in the field of bacterial diseases in veterinary practice.
2. Show awareness of current problems and recent theories in the field of bacterial diseases.
3. Master different professional skills and techniques in diagnosis, prevention and control of bacterial diseases.
4. Outline the bases of designing an experimental work using bacterial isolate.
5. Employ the acquired knowledge about the nature and anatomy of bacterial cells in relation to their functions.
6. Set the classification of bacteria in comparison with other microorganisms.
7. Recognize the optimal requirements for the growth and reproduction of bacteria.
8. Elicit the molecular genetic of bacteria.
9. Identify different bacterial pathogens detecting their virulence factors and antimicrobial resistance.
10. Diagnose different veterinary bacterial infections by different traditional and recent methods.
11. Control the problems concerning with different veterinary bacterial affections and prevent the spread of the infection in the community.
12. Perform academic and professional self-development and continuous learning.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Recall specialized knowledge in the field of bacterial diseases and related sciences.

a.2. Outline principles and morals of scientific research and the bases of designing an experimental work using bacterial isolate.

a.3. Employ the acquired knowledge about the nature and structure of bacterial cells in relation to their functions.

a.4. Classify bacteria in comparison with other microorganisms.

a.5. Recognize the nutritional and environmental requirements for growth and reproduction of bacteria.

a.6. Enumerate the by-products and factors associated with the virulence of the bacteria.
a.7. Describe how genetic characters of bacteria could be expressed, transferred and changed.
a.8. Be aware with quality control measures and acquire the knowledge required for protecting environment from bacterial infections and planning the infection management policy.
a.9. List the extensively updated immunologic laboratory tests and advanced methods aid in rapid clinical diagnosis.

b- Intellectual skills:

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

b.1. Analyze and evaluate knowledge related to diagnosis, differential diagnoses, prevention and control of bacterial diseases in veterinary practice.
b.2. Explain the important mechanisms of bacterial pathogenesis, basic concepts of molecular immunology, immunity to infection and outcomes of infections.
b.3. Solve the clinical laboratory problems related to bacterial diseases.
b.4. Assess the infective potential of environmental materials to control the infection in the community.
b.5. Make a decision for prevention and control of different veterinary bacterial affections.
b.6. Conduct a research study and/or Write and evaluate scientific article on a research problem in the field related to his/her thesis.

c- Professional and practical skills

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

c.1. Design a laboratory experiments with an awareness of security procedures in a Microbiology lab.
c.2. Recognize the methods used for the collection, transport, precautions and bacteriological analysis of different clinical specimens.
c.3. Perform the isolation and preservation of bacterial pathogens.
c.4. Assess different available tools and methods applied in diagnosis of bacterial diseases in veterinary practice.
c.5. Analyze and interpret bacteriological laboratory data and write scientific report.
c.6. Determine the sensitivities of the pathogenic bacteria to antibacterial drugs.
c.7. Write efficiently scientific paper and dissertation according to the basics of scientific research.

d- General and transferable skills

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

d.1. Communicate effectively using different means.
d.2. Properly use the information technologies for development of his/her professional abilities.

Course specification of postgraduate

d.3. Use different facilities for gaining knowledge and information.
d.4. Understand the significance and means of continuous self-learning.
d.5. Work in a team work, leading the team
d.6. Manage the time.

4-Topics and contents

Course	Week	Topic (theoretical)	Hours	Practical topic	Hours
Diagnostic Bacteriology (Lec. 2h./week, Pract 2h./week)	1-2	-Introduction& history of Bacteriology. - Prokaryote and Eukaryote.	2 2	- Safety in the laboratory	4
	3-10	- General Bacteriology.	16	-Bacteriological samples (collection, transport& preservation) -Microscopy& Micrometry -Bacterial Morphology -Sterilization & Disinfection -Bacterial stains	4 2 2 4 4
	11-13	- Bacterial genetics	6	-Bacterial isolation& purification on different media.	6
	14-15	- Gram positive cocci	4	-Biochemical identification of bacteria.	4
	16-22	- Gram positive bacilli	14	-Serological and immunological tests. -Molecular identification of bacteria. - *S. aureus* (Gram`s stain) - Streptococci (Gram`s stain& Loeffler`s MB)	4 4 2 4
	23-30	- Gram negative bacteria	16	- Gram`s stain for Gram positive and Gram negative bacilli. -Zeihl-Neelsen stain for Mycobacteria. -Leishman`s stain for Pasteurella.	12 2 2
	31-32	Principles of scientific research and the bases of designing an experimental work using fungal isolate and writing a thesis.	4	Antimicrobial susceptibility of bacteria.	4
	Total		64		64

5-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 different bacteria.
- Biochemical tests for identification of different bacteria.
- Immunological and serological tests for identification of bacteria.
- Molecular identification of bacteria.

Course specification of postgraduate

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
Writing Exam	a1-a9 (all)	a1,a2,a3,a4,a6	c1,c4,c7	d2, d4, d6
Practical Exam	a2,a5,a6,a8,a9	a1,a3,a4,a5	c2-c6	
Oral Exam	a1-a9 (all)	b1-b5	c1-c6	

6.2. Assessment schedules

Method	Week(s)
Practical exam	45-48
writing exam	45-48
Oral Exam	45-48

6.3. Weight of assessments

Assessment	Weight of assessment
Writing exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	**100%**

7- List of references

7.1. Notes and books

Departmental notes on:

7.1.1- Notes on Bacteriology, Mycology and Immunology.

7.1.2- Notes on Practical Bacteriology, Mycology and Immunology.

7.1.3- Notes on Veterinary Microbiology.

7.2. Essential books:

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

7.2.2- Prescott, Harley and Klein's Microbiology. J. M. Willey, L. M. Sherwood, and C. J. Woolverton – 17th Edition, International Edition , 2008, Mc Graw Hill

7.2.3- Bergey's Manual of Determinative Bacteriology, 9th Edition John G. Holt, 1993

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

7.3. Recommended text books:

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

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

7.3.3- Medical Microbiology, R. Cruickshank 1986.

7.3.4- Mackie and McCartney Medical Microbiology, 14th Edition 1992 (J. P. Duguid, B.P. Marmion and R. H. A. Swain). (The bock present in the faculty library)

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

7.3.6- Introductory Mycology, 3rd Edition 1979, C.J. Alexopoulos and C.W. Mims.

7.3.7- Immunology, 1986 D. M. Weir.

7.3.8- Medical Immunology, 1977, Malcolm S. Thaler, M. D. and Richard D.

7.3.9- Topley & Wilson microbiology and microbial infections, 9^{h} edition

7.4. 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
Iranian Journal of Microbiology

Websites

http://www.sciencedirect.com.
http://www.Pubmed.
http://www.AltaVista.
http://www.cellsalive.com.
http://www.textbookofbacteriology.net.
http://www.ourfood.com/General_bacteriology.html
http://www.Veterinary Microbiology
http://www.Immunology and Immunopathology

Course Coordinator

Dr. Hala Sayed Hassan

Ass. Prof. of Bacteriology, Mycology and Immunology, Faculty of Veterinary Medicine, Beni-Suef University

Head of the department

Prof. Dr. Ismail Abd El-Hafeez Radwan

Professor and Head of Bacteriology, Mycology and Immunology department, Faculty of Veterinary Medicine, Beni-Suef University

Course specification of postgraduate

Course specification Matrix

Week		Topic	Intended learning outcomes of course (ILOs)			
			K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
1-2		* Introduction& history of Bacteriology. * Prokaryote and Eukaryote.	a3 a4	----	---	d1-d6
		- Safety in the laboratory	a8	b1,b3	c2	d3-d6
3-10		*General Bacteriology.	a3.a5,a8	b2	---	d1-d6
	3-4	-Bacteriological samples (collection, transport& preservation)	a8	b1,b3,b4,b5	c2	d3-d6
	5	-Microscopy& Micrometry	a2,a9	b1,b3	c4,c5	
	6	-Bacterial Morphology	a2,29	b1,b3	c4,c5	
	7-8	-Sterilization & Disinfection	a8	b1,b3,b4,b5	--	
	9-10	-Bacterial stains	a2,29	b1,b3	c4,c5	
11-13		* Bacterial genetics.	a7	b2	--	d1-d6
		- Bacterial isolation& purification on different media.	a5,a9	b1,b3	c3,c4,c5	d3-d6
14-15		*Gram positive cocci.	a1, a3,a5,a9	b1,b2,b3,b4	C4	d1-d6
		- Biochemical identification of bacteria.	a2,a9	b1,b3	c4,c5	d3-d6
16-22		* Gram positive bacilli.	a1, a3,a5,a9	b1,b2,b3,b4	c4	d1-d6
	16-17	-Serological and immunological tests.	a2,a9	b1,b3	c4,c5	d3-d6
	18-19	-Molecular identification of bacteria.		b1,b3		
	20	- *S. aureus* (Gram`s stain)		b1,b3,b4		
	21-22	- Streptococci (Gram`s stain& Loeffler`s MB).		b1,b3,b4		
23-30		* Gram negative bacteria	a1, a3,a5,a9	b1,b2,b3,b4	c4	d1-d6
	23-28	-Gram`s stain for Gram positive and Gram negative bacilli.	a2,a9	b1,b3,b4	c4,c5	d3-d6
	29	-Zeihl-Neelsen stain for Mycobacteria.				
	30	-Leishman`s stain for Pasteurella.				
31-32		*Principles of scientific research and the bases of designing an experimental work using fungal isolate and writing a thesis.	a2	b1,b6	c1,c4,c7	d1-d6
		- Antimicrobial susceptibility of bacteria	a8	b1,b3,b4,b5	c5,c6	d3-d6

University
Faculty of Veterinary Medicine

University: Beni-Suef University, Egypt.

Faculty: Faculty of Veterinary Medicine.

Departments: Bacteriology, Mycology and Immunology.

Course specification

A- Administrative Information:

Course Code:	M-88
Course title :	Advanced Immunology
Program title:	MVSc
Contact hours/ week	4 hours per week (2hr theoretical and 2hr practical).
Date of course approval:	

B-Professional information

1- Overall aims of course:

Overall aims of course:

This course aims to:

1. Provide the graduate with theories and fundamentals in the field of Immunology and related areas.
2. Supply the veterinarian master students with the knowledge and skills to equip them for a career in diagnostic veterinary Immunology.
3. Develop the competence in applying clinical skills to the veterinary practice.
4. Enhance the critical and analytical powers of the student in relation to basic and diagnostic Immunology.
5. Provide the student with the skills to adapt and respond positively to change.
6. Improve the development of the interpersonal skills.

2- Intended learning outcomes of course (ILOs)

a-Knowledge and understanding:

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

a.1. define the composition and structure of the immune system

a.2. Describe cell mediated and humeral immune response and identify their Cells cooperation.

a.3. Distinguish basis of diagnostic Immunology.

a.4. List extensively updated immunologic laboratory tests and new methods aid in rapid clinical diagnosis.

a.5. List types of hypersensitivity and the significance of delayed type.

a.6. Enumerate types of vaccines and evaluate the immune response against different vaccine in different hosts and against different diseases.

a.7. Enumerate types of vaccines and evaluate the immune response against different vaccine in different hosts and against different diseases.

b-Intellectual skills:

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

b.1-Analyse and evaluate the knowledge in the field of Immunology and related topicsto solve problems.

b.2-Interpret data of diagnostic immunology.

b.3-integrate different knowledge to solve clinical laboratory problems effectively.

b.4- Conduct a research study and / or write a scientific article on a research problem in the field related to his/her thesis

b.5- Explain important mechanisms of microbial pathogenesis, basic concepts of molecular immunology, immunity to infection and outcomes of infections.

c-Professional and practical skills

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

c1-Master the basic professional skills and modern in the area of Immunology.
c2-Writeand evaluate reports.
c3-Assess methods and tools in the area of Immunology.
c4- Evaluate the immune competence in the Laboratory.
c5- Evaluate the effects of different vaccines.

d-General and transferable skills

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

d.1. Communicate effectively using different means.
d.2. Properly use the information technologies for development of his/her professional abilities.
d.3. Assess him/herself and learn how to detect his/her learning requirements.
d.4. Use different facilities for gaining knowledge and information.
d.5. Understand the significance and means of continuous self learning.

3-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Immunology 4hours/week (Lec. 2hr/wk, Pr 2hr/wk)	Structure of the immune system	8	Preparation of blood samples for immunological diagnosis.	8
	–Types and mechanisms of immunity.	8	Preparation of serial dilution and buffers of different normality and molarity.	8
	–Antigen and Immunogenicity.	8	In vitro antigen-antibody reactions (serological methods).	8
	–Immunoglobulins –Cells cooperation for humeral and cell mediated immunity	10	Complement fixation test (CF).	10

	–Adjuvant –Immunostimulants and immunosuppression.	10	Lymphocyte transformation test and macrophage migration inhibition assay.	10
Immunology 4hours/week (Lec. 2hr/wk, Pr 2hr/wk)	–Monoclonal Antibodies.	8	Separation & counting of lymphocytes and macrophages.	8
	– types and mechanisms of hypersensitivity	10	-Skin test and recent techniques.	10
	– Vaccines.	10	Phagocytic activities and macrophage killing assay.	10
Total		**72**		**72**

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.

Practice different immunological and serological tests in the laboratory.

5.4- Field visits: Visits to diagnostic and reference labs.

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**
Written Exam	**a1 to a6(all)**	**b1to b5 (all)**	**c1 to c5 (all)**	**None**
Practical Exam	**a4**	**b1,b2,b3,b4**	**c1 to c5(all)**	
Oral Exam	**a1 to a6 (all)**	**b1 tob5 (all)**	**c1 to c5 (all)**	

5.2. Assessment schedules/semester:

Method	Week(s)
Written exam	45-48
Final exam	45-48
Oral Exam	45-48

5.3. Weight of assessments:

Assessment	Weight of assessment
written exam	50%
practical exam	25%
Final exam	25%

6- List of references

6.1. <u>Notes and books:</u>

Departmental notes on:

6.1.1- Bacteriology, Mycology and Immunology.

6.1.2- Practical Bacteriology, Mycology and Immunology.

6.2. Essential books:

6.2.1- Experimental immunology3rd ed. by Burrell and Mascoll (2010)

6.2.2- Veterinary Immunology: An Introduction by Ian R. Tizard (2008)

6.2.3- Immunology, 1986 D. M. Weir.

6.2.4- Medical Immunology, 1977, Malcolm S. Thaler, M. D. and Richard D.

6.4. Journals, Websites ……..etc

Microbiology and Immunology

Journal of Microbiology, Immunology and Infection

Websites

http://www.sciencedirect.com.

http://www.Pubmed.

http://www.AltaVista.

http://www.cellsalive.com.

http://www.Immunology and Immunopathology

Course Coordinator

Dr. HalaSayed Hassan

Ass. Prof. of Bacteriology, Mycology and Immunology, Faculty of Veterinary Medicine, Beni-Suef University

Head of the department

Prof. Dr. Ismail Abd El-HafeezRadwan

Professor and Head of Bacteriology, Mycology and Immunology department, Faculty ofVeterinary Medicine,Beni-Suef University

Course specification Matrix

Course	Topic	weeks	Intended learning outcomes of course (ILOs)			
			K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Immunology 4hours/week (Lec. 2hr/wk, Pr 2hr/wk)	Structure of the immune system Preparation of blood samples for immunological diagnosis.	1-4	a1, a3	b1,b2, b3,b4	c1,c2,c3	a1-a5 (all)
	–Types and mechanisms of immunity. Preparation of serial dilution and buffers of different normality and molarity.	5-8	a2,a3	b1,b2, b3,b4	c1,c2,c3	a1-a5 (all)
	–Antigen and Immunogenicity. In vitro antigen-antibody reactions (serological methods).	9-12	a2,a3	b1,b2, b3,b4	c1,c2,c3	a1-a5 (all)
	–Immunoglobulins –Cells cooperation for humeral and cell mediated immunity Complement fixation test (CF).	13-17	a2,a3,a4	b1,b2, b3,b4	c1,c2,c3	a1-a5 (all)
	–Adjuvant –Immunostimulants and immunosuppression. Lymphocyte transformation test and macrophage migration inhibition assay.	18-22	a2,a3,a4	b1,b2, b3,b4	c1,c2,c3	a1-a5 (all)
	–Monoclonal Antibodies. Separation & counting of lymphocytes and macrophages.	23-26	a2,a3,a4	b1,b2, b3,b4	c1,c2,c3,c4	a1-a5 (all)
	– types and mechanisms of hypersensitivity -Skin test and recent techniques.	27-31	a3,a5	b1,b2, b3,b4	c1,c2,c3,c4	a1-a5 (all)
	– Vaccines. Phagocytic activities and macrophage killing assay.	32-36	a3,a6	b1,b2, b3,b4	c4,c5	a1-a5 (all)

University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	**M-89**
Course title :	**Mycology (Advanced course)**
Program title:	**MVSc**
Contact hours/ week	**3 hr/week (1hr theoretical and 2hr practical).**
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1. Apply the analytical approach and its use in the field of fungal diseases in veterinary practice.
2. Show awareness of current problems and recent theories in the field of fungal diseases.
3. Master different professional skills and techniques in diagnosis, prevention and control of fungal diseases.
4. Outline the bases of designing an experimental work using fungal isolate.
5. Employ the acquired knowledge about the nature and anatomy of fungal cells in relation to their functions.
6. Set the classification of fungi in comparison with other microorganisms.
7. Recognize the optimal requirements for the growth and reproduction of fungi.
8. Elicit the molecular genetic of fungi.
9. Identify different fungal pathogens detecting their virulence factors and antifungal resistance.
10. Diagnose different veterinary fungal infections by different traditional and recent methods.
11. Control the problems concerning with different veterinary fungal affections and prevent the spread of the infection in the community.
12. Perform academic and professional self-development and continuous learning.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Recall specialized knowledge in the field of fungal diseases and related sciences.

a.2. Outline principles and morals of scientific research and the bases of designing an experimental work using fungal isolate.

a.3. Employ the acquired knowledge about the nature and structure of fungal cells in relation to their functions.

a.4. Classify fungi in comparison with other microorganisms.

a.5. Recognize the nutritional and environmental requirements for growth and reproduction of fungi.

a.6. Enumerate by-products and the factors associated with the virulence of the fungi.

a.7. Describe how genetic characters of fungi could be expressed, transferred and changed.
a.8. Be aware with quality control measures and acquire the knowledge required for protecting environment from fungal infections and planning the infection management policy.
a.9. List the extensively updated laboratory tests and advanced methods aid in rapid clinical diagnosis.

b- Intellectual skills:

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

b.1. Analyze and evaluate knowledge related to diagnosis, differential diagnoses, prevention and control of fungal diseases in veterinary practice.
b.2. Explain the important mechanisms of fungal pathogenesis, basic concepts of molecular immunology, immunity to infection and outcomes of infections.
b.3. Solve the clinical laboratory problems related to fungal diseases.
b.4. Assess the infective potential of environmental materials to control the infection in the community.
b.5. Make a decision for prevention and control of different veterinary fungal affections.
b.6. Conduct a research study and/or Write and evaluate scientific article on a research problem in the field related to his/her thesis.

c- Professional and practical skills

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

c.1. Design a laboratory experiments with an awareness of security procedures in a Microbiology lab.
c.2. Recognize the methods used for the collection, transport, precautions and mycological analysis of different clinical specimens.
c.3. Perform the isolation and preservation of fungal pathogens.
c.4. Assess different available tools and methods applied in diagnosis of fungal diseases in veterinary practice.
c.5. Analyze and interpret mycological laboratory data and write scientific report.
c.6. Determine the sensitivities of the pathogenic fungi to antifungal drugs.
c.7. Write efficiently scientific paper and dissertation according to the basics of scientific research.

d- General and transferable skills

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

d.1. Communicate effectively using different means.
d.2. Properly use the information technologies for development of his/her professional abilities.
d.3. Use different facilities for gaining knowledge and information.

d.4. Understand the significance and means of continuous self-learning.
d.5. Work in a team work, leading the team
d.6. Manage the time.

4-Topics and contents

Course	Week	Topic (theoretical)	Hours	Practical topic	Hours
Mycology (Advanced course) (Lec. 1h./week, Pract 2h./week)	1-2	- Introduction to Mycology. - Prokaryote and Eukaryote.	2	Safety in the laboratory	4
	3-11	- General Mycology& Classifications of fungi. - Fungal genetics	6 3	- Mycological samples - Sterilization - Identification of Yeasts by different methods.	4 4 10
	12-16	- Yeasts - Moulds	2 3	- Identification of Moulds by different methods.	10
	17-19	-Diphasic fungi	3	- Diphasic fungi	6
	20-21	-Dermatophytes.	2	-Dermatophytes.	4
	22-23	- Zygomycetes	2	- Zygomycetes	4
	24-25	- Dematoceous fungi	2	- Dematoceous fungi	4
	26-27	- Mycotoxins	2	Mycotoxins	4
	28-30	Principles of scientific research and the bases of designing an experimental work using fungal isolate and writing a thesis.	3	Antimycotic susceptibility	6
	Total		30		60

5-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 different fungi.
- Biochemical tests for identification of different fungi.
- Immunological and serological tests for identification of fungi.
- Molecular identification of fungi.

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
Writing Exam	a1-a9 (all)	a1,a2,a3,a4,a6	c1,c4,c7	d2, d4, d6
Practical Exam	a2,a5,a6,a8,a9	a1,a3,a4,a5	c2-c6	
Oral Exam	a1-a9 (all)	b1-b5	c1-c6	

6.2. Assessment schedules

Method	Week(s)
Practical exam	45-48
writing exam	45-48
Oral Exam	45-48

6.3. Weight of assessments

Assessment	Weight of assessment
Writing exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	**100%**

7- List of references

7.1. Notes and books

Departmental notes on:

7.1.1- Notes on Bacteriology, Mycology and Immunology.

7.1.2- Notes on Practical Bacteriology, Mycology and Immunology.

7.2. Essential books:

7.2.1- Medical Mycology by Kevim Kavanagh (2007)

7.2.2 - Modern Mycology by J.W.Deacoon (1997)

7.2.3- Prescott, Harley and Klein's Microbiology. J. M. Willey, L. M. Sherwood, and C. J. Woolverton – 17th Edition, International Edition, 2008, Mc Graw Hill

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

7.3. Recommended text books:

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

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

7.3.3- Medical Microbiology, R. Cruickshank 1986.

7.3.4- Mackie and McCartney Medical Microbiology, 14th Edition 1992 (J. P. Duguid, B.P. Marmion and R. H. A. Swain). (The bock present in the faculty library)

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

7.3.6- Introductory Mycology, 3rd Edition 1979, C.J. Alexopoulos and C.W. Mims.

7.3.9- Topley & Wilson microbiology and microbial infections, 9th edition.

7.4. Journals, Websites ……..etc

Journal of Medical and Veterinary Mycology

Medical mycology

Acta Mycologia

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
Iranian Journal of Microbiology

Websites

http://www.sciencedirect.com.
http://www.Pubmed.
http://www.AltaVista.
http://www.cellsalive.com.
http://www.textbookofbacteriology.net.
http://www.Veterinary Microbiology

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

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

Course specification of postgraduate

Course specification Matrix

Week		Topic	Intended learning outcomes of course (ILOs)			
			K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
1-2		* Introduction to Mycology. * Prokaryote and Eukaryote.	a3 a4	----	---	d1-d6
		- Safety in the laboratory	a8	b1,b3	c2	d3-d6
3-11	3-8 9-11	* General Mycology& Classifications of fungi. * Fungal genetics	a3.a5,a8 a7	b2 b2	---	d1-d6
	3-4 5-6 7-11	- Mycological samples - Sterilization - Identification of Yeasts by different methods.	a8 a8 a1,a5,a9	b1,b3,b4,b5 b1,b3,b4,b5 b1,b3	c2 -- c3,c4,c5	d3-d6 d3-d6 d3-d6
12-16	12-13 14-16	* Yeasts * Moulds.	a1, a3,a5,a9	b1,b2,b3,b4	c4	d1-d6
		- Identification of Moulds by different methods.	a3,a5,a9	b1,b3	c3,c4,c5	d3-d6
17-19		* Diphasic fungi.	a1, a3,a5,a9	b1,b2,b3,b4	C4	d1-d6
		- Diphasic fungi	a2,a5,a9	b1,b3,b4	c3,c4,c5	d3-d6
20-21		* Dermatophytes.	a1, a3,a5,a9	b1,b2,b3,b4	c4	d1-d6
		- Dermatophytes.	a2,a5,a9	b1,b3,b4	c3,c4,c5	d3-d6
22-23		* Zygomycetes	a1, a3,a5,a9	b1,b2,b3,b4	c4	d1-d6
		- Zygomycetes	a2,a5,a9	b1,b3,b4	c3,c4,c5	d3-d6
24-25		* Dematacеous fungi	a1, a3,a5,a9	b1,b2,b3,b4	c4	d1-d6
		- Dematacеous fungi	a2,a5,a9	b1,b3,b4	c3,c4,c5	d3-d6
26-27		* Mycotoxins	a1,a8	b1,b2,b3,b4	c4	d1-d6
		- Mycotoxins	a2,a5	b1,b3,b4	c5	d3-d6
28-30		* Principles of scientific research and the bases of designing an experimental work using fungal isolate and writing a thesis.	a2	b1,b6	c1,c4,c7	d1-d6
		- Antimycotic susceptibility	a8	b1,b3,b4,b5	c5,c6	d3-d6