



Programme Specification

Diploma of Microbiology

University: Beni-Suef University.

Faculty: Faculty of Veterinary Medicine.

A- Administrative Information

1. Programme title: Diploma of animal microbiology.
2. Award/degree: Diploma
4. Department responsible: Bacteriology, Mycology and Immunology
5. Coordinator: Dr. Hala Sayed Hassan Salam
6. External evaluator(s): Ahmed Mohammed Mohammed Ammar
7. Approval date:

B- Professional Information

Programme aims: The Diploma programme support the postgraduate student ability to:

1. Provide the postgraduates with the knowledge, skills and attitudes that allow them to master bacteria, fungi and viruses affecting animals and basic criteria used in the classification/ taxonomy of these micro-organisms.
2. Demonstrate advanced knowledge and understanding of the nature of viruses, bacteria and fungi and basic criteria used in the classification/ taxonomy of these micro-organisms.
3. completely familiar with different infectious diseases, pathogenesis, treatment, control and molecular basis of diagnosis of different microbial infections including viral, bacterial and fungal infections regarding signs and symptoms, and specimen collection with subsequent, microbiological, serological and molecular identifications.
4. Provide postgraduates with specialized and related knowledge in specific and non-specific immunity and relating with current veterinary and public health problems.
5. Introduce the postgraduates to the basics of molecular biology and its application
6. Consider the need for self-development and engagement in continuous learning.
7. Develop the information technology skills.
8. Develop the professional skills of criticism and analysis based on scientific bases.
9. Provide postgraduates the ability to interact with community problems and respect ethical values according to community cultures.

2. Intended learning outcomes (ILOs) for programme

a-Knowledge and understanding:

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

- a1-Acquire specialized principles, theories and hypotheses in the veterinary microbiology and other career related science.
- a2- Recognize veterinary microbiology practice regulations and ethics.
- a3- Identify quality principles and basics in veterinary microbiology practice.
- a4-Describe methods of different viral, bacterial and fungal diagnosis and describe the basis of their immunity.

b- Intellectual skills

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



b1- Interpret the results of serological techniques with categorizing bacteria, viruses and fungi according to standard taxonomy heritage.

b2- Formulate a systematic approach for laboratory diagnosis of diseases caused by bacteria, viruses and fungi and selection of the most appropriate and cost effective method.

b3- Interpret gene sequence.

c- Professional and practical skills

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

c1- Take samples for bacterial, viral and fungal identification with isolation of them by different methods.

c2- Perform serological tests for viral, bacterial and fungal identification.

c3- Perform nucleic acid isolation and amplification

d- General and transferable skills

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

d1- Maintain a professional image concerning behavior, dress and speech.

d2- Achieve computer skills necessary to make use of veterinary medical data bases and use the internet for communication.

d3- Appreciate team working.

d4- Utilize leadership skills that enable him to organize work and lead the juniors.

3- Academic standards

* The faculty mission, vision and strategic objective are confirmed to the academic standard. The learning outcomes are in line with the department and the faculty mission.

* Postgraduates NARS (March 2009) Diploma degree chapter issued by national authority for quality assurance and accreditation of education (NAQAAE) and Veterinary medicine post graduate academic standards (ARS) for the faculty of veterinary medicine, Beni-Suef University, Beni-Suef, Egypt are selected to confirm the appropriateness of the academic standards .

4 – Curriculum structure and content.

4.1) Programme duration: 1 year

4.2) Programme structure:

Title	Lecture	Practical	Total
1-Bacteriology	2	2	4
2-Mycolgy	2	2	4
3-Immunology	2	2	4
4-virology	2	2	4
5-Molecular biology	1	2	3
Total	9	10	19

5- Programme – course ILOS Matrix

Course title	a1	a2	a3	a4	b1	b2	b3	c1	c2	c3	d1	d2	d3	d4
1-Bacteriology	x	x		x	X	X		X	X		x	x	x	x
2-Immunology			x	x	X	X		X	X			x	x	x
3-Mycolgy	x	x		x	X	X		x	X		x		x	
4-Virology	x	x		x	X	X			X			x	x	x
5-Molecular biology		x	x	x		X	X		X	X	x		x	



6- Programme admission requirement:

- 1- Obtaining a bachelor degree in veterinary medicine sciences from one of the Egyptian universities or equivalent degree from another recognized scientific institute with any grade.
- 2- The bachelor degree must be obtained at least one year prior to registration.
- 3- The applicant must have regular attendance in his courses according to the schedule of the faculty.
- 4- Registration will be during September of each year.

7 - Regulations for progression and programme completion.

- 1- Registration period is one year for diploma and the applicant not exceed a period of registration for two year.
- 2- The examinations of the diploma are 2 times / year in December & April.
- 3- The faculty council has the right to deprive the applicant from the exam if his attendance courses are less than 75%.
- 4- In case of failure, the exams will be hold 2 times / year and reexamination in all courses each time.

8-System of examination for postgraduate studies as follow:

- Time of written exams, 3 hours for each curriculum have 3 hours or more for theoretical / practical hours/ week.
- The final degree of each curriculum which have 3 hours (theoretical & practical) per week is 100 & divided into 50 % for written and exam and 50 % for practical and oral ex.

9-Grades of graduation are as follow:

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

Programme coordinator:

Name: Hala Sayed Hassan Salam

Signature..... Date.

Head of the Department (Bacteriology, Mycology and Immunology)

Name:Prof. Dr. Ismail Abd El Hafeez Radwan

Signature..... Date.



University: Beni-Suef University, Egypt.

Faculty: Faculty of Veterinary Medicine.

Departments: Bacteriology, Mycology and Immunology.

Course specification

A- Administrative Information:

Course Code:	
Course title :	Mycology
Program title:	Diploma of Animal Microbiology
Contact hours/ week	4 hours per week (2hr lectures and 2hr practical).
Date of course approval:	

B-Professional information

1- Overall aims of course:

Overall aims of course:

This course aims to:

- 1- Conclude the nature and structure of fungal cells.
- 2- Set the classification of fungi.
- 3- Recognize the requirements for the growth and reproduction of fungi.
- 4- Elicit the molecular genetic of fungi.
- 5- Identify different fungal pathogens, detecting their virulence factors and antimicrobial resistance.
- 6- Diagnose different veterinary fungal infections by different traditional and recent methods.
- 7- Find solutions for the problems concerning with different veterinary fungal affections and prevent the spread of the infection in the community.

2- Intended learning outcomes of course (ILOs)

a-Knowledge and understanding:

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

- a1- Conclude the nature and structure of fungal cells
- a2- Classifyfungi.
- a3- Recognize the nutritional and environmental requirements for growth and reproduction of fungi.
- a4- Enumerate the by-products of pathogenic fungi.
- a5- Describe how genetic characters of fungicould be expressed, transferred and changed.
- a6-Concludefactors leading to bacterial resistance& virulence.
- a7-List the extensively updated immunologic laboratory tests and new methods aid in rapid clinical diagnosis.

b-Intellectual skills:

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

- b1- Identify and analyze problems in the area of Mycology and rank them according to their priorities.
- b2- Solve problems in the area of Mycology.
- b3- Diagnose different fungal diseases.
- b4- Assess the infective potential of environmental materials to prevent the spread of the infection in the community.
- b5- Suggest the solutions of the problems concerning with different veterinary fungal affections.

c-Professional and practical skills

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

- c1- Collect the suitable specimens at the suitable time from animals, poultry and fish for mycological examination.
- c2- Identify the causative microorganism depending on morphological, cultural and biochemical characters as well as serology.
- c3- Determine the sensitivities of infected organism to antifungal drugs.
- c4- Identify and determine the significance.

d-General and transferable skills

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

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

3-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Mycology 4hours/week (Lec. 2hr/wk, Pr 2hr/wk) 1-General Mycology	- Structure of fungal cell and fungal colony. -Fungal reproduction.	12	6	6
	-Fungal growth and Fungal products.	8	4	4
	-Classification of fungi.	12	6	6
	-Identification of fungi.	12	6	6
Mycology 4hours/week	-Yeasts (Candida, Cryptococcus)	12	6	6
	-Dermatophytes.	12	6	6

- Moulds.	12	6	6
○ Aspergillus			
○ Penicillium			
- Mycotoxins	4	4	-
- Diphasic fungi	18	8	10
- Zygomycetes	14	6	8
- Dermataceous fungi	20	10	10
Total	136	68	68

4-Teaching and learning methods

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

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

5.3- Practical sections.

- Microscopical and colonial examination of microorganisms.
- Antimicrobial sensitivity testing.

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

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
writing Exam	a1 to a7 (all)	b1to b3 (all)	c1, c4	d3
Practical Exam	a1, a2, a3	b1to b3 (all)	c1, c2, c3, c4	
Oral Exam	a1 to a7 (all)	b1 to b3 (all)	c1 to c4 (all)	

5.2. Assessment schedules/semester:

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

5.3. Weight of assessments:

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

6- List of references

6.1. Notes and books:

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- Medical Mycology by Kevim Kavanagh (2007)

6.2.2 -Modern Mycology by J.W.Deacon (1997)

6.3. Recommended textbooks:

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

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

6.4. Journals, Websitesetc

Journal of Medical and Veterinary Mycology

Medical mycology

Acta Mycologia

Websites

<http://www.sciencedirect.com>.

<http://www.Pubmed>.

<http://www.Altavista>.

<http://www.cellsalive.com>.

<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 Matrix

Topic		Week	Intended learning outcomes of course (ILOs)			
			K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
1-General Mycology	- Structure of fungal cell and fungal colony. -Fungal reproduction.	1,2,3	a1,a3,a5	b1,b3	c1	d1,d2,d3
	-Fungal growth and Fungal products.	4,5	a3,a4	b1,b3	c1	
	-Classification of fungi.	6,7,8	a2			
	-Identification of fungi.	9,10,11	a6,a7			
2-Systematic Mycology	-Yeasts (Candida, Cryptococcus)	12,13,14	a1,a2,a3,a4,a6,a7	b1,b2,b3	c1,c2,c3,c4	d1,d2,d3
	-Dermatophytes.	15,16,17				
	- Moulds. o Aspergillus. o Penicillium	18,19,20				
	- Mycotoxins	21				
	- Diphasic fungi	22,23,24,25,26				
	- Zygomycetes	26,27,28, 29				
	- Dermataceous fungi	30,31,32,33,34				

University: Beni-Suef University, Egypt.

Faculty: Faculty of Veterinary Medicine.

Departments: Bacteriology, Mycology and Immunology.

Course specification

A- Administrative Information:

Course Code:	
Course title :	Bacteriology
Program title:	Diploma of Animal Microbiology
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- Conclude the nature and structure of bacterial cells.
- 2- Set the classification of bacteria.
- 3- Recognize the requirements for the growth and reproduction of bacteria.
- 4- Elicit the molecular genetic of bacteria.
- 5- Identify different bacterial pathogens detecting their virulence factors and antimicrobial resistance.
- 6- Diagnose different veterinary bacterial infections by different traditional and recent methods.
- 7- Find solutions for the problems concerning with different veterinary bacterial affections and prevent the spread of the infection in the community.

2- Intended learning outcomes of course (ILOs)

a-Knowledge and understanding:

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

- a1- Conclude the nature and structure of bacterial cells.
- a2- Classify bacteria.
- a3- Recognize the nutritional and environmental requirements for growth and reproduction of bacteria.
- a4- Recognize the factors associated with the virulence of the microorganisms, its exaltation and attenuation.
- a5- Enumerate the by-products of pathogenic microorganisms.
- a6- Describe how genetic characters of bacteria could be expressed, transferred and changed.
- a7- Conclude factors leading to bacterial resistance & virulence.
- a8- List the extensively updated immunologic laboratory tests and new methods aid in rapid clinical diagnosis.

b-Intellectual skills:

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

- b1- Diagnose different bacterial diseases.
- b2- Assess the infective potential of environmental materials to prevent the spread of the infection in the community.
- b3- Suggest the solutions of the problems concerning with different veterinary bacterial affections.

c-Professional and practical skills

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

- c1- Collect the suitable specimens at the suitable time from animals, poultry and fish for bacteriological examination.
- 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- Identify and determine the significance.

d-General and transferable skills

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

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

Course	Topic	No. of hours	Lectures	Practical
Bacteriology 4hours/week (Lec. 2hr/wk, Pr 2hr/wk) 1-General Bacteriology	-Morphology and Classification of bacteria	3	3	-
	-Bacterial growth cycle, arrangement and Structure.	4	4	-
	-Bacterial Reproduction and Metabolism.	2	2	-
	-Relationships of the bacteria to the host and environment.	2	2	-
	-Bacterial products (pigments, toxins)	3	3	-
	-Bacterial infection and virulence	2	2	-
	-Koch's postulates and their exceptions.	2	1	-
Bacteriology 4hours/week (Lec. 2hr/wk, Pr 2hr/wk) 2- Bacterial genetics	-Gene expression (Transcription and Translation).	2	2	-
	-Bacterial chromosome and plasmids.	2	2	-
	-Mutations and mutagenic agents.	2	2	-
	-Genetic engineering techniques and nucleic acid hybridization.	2	2	-
	-Microscopy	2	-	2
	-Bacterial Motility	2	-	2
	-Sterilization and disinfection.	4	-	4
	-In-vitro antimicrobial sensitivity.	2	-	2
	-Staining of bacteria.	6	-	6
	-Bacteriological culture media.	4	-	4
	-Cultivation and isolation of pure culture of bacteria.	4	-	4
	-Tests for the identification of bacteria.	6	-	6

	-Serological tests.	6	-	6
Bacteriology 4hours/week (Lec. 2hr/wk, Pr 2hr/wk) 4-Systematic Bacteriology	- Staphylococci	4	2	2
	-Streptococci	6	2	4
	- Listeria	4	2	2
	- F. Bacillaceae: (G. Bacillus)	8	4	4
	- G. Clostridium	12	8	4
	-Corynebacteria	4	2	2
	-Mycobacterium	4	2	2
	-Enterobacteriaceae (<i>E. coli, Salmonella, Klebsiella, Shigella</i>)	12	8	4
	-Pasteurella	4	2	2
	-Brucella	2	2	0
	-Campylobacter	4	2	2
	-Pseudomonas			
	-Spirochaetes (Leptospira)	3	2	1
	-Mycoplasma - Chlamydia - Rickettsia	5	2	3
	-Bacteria pathogenic for fish (<i>Aeromonas, Vibrio</i> and <i>Edwardsiella</i>)	2	2	0
Total		136	68	68

4-Teaching and learning methods

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

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

4.3- Practical sections.

- Microscopical and colonial examination of fungi and yeasts.

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

5-Student assessment

5.1. Assessments methods:

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	K&U	I.S	P&P.S	G.S
writing Exam	a1 to a7(all)	b1to b3 (all)	c1, c4	d3
Practical Exam	a1, a2, a3, a7	b1to b3 (all)	c1, c2, c3, c4	
Oral Exam	a1 to a8 (all)	b1 tob3 (all)	c1 to c4 (all)	

5.2. Assessment schedules/semester:

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

5.3. Weight of assessments:

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

6- List of references

6.1. Notes and books:

Departmental notes on:

6.1.1- Bacteriology, Mycology and Immunology.

6.1.2- Practical Bacteriology, Mycology and Immunology.

6.2. Essential books:

- 6.2.1- Bergey's Manual of Systematic Bacteriology, 4th Edition Noel R. Krieg, John G. Holt, and Murray R. G. E. 1984.
- 6.2.2- Prescott, Harley and Klein's Microbiology. J. M. Willey, L. M. Sherwood, and C. J. Woolverton – 17th Edition, International Edition, 2008, McGraw Hill
- 6.2.3- Bergey's Manual of Determinative Bacteriology, 9th Edition John G. Holt, 1993
- 6.2.4- Diagnostic Microbiology, 2nd Edition 2000 Connie R. Mahon and George Manuselis.

6.3. Recommended textbooks:

- 6.3.1- Clinical Veterinary Microbiology, P.J. Quinn, M.E. Carter, B. Markey and G.R. Carter, 6th Edition 2004
- 6.3.2- Veterinary Microbiology, Dwight C. Hirsh and Yuan Ghung Zee, 1999
- 6.3.3- Medical Microbiology, R. Cruickshank 1986.
- 6.3.4- Mackie and McCartney Medical Microbiology, 14th Edition 1992 (J. P. Duguid, B.P. Marmion and R. H. A. Swain). (The book present in the faculty library)
- 6.3.5- Topley & Wilson microbiology and microbial infections, 9th edition

6.4. Journals, Websitesetc

- [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.VeterinaryMicrobiology)
[http://www.Immunology and Immunopathology](http://www.ImmunologyandImmunopathology)

Course Coordinator

Dr. HalaSayed Hassansalam

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 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)
1-General Bacteriology	–Morphology and Classification of bacteria	1,2	1,2	1,3	1	1,2,3
	–Bacterial growth cycle, arrangement and Structure.	2,3,4	1,3	1,3	1	
	–Bacterial Reproduction and Metabolism.	4,5	1,3	-	-	
	–Relationships of the bacteria to the host and environment.	5,6	3,4	2	-	
	–Bacterial products (pigments, toxins)	6,7	5	1,3	1	
	–Bacterial infection and virulence	8	4	1,2	2,4	
	–Koch's postulates and their exceptions.	9	4	1	2,4	
2-Bacterial genetics	–Gene expression (Transcription and Translation).	10	6	-	-	1,2,3
	–Bacterial chromosome and plasmids.	11	1,6	1,3	1	
	–Mutations and mutagenic agents.	12	6	3,4		
	–Genetic engineering techniques and nucleic acid hybridization.	13	6	1,3	1	
3-Systematic Bacteriology	- Staphylococci	14	1,2,3,4,5,7	1,2,3	1,2,4	
	-Streptococci	15				
	- Listeria	16				
	- F. Bacillaceae: (G. Bacillus)	17,18				

	-G. Clostridium	19,20,21,22	1,2,3,4,5,7	1,2,3	1,2,4	1,2,3
	-Corynebacteria	23				
	-Mycobacterium	24				
	-Enterobacteriaceae (<i>E. coli</i> , <i>Salmonella</i> , <i>Klebsiella</i> , <i>Shigella</i>)	25,26,27,28				
	-Pasteurella	29				
	-Brucella	30				
	- Pseudomonas - Campylobacter	31				
	-Spirochaetes (Leptospira)	32				
	-Mycoplasma - Chlamydia- Rickettsia	33				
	-Fish pathogenic bacteria (<i>Aeromonas</i> , <i>Vibrio</i> , <i>Edwardsiella</i>).	34				
4- Applications	- Microscopy	1	1,2	1,3	1	1,2,3
	- Bacterial Motility	2	1,2	1,3	1	
	- Sterilization and disinfection	3,4	7	2,3	-	
	- In-vitro antimicrobial sensitivity	5	7	2,3	3	
	- Staining of bacteria	6,7,8	1,2	1,3	1	
	- Bacteriological culture media	9,10	1,2,3	1,3	1	
	- Cultivation and isolation of pure culture of bacteria	11,12	1,2,3	1,3	1	
	- Tests for the identification of bacteria	13,14,15	4,5	1,3	1	
	- Serological tests	16,17,18	-	1,3,4	1,2	
	- Staphylococci	19	1,2,3,4,5,7	1,2,3	1,2,4	1,2,3
	- Streptococci	12,21				
	- Listeria	22				
	- F. Bacillaceae:(<i>G. Bacillus</i>)	23,24				

	-G. Clostridium	25,26	1,2,3,4,5,7	1,2,3	1,2,3,4	1,2,3
	-Corynebacteria	27				
	-Mycobacterium	28				
	-Enterobacteriaceae (<i>E. coli</i> , <i>Salmonella</i> , <i>Klebsiella</i> , <i>Shigella</i>)	29,30				
	-Pasteurella	31				
	- Pseudomonas	32				
	- Campylobacter					
	Spirochaetes (Leptospira)	33				
	-Mycoplasma- Chlamydia- Rickettsia	33,34				



University: Beni-Suef University, Egypt.

Faculty: Faculty of Veterinary Medicine.

Departments: Bacteriology, Mycology and Immunology.

Course specification (2017-2018)

A- Administrative Information:

Course Code:	
Course title :	Immunology
Program title:	Diploma of Animal Microbiology
Contact hours/ week	4 hours per week (2hr lectures and 2hr practical).
Date of course approval:	

B-Professional information

1- Overall aims of course:

Overall aims of course:

This course aims to:

- 1- Acquire knowledge, skills and practical experience about physiology of immunity.
- 2- Classify the types of immunity.
- 3- Conclude structure and development of the immune system,
- 4- Conclude different serological tests used in diagnosis of different microbial diseases.
- 5- Enumerate different types of vaccines used in protection against different microbial diseases

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. Theories and fundamentals and specialized knowledge in the field of Immunology, as well as exercise science-related career.
- a.2. Understand various types of immunity.
- a.3. Differentiate between various types of antigen.
- a.4. Describe principles of histocompatibility.
- a.5. Understand the immune system structure.
- Conclude the nature, the types and the mechanisms of immunity against different diseases.
- a.6. List Cells cooperation for humeral and cell mediated immunity.
- a.7. Describe the humeral immunity and mechanism antibody production as well as types, structure and role of each Immunoglobulin in the immunity.
- a.8. List extensively updated immunologic laboratory tests and new methods aid in rapid



clinical diagnosis.

- a.9. Recognize the molecular genetic which describes the key molecular biological methods used for clinical analysis of the immune system.
- a.10. List types of hypersensitivity and the significance of delayed type.
- a.11. 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:

- b1-Analyze different types of immunity.
- B2- Suggest the solutions of the problems concerning with different veterinary microbial affections.
- b.3. Formulate new immunological explanation..
- b.4. Make professional decisions in the light of available information.

c-Professional and practical skills

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

- c1- Perform clinical laboratory methods for detection of humeral and cellular immunity.
- c2- Assess molecular genetic techniques for clinical analysis of the immune system.
- c3- Assess Immunohaematology.
- c4- Evaluate the immune competence in the Laboratory.
- c5- Evaluate the effects of different vaccines.
- c6- Apply delayed hypersensitivity in diagnosis.

d-General and transferable skills

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

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

3-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Immunology 4hours/week (Lec. 2hr/wk, Pr 2hr/wk) 1-General Immunology	-Tissues,organs and cells of the immune system.	16	8	8
	-Types and mechanisms of immunity.	16	8	8
	-Antigen and Immunogenicity.	12	6	6
	-Immunoglobulins -Cells cooperation for humeral and cell mediated immunity	20	10	10
	-Adjuvant -Hypersensitivity. -Immunostimulants and immunosuppression.	20	10	10



Immunology 4hours/week (Lec. 2hr/wk, Pr 2hr/wk) 2- Advanced Immunology	-Monoclonal Antibodies.	12	6	6
	- Serological tests.	20	10	10
	- Vaccines.	20	10	10
Total		128	68	68

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.

Practiced 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
Final Exam	a1 to a7(all)	b1to b3 (all)	c1 toc6 (all)	d3
Practical Exam	a1, a2, a3, a7	b1to b3 (all)	c1 toc6 (all)	
Oral Exam	a1 to a8 (all)	b1 tob3 (all)	c1 toc6 (all)	

5.2. Assessment schedules/semester:

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

5.3. Weight of assessments:

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

6- List of references

6.1. Notes and books:

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 immunology 3rd 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, Websitesetc

[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.textbookofbacteriology.net>.

http://www.ourfood.com/General_bacteriology.html

<http://www.VeterinaryMicrobiology>

<http://www.ImmunologyandImmunopathology>

Course Coordinator

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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)
1-General Bacteriology	-Tissues and organs and cells of the immune system.	1,2,3,4	a1,a2	b1	c3	
	-Types and mechanisms of immunity.	5,6,7,8	a1,a2,a3, a5	b1,b3	c2,c3	
	-Antigen and Immunogenicity.	9,10,11	a2,a3	b3	c1	
	-Immunoglobulins -Cells cooperation for humeral and cell mediated immunity	12,13,14,15,16	a2, a3	b1,b2	c1,c3	
	-Adjuvant -Hypersensitivity. -Immunostimulants and immunosuppression.	17,18,19,20,21	a2,a6,a7	b1,b3	c1,c6	
2-Bacterial genetics	-Monoclonal Antibodies.	22,23,24	a4	b3		d1, d2, d3
	- Serological tests.	25,26,27,28,29	a2,a3,a4	b1,b2,b3	c1,c3,c4	
	- Vaccines.	30,31,32,33,34	a7	b3	c3,c5	