BLOCK PRD-105

Student Study Guide

Prepared by

Medical Microbiology and Immunology

&

Medical Parasitology Departments

2024-2025

Contact Information of Staff Responsible for Block PRD-105

Heads of the Departments	
Prof. Asmaa Nasr Eldin Thabet *Professor of Medical Microbiology and Immunology* Email: monaarahman2002@yahoo.co.uk	**Prof. Hanaa Ahmed El-Hady** *Professor of Medical Parasitology* Email: hanaaelhady@yahoo.com
Department Coordinators	
Dr Ekram Abd El Rahman Mahmoud *Lecturer of Medical Microbiology and Immunology* Email: dr.ekram.ar@gmail.com	**Prof. Amal Mostafa Ahmed** *Professor of Medical Parasitology* Email: **moustafad658@yahoo.com**

Contents

Basic Information about the Block

Medical Microbiology and Immunology& Medical Parasitology Departments

Block Map

Block	Points	weeks	learning activities		
			contact hours/points	**formative assessment/ feedback**	**Assignments**
Principle of diseases	12.5	8 weeks	162 hrs 6.5 points	0.5point	5.5 points

NARS competencies covered by the block

1.8. Apply knowledge of the clinical and biomedical sciences relevant to the clinical problem at hand.

1.11 Perform diagnostic and intervention procedures2 in a skillful and safe manner, adapting to unanticipated findings or changing clinical circumstances.

1.12. Adopt strategies and apply measures that promote patient safety.

2.1 Identify the basic determinants of health and principles of health improvement.

2.4 Identify the major health risks in his/her community, including demographic, occupational and environmental risks, endemic diseases, and prevalent chronic diseases.

2.5 Describe the principles of disease prevention, and empower communities, specific groups or individuals by raising their awareness and building their capacity.

2.6 Recognize the epidemiology of common diseases within his/her community and apply the systematic approaches useful in reducing the incidence and prevalence of those diseases.

2.9 Adopt suitable measures for infection control.

4.2 Explain the molecular, biochemical, and cellular mechanisms that are important in maintaining the body's homeostasis.

4.5 Identify various causes (genetic, developmental, metabolic, toxic, microbiologic, autoimmune, neoplastic, degenerative, and traumatic) of illness/disease and explain the ways in which they operate on the body (pathogenesis).

4.6 Describe altered structure and function of the body and its major organ systems that are seen in various diseases and conditions

4.7 Describe drug actions: therapeutics and pharmacokinetics; side effects and interactions, including multiple treatments, long term conditions and non-prescribed medication; and effects on the population.

4.8 Demonstrate basic sciences specific practical skills and procedures relevant to future practice, recognizing their scientific basis, and interpret common diagnostic modalities, including: imaging, electrocardiograms, laboratory assays, pathologic studies, and functional assessment tests.

Professional Information
Block Aims

Program on which the course is given:

Prepared by

Intended Learning Outcomes of the Block:

A- Knowledge and understanding

Upon completion of the course students should be able to:

A1- State the principle of basic medical microbiology

A2- Memorize the microorganism morphology

A3- Recall bacterial growth requirements and replication.

A4- List genotypic variations and recombinant DNA technology

A5- Recall bacterial pathogenesis

A6- Describe different methods of sterilization

A7- Recognize proper selection of antimicrobials.

A8- Recall general knowledge in the field of viral and fungal diseases.

A9- Define various contributors in the immune system, innate and acquired immunity.

A10- Identify the role of the immune system against microbial infection.

A11-State the principles of immunization.

A12-Recall the principals of immunopathology

A13-Define the different terms of medical parasitology

A14-State parasitism and host-parasite relationship.

A15-List the different types of hosts.

A16-List the sources of parasitic infections.

A17-Memorize the methods of infection of common parasites.

A18-Recall the infective and diagnostic stages of common parasites.

This block aims to provide students with foundations of bacteriology, virology,mycology, immunity and parasitology.

B8- Demonstrate different types of parasitic infections.B9- Explain host-parasite relationships.

A19-Discuss principles of immunoparasitology.

A20- State the basics of infection control

Overall Aims

B- Intellectual skills

B1- Differentiate the microorganism morphology

C- Psychomotor skills

C1- Handle the microscope in microbiology and parasitology

C2- Identify different bacteria and fungi under the microscope

C3- Manipulate the bacterial isolates into pure colonies with identification.

C6- Identify the infective and diagnostic stages of common parasites under microscope

D1-Practice the value of teamwork by acting in small groups.

Structure of the block

Total contact hours and credit points									
	Lectures	**Practical**	**SDL**	**Small group discussions**	**Cases**	**Seminars**	**Formative assessment**	**Revisions and Exams**	**Total**
Contact Hours	66	40	7	20	8	14	7		162
Credit	**2.6**	**1.6**	**0.3**	**0.8**	**0.3**	**0.6**	**0.3**		**6.5**

Learning Methods

D- General and transferable skills

Methods of Student Assessment

D2- Develop adequate cooperation with his/her colleagues.
D3- Arrange the efforts required to accomplish the tasks in specified time.
D4- Practice effectively using a written health record, electronic medical record, orother digital technology.
D5- Describe his/her work and that of others using constructive feedback.
D6- Present regular reflection on and assess his/her performance using variousperformance indicators and information sources.
D7- Initiate a personal learning plan to enhance professional practiceD8- Identify opportunities and use various resources for learning.
D9- Integrate in inter-professional activities and collaborative

Assessment task	Type of assessment	Proportion of total assessment	
		%	Marks
Mid-block exam	100% MCQ (best answer)	20%	36 marks
Portfolio		10%	18 marks
Final block exam	100% MCQ (best answer)	40%	72 marks
Practical exam		30%	54 marks
Total		**100%**	**180 marks**

Block evaluation

1

1. Formative:

This is used to

Block Contents

Lecture Topics and Their Intended Learning Outcomes

ILOs	NARS Competencies	Lectures Titles	Week No.	Contact Hours
A1, A.2,A.3, B2	4.5	Introduction to Microbiology and Bacterial structure	1st	2 hrs
A1, A.3, B2, A4	4.5	Bacterial physiology and bacteriophages	1st	2hrs
A1, A4, B2	2.5, 4.5	Bacterial genetics part (1)	1st	2 hrs
A1, A4, B2	2.5, 4.5	Bacterial genetics part (2)	1st	2 hrs
A13, A 14, A15, B 9	2.4, 4.5	Introduction to parasitology I (definitions and terminology)	1st	1hr
A16, A17,A18, B8, B9	2.4, 4.5	Introduction to parasitology II (methods of infection and stages)		1 hr
	2.4, 4.5			1 hr
A1	2.5- 4.7	Anti microbialchemotherapy	2nd	2hrs
A1, A5	2.4- 4.6	Bacterial pathogenesis	2nd	2 hrs
A14	2.4- 4.5	Introduction to Trematodes I	2nd	1hr
A17, A18, B8, B9	2.4- 4.5	Introduction to Trematodes II	2nd	1hr
A16.1, A17.1, A18.1	1.8- 2.6-4.5	Snails transmittedparasitic disease	2nd	1hr

A1, A.8	4.5-2.4	Viral structure and Viral classification	2nd	2hrs
A1, A.8	4.5	Viral genetics, and Interactions between viruses	3rd	2 hrs
A1, A8	2.4 - 4.5	Viral replication, Viral pathogenesis and role of viruses in diseases	3rd	2hrs
A14, A18, A17, B8, B9	2.4-2.6- 4.5	Introduction to CestodesI	3rd	1hr
	2.4-2.6- 4.5	Introduction to Cestodes II		1 hr
A16, A17, A18	2.4- 2.6- 4.5	Parasitic diseases caused by larval stagesof cestodes		1 hr
A1, A8	1.8-2.4- 2.6-4.5	Fungal structure, Fungal reproduction and Fungal diseases	3rd	2 hrs
A9, A10, B7	2.1- 4.2	Introduction to the immune system- Innate Immunity	3rd	2 hrs
A14, A17,	2.4- 2.6- 4.5	Introduction to Nematodes I	4th	1 hr
A18, B8, B9	2.4- 2.6- 4.5	Introduction to Nematodes II	4th	**1 hr**
A13, A14, A17, B9, B10, B11	2.4- 2.6- 4.5	Autoinfection in helminths infections	4th	1 hr

A9, A10, B7	4.2-4.5	Antigens	4th	2 hrs
A9, A10, B7	2.1- 2.5-4.2	Acquired immunity	4th	2hrs
A9, A10, B7	2.1-2.5- 4.2-4.5	Antigen presenting cells and CMI	4th	2 hrS
A9, A10, B7	2.1- 2.5-4.2	Humeral immunity	4th	2hrs
A9, A10, B7	2.1- 2.5-4.2	Secondary immune response and monoclonal antibodies	5th	2 hrs
A14, A17, A18, B8, B9	2.4-2.6- 4.5	Introduction to Protozoa I	5th	1 hr
		Intestinal Protozoa		1 hr
		Blood Protozoa		1 hr
A9, A10, B7	2.1- 2.5-4.2	Cytokines	5th	1 hr
A11, B7	1.8- 4.2- 4.5	Immunoprophylaxis	5th	1 hr
A9, A10, B7	2.1- 4.2-4.5	Complement	5th	2hrs
A12, B7	1.8- 4.2- 4.5	Hypersensitivity	5th	2 hrs
A12, B7	1.8- 2.5- 4.2-4.5-4.6	Tumor immunology	6th	2hrs
A9, A.12,B7	1.8-2.5- 4.2-4.5- 4.6	Immune tolerance and Autoimmunity	6th	1 hr
			6th	1 hr
A12, B7	1.8- 2.5- 4.2-4.5-4.6	MHC and Transplantation	6th	2 hrs
A12, B7	1.8- 2.5- 4.2-4.5- 4.6	Immunodeficiencydisorders and assessment of immune cells	6th	2 hrs
A15, A16,A18, B9	2.4-2.6- 4.5	Introduction to Medically important arthropods I	7th	1 hr
	2.4-2.6- 4.5	Introduction to Medically importantarthropods I-Arthropods Transmitting Disease		1 hr

A20, B12,C8-9	1.12, 2.9	Basics of infectioncontrol	7th	1 hr
A.16, A19, B8, B9, B11	2.4-2.6- 4.5-4.6	Introduction to Medically importantarthropods II Arthropods causing disease	7th	1 hr
		Immunoparasitology		1 hr
			7wks	**66 hrs**
		Revisions and Exams	8th wk	
		Total		**66 hrs**

Practical Topics and Their Intended Learning Outcomes

No.	ILOs	NARS Competencies	Practical Topic	wks	Hrs
1.	B.1, C.1 D.1, D2	1.11-4.8	Lab safety –Microscope	1st	2hrs
2	A2, B.1 C1, C2 D1, D2	1.11- 4.8	Staining	1st	2hrs
3.	C1,C6, A18	1.11- 4.8	Stool analysis + Introduction to Trematodes **(Parasitology)**	1st	2hrs
4	A3, B.1, C3 D1, D2	1.11- 4.8	Culture media part I	2nd	2hrs
5	A3, B.1, C3 D1, D2	1.11- 4.8	Culture media part II	2nd	2hrs
6	C1, C6, A18	1.11- 4.8	Introduction to Cestodes **(Parasitology)**	2nd	2hrs
7	A10, B.7, C4, D1, D2	1.11- 4.81.11-4.8	Serology I	3rd	2hrs
8	A10, B.7, C4, D1, D2	1.11- 4.81.11-4.8	Serology II	3rd	2hrs
9.	C1, C6, A18	1.11- 4.8	Introduction to Nematodes (**Parasitology)**	3rd	2 hrs
10	A3, B2, C3, D1, D2	1.11- 4.8	Biochemical reactions I	4th	2 hrs
11	A3, B2, , C3, D1, D2	1.11- 4.8	Biochemical reactions II	4th	2 hrs
12	C1, C6	1.11- 4.8	Intestinal protozoa **(parasitology)**	4th	2 hrs

13	A3, B2, C3, D1, D2	1.11- 4.8	Molecular diagnostic techniques)	5th	2hrs
14	A7, B.4	1.11- 4.8	Antimicrobial susceptibility testing	5th	2hrs
15.	C1, C6	1.11-4.8	Blood protozoa **(parasitology)**	5th	2hrs
16	A6, B3	2.9	Sterilization, disinfection Andantisepsis	6th	2 hrs
17	A8, B5, C5, D1, D2	1.11- 4.8	Laboratory diagnosis of viral infections	6th	2hrs
18	A15, A16, C1	1.11- 4.8	Medically important arthropods **(Parasitology)**	6th	2hrs
19	A8, C2, B.6, D1, D2	1.11- 4.8	Laboratory diagnosis of fungal infections	7th	2 hrs
20	A20, B12, C8-9	1.12, 2.9	Basics of infection control	7th	2 hrs
				7 wks	**40 hours**
			Revisions and Exam	**8 wks**	
			Total		**40 hrs**

Self-Directed Learning and Group Discussion Topics

No.	ILOs	Topics	wks	hrs
1.	A1, A5, D1-10	Normal flora	1st	1hr
2.	A1, A5, D1-10	**Bacterial pathogenesis**: Bacterial toxins	1st	1hr
3.	A1, A4,B.2 D1-10	**Bacterial genetics:** Mobile genetic elements, applications of DNA cloning and bacteriophage	1st	2hrs
4.	A14, A17, A18 B8.2, B9.2	Snails transmitted Trematodes	2nd	2 hrs
5.	A1, A5, D1-10	Classification of bacteria	2nd	1 hrs
6.	A1, A7, B4 D1-10	**Antimicrobial chemotherapy:** Chemoprophylaxis- Probiotics	2nd	1hr
7.	A1, A.8, D1-D10	**Viral structure:** Atypical virus like agents	3rd	1 hr
8.	A1, A.8, D1-D10	Classification of viruses	3rd	2 hr
9.	A14, A17, A18 B8, B9, D1-D10	Life threatening nematode infection	4th	2 hrs
10.	A1, A8, D1-10	Fungal diseases: Fungal toxins	4th	1hr
11.	A1, A.8, D1-D10	Replication of viruses	4th	1 hr
12.	A10, B7 D1-10	Assessment of Immune Competence	5 th	1hr
13.	A10, B7 D1-10	Anti bacteria- anti viral- anti fungal immunity	5th	2hr
14.	A15, A16, A18, B9, D1-10	Arthtopodes transmitted and causing diseases..	7th	2 hrs
	Total		**7 wks**	**20 hrs**
	SDL for the previous topics			**7 hrs**

Cases and their Intended Learning Outcomes

No.	ILOs	Cases	Wks	Hr
1.	A5, B1, D1, D2, D3	Short cases on bacterial infections	3rd	2hrs
2.	A8, B5, D1, D2,D3	Short cases on viral infections	3rd	1hr
3.	A8, B5, B.6 D1, D2, D3	Short cases on fungal infections	5th	1hr
4.	B8, B9, B10	Hepatosplenomegaly	6th	1hr
5.	A16, B8, B10,	Diarrhea	6th	1hr
6.	A12, B7, D1-4, C4	Short cases in immunology	6th	2 hrs
7.	A. 12 B7, D1-4, C4	Short cases in immunology	7th	2hrs
	Total		**7 weeks**	**8 hrs**

Seminars

No.	Seminars	weeks	hours
1.	Microbiology+ Parasitology (topics of the 1st week)	1st	2hrs
2.	Microbiology+ Parasitology (topics of the 2nd week)	2nd	2hrs
3.	Microbiology+ Parasitology (topics of the 3rd week)	3rd	2hrs
4.	Microbiology+ Parasitology (Topics of the 4th week)	4th	2hrs
5.	Microbiology+ Parasitology (topics of the 5th week)	5th	2hrs
6.	Microbiology+ Parasitology (topics of the 6th week)	6th	2hrs
7.	Microbiology+ Parasitology (topics of the 7th week)	7th	2hrs
	Total		14 hrs

Formative assessment

No.	Quiz	weeks	hours
1.	Microbiology+ Parasitology (topics of the 1st week)	1st	1 hr
2.	Microbiology+ Parasitology (topics of the 2nd week)	2nd	1hr
3.	Microbiology+ Parasitology (topics of the 3rd week)	3rd	1hr
4.	Microbiology+ Parasitology (topics of the 4th week)	4th	1hr
5.	Microbiology+ Parasitology (topics of the 5th week)	5th	1hr
6.	Microbiology+ Parasitology (topics of the 6th week)	6th	1hr
7.	Microbiology+ Parasitology (topics of the 7th week)	7th	1hr
	Total		**7 hrs**

Blueprint of the block

N.	Topic (Lectures)	Hours	Total marks	End of block	Final exam
	1st week				
1	Introduction and bacterial structure	2 hrs	3 marks	2 marks	1 mark
2	Bacterial physiology and bacteriophages	2 hrs	4 marks	2 marks	2 mark
3	Bacterial genetics (part 1)	2 hr	3 marks	2 marks	1 mark
4	Bacterial genetics part 2	2 hrs	3 marks	2 marks	1 mark
5	Introduction to parasitology I (definitions and terminology)	1 hr	1 marks		2 mark
6	Introduction to parasitology II (definitions and terminology) Methods of infection and stages of parasites	2 hrs	3 marks	2 mark	
	2nd week				
7	Antimicrobial chemotherapy	2 hrs	3 marks	2 marks	1 marks
8	Bacterial pathogenesis	2 hr	3 marks	2 marks	1 marks
9	Virus structure and classification	2 hr	4 marks	2 marks	1 marks
10	Virus genetics and interactions	2 hr	3 marks	2 marks	1 mark
11	Introduction to Trematodes	2 hrs	5 marks	3 marks	3 marks
12	Snails transmitted-parasitic diseases	1 hr	1 marks	1 marks	
	3rd week				
13	Virus replication and pathogenesis Role of viruses in diseases	2 hrs	3 marks	2 marks	1 marks
14	Mycology (Fungal structure, reproduction, Fungal diseases)	2 hr	4 marks	2 marks	1 marks
15	innate immunity	2 hrs	4 marks	2 marks	1 marks
16	Antigens and immunogens	2 hr	4 marks	2 marks	1 marks
17	Introductionto Cestodes	2 hrs	4 marks	2 mark	3 marks
18	Parasitic diseases caused by larval stages of cestodes	1 hr	2 marks	1 mark	2 mark

	4th week				
19	**Acquired immunity**	**2 hr**	**4 marks**		**3 marks**
20	**APC and CMI**	**2 hrs**	**4 marks**		**3 marks**
21	**Humeral immunity**	**2 hrs**	**4 marks**		**3 marks**
22	**Secondary immune response and monoclonal antibodies**	**2 hr**	**3 marks**		**3 marks**
23	**Introduction to Nematodes**	**2 hrs**	**5 marks**	**3 marks**	**3 marks**
24	**Autoinfection inhelminthes infection diseases**	**1 hr**	**1 marks**		**1 mark**
	5th week				
25	**Cytokines**	**1 hr**	**2 marks**		**2 marks**
26	**Immunoprophylaxis and protective immune response**	**1h**	**2 marks**		**2 marks**
27	**Complement**	**2 hr**	**3 marks**		**2 marks**
28	**Hypersensitivity**	**2 hr**	**3 marks**		**3 marks**
29	**Tumor immunology**	**2 hr**	**3 marks**		**3 marks**
30	**Introduction to Protozoa & intestinal protozoa part I**	**1 hr**	**2 marks**		**2 mark**
31	**Intestinal protozoa part II & Blood Protozoa**	**2 hrs**	**5 marks**		**5 marks**
	6th week				
32	**Immune tolerance and Autoimmune disease**	**2 hr**	**3 marks**		**3 marks**
33	**MHC and transplantation**	**2 hrs**	**3 marks**		**3 marks**
34	**Immune deficiency and assessment of Cells of immune cells**	**2 hr**	**3 marks**		**3 marks**
35	**Introduction to medically important arthropods I**	**1 hr**	**1 mark**		**1 mark**
36	**Arthropods transmitted diseases**	**1 hr**	**1 mark**		**1 mark**
	7th week				
37	**Basics of Infection control**	**1 hr**	**2 marks**		**2 marks**
38	**Introduction to medically important arthropods II**	**1 hr**	**1 marks**		**1 marks**
39	**Immunoparasitology**	**1hr**			
	Total micro	**47 hrs**	**72 marks**	**24 marks**	**48 marks**
	Total Para	**19 hrs**	**36 marks**	**12 marks**	**24 marks**
	Micro+Para	**66 hrs**	**108 marks**	**36 marks**	**72 marks**

- **Microbiology 72 marks/ 108**
- **Parasitology 36 marks/ 108**

N.	Topic (Practical)	wks	Hrs	Marks of Final practical exam
1.	Microscopy	1st	2hrs	2
2.	Staining	1st	2hrs	2
3.	Stool analysis + Introduction to Trematodes **(Parasitology)**	1st	2 hrs	3 marks
4.	Culture media part I	2nd	2 hrs	3 marks
5.	Culture media part II	2nd	2hrs	3 marks
6.	Introduction to Cestodes **(Parasitology)**	2nd	2 hrs	3 marks
7.	Serology part I	3rd	2hrs	3 marks
8.	Serology part II	3rd	2hrs	3 marks
9.	Introduction to Nematodes (**Parasitology)**	3rd	2 hrs	3 marks
10	Biochemical reaction part I	4th	2 hrs	3 marks
11	Biochemical reaction part II	4th	2 hrs	2 marks
12	Intestinal protozoa **(parasitology)**	4th	2 hrs	3 marks
13	Molecular diagnosis	5th	2 hrs	3 marks
14	Antibiotic sensitivity 5th	5th	2 hrs	2 marks
15	Blood protozoa **(parasitology)**	5th	2 hrs	3 marks
16	Sterilization and disinfection	6th	2 hrs	3 marks
17	Diagnosis of viral infections	6th	2 hrs	2 marks
18	Medically important arthropods **(Parasitology)**	6th	2 hrs	3 marks
19	Diagnosis of fungal infections	7th	2 hrs	3 marks
20	Basics of Infection Control	7th	2hrs	2 marks

- **Practical of Microbiology 36 marks/ 54**
- **Practical of Parasitology 18 marks/ 54**

Block INI-105 Blueprint

Exam	Mid 20%	Final 40%	Practical 30%	Portfolio 10%	Total
Microbiology	24	48	36	12	120
Parasitology	12	24	18	6	60
Total	36	72	54	18	180

Study Resources

Students' results

Students' feedbackTutors' feedback

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➢ **Microbiology**

1. First Aid for the USMLE Step 1 2018. Le Tao, Bhushan Vikas, Sochat Matthew,Chavda Yash, Zureick Andrew, Kalani Mehboob and Kallianos

1. **Lecture notes**
2. **Books:**

Lecture Outlines

➢ **Parasitology**

1- Garcia, Lynne Shore, and David A. Bruckner. Diagnostic Medical Parasitology.

New York: Elsevier, 2016.

Introduction to microbiology

By the end of the lecture the student will be able to:

• Define the scope of Medical Microbiology: Bacteriology, Virology, Mycology andImmunology
• Recall microorganisms that cause infectious diseases and their properties
• Outline the difference between microorganisms
• State microbiological nomenclature
• **Contents of the lecture:**
- Define Medical Microbiology
- Differentiation between viruses, fungi and bacteria.
- Differentiation between prokaryotes and eukaryotes
- Microbiological nomenclature

By the end of the lecture the student will be able to :

Bacterial structure

Bacterial genetics

By the end of the lecture the student will be able to :

- Outline the the differences between prokaryote and eukaryote genetics
- Recall bacterial genetic material and methods of gene transfere
- Basics of recombinant DNA technology and applications

Contents of the lecture:

- Differences between prokaryote and eukaryote genetics
- The bacterial genetic material
  - The chromosome
  - Plasmids
- Bacteriophage
- Gene transfere
  - Conjugation
  - Transduction
  - Transformation
- Mobile genetic elements
  - Gene cassettes
  - Integrons
  - Transposons
  - How do multiple drug resistant plasmids arise
- Recombination
  - Definition of recombination
  - Types of recombination
- Recombinant DNA technology
  - Basics
  - Applications

By the end of the lecture the student will be able to:

- Recall bacterial growth requirements and phases of growth

Bacterial growth

Parasitology -Introduction to parasitology I

By the end of the lecture the student will be able to:

- Define the different terms of medical parasitology.
- State parasitism and host-parasite relationship.
- List the different types of hosts.
- List the diferent types of parasites.
- Explain host-parasite relationsh List the sources of parasitic infections.
- Memorize the methods of infection of common parasites.
- Recall the infective and diagnostic stages of common parasites.
- Demonstrate different types of parasitic infections.
- Explain host-parasite relationships.
- General life cycle of Parasites

Bacterial pathogenesis

By the end of the lecture the student will be able to :

- State how bacteria cause disease
- Basic terms frequently used in describing aspects of pathogenesis

Contents of the lecture:

- Differences between pathogenic and opportunistic bacteria
- Basic terms frequently used in describing aspects of pathogenesis
- Stages of bacterial pathogenesis
- Virulence factors
  - Adherence factors
  - Invasiveness, inflammation and intracellular survival
  - Toxin production

Antimicrobial drugs

By the end of the lecture the student will be able to :

- State different terms of antimicrobial processes
- Describe mechanisms of action and resistance of drugs
- Outline the origin of Microbial resistance to drugs and their methods of transfer

Contents of the lecture:

By **Parasitology - Introduction to Trematodes**

Explain host-parasite relationships in TrematodesState general life cycle of *Fasciola*.
List different stages of *Fasciola*. List community impact of

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-
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Parasitology – Snails transmitted parasitic disease

By the end of the lecture the student will be able to:

- State general Structure of snails.
- List different stages of parasites inside snails.
- List community impact of snail transmitted trematodes.

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Viral structure and classification

By the end of the lecture the student will be able to :

- Outline the differences between viruses and other microbial agents
- Memorize the basic structure of a virus and the function of each part
- Outline the basis of virus classification

Contents of the lecture:

- Viral structure
  - Viral nucleic acid

Viral genetics

By the end of the lecture the student will be able to :

- Recall viral mutations

By the end of the lecture the student will be able to :

- State the different phenomena that happen when 2 viruses infect a cell.

- **Contents of the lecture:**
- Interaction between viruses

Role of viruses in disease- Interactions between viruses

Viral replicative cycle
Viral pathogenesis

By the end of the lecture the student will be able to :

- State the steps of the pathogenesis of viral infections in infected patients

- Stages of viral growth cycle
- Attachment, penetration and uncoating
- Synthesis of new viral components
  - DNA viruses
  - RNA viruses
- Assembly and release

By the end of the lecture the student will be able to:

- Identify general life cycle of cestodes.

- Recall and differentiate the infective and diagnostic stages of common cestodes.

Parasitology- Introduction to Cestodes

Parasitology- Parasitic diseases caused by larval stages of cestodes

By the end of the lecture the student will be able to:

- List different larval stages of Cestodes
- List the parasitic disease caused by larval stages.
- List methods of infection for larval cestodes infection
- List community impact of larval stages of cestodes

Fungal structure

By the end of the lecture the student will be able to:

- Outline fungal structure and morphological classification.
- **Contents of the lecture:**
- Fungal structure
- Morphological classification of fungi

Fungal reproduction

By the end of the lecture the student will be able to :

- Outline types of fungal reproduction

Contents of the lecture:

- Fungal Reproduction
  - A sexual
  - Sexual

-
-

Barriers to infection

Cells of the innate immune system

Innate immune function

Recognition (pathogen associated molecular patterns-receptors)

p a t t e

Fungal diseases

By the end of the

Introduction to immunity- Innate immunity

By the end of the lecture the student will be able to :

- State the functions of the immune system
- Outline the categories of immunity
- Define the organs involved in the immune response
- Memorize characteristics and mechanisms of innate immunity

Contents of the lecture:

- Immunology overview
- General functions of the immune system

Antigens

By the end of the lecture the student will be able to :

- Memorize the definitions of antigens, immunogens, haptens and epitopes
- Understand factors that affect the degree of immunogenicity
- Recall different examples of antigens

Contents of the lecture:

Autoinfection in helminthes infection diseases

By the end of the lecture the student will be able to:

- Identify general life cycle of common nematodes.
- Recall and differentiate the infective and diagnostic stages of common nematodes.
- Demonstrate different types of nematodes infections.
- Explain host-parasite relationships in nematodes.

Autoinfection in helminthes infection diseases

Parasitology- Introduction to Nematodes

By the end of the lecture the student will be able to :

By the end of the lecture the student will be able to:

- Define the term autoinfection.
- List parasitic helminths in which autoinfection can occur.
- Memorize diagnostic and infective stages.
- Explain host-parasite relationships.
- Differentiate between the infective and diagnostic stages of different parasitesresponse to the parasitic infection.

By the end of the lecture the student will be able to :

- Outline the role of the antigen presenting cells (APS) in the development of

Complement

Antigen presenting cells

Introduction to Adaptive (acquired) immunity- B cellmediated immunity

By the end of the lecture the student will be able to :

- State the major contributors of adaptive immunity
- Understand the features that characterize adaptive immunity
- Recall the differentiation between innate and adaptive immunity
- Recall the role of humoral immunity in host defense.
- Memorize the origin, development, receptors and activation of B lymphocyte
- State the types, structure and functions of antibodies.

By the end of the lecture the student will be able to :

- Outline the role of CMI.
- Recall what monoclonal antibodies are , how they are produced and their
- functions
- Outline the differences between the primary and secondary immune
- Responses

Contents of the lecture:

- Mechanisms for acquired immune response

T cell mediated immunity

By the end of the lecture the student will be able to:

- Identify medically important protozoa.
- Understand life cycle's needs for common protozoa.
- Recall and differentiate the infective and diagnostic stages of common protozoa.

Parasitology- Introduction to Protozoa- Intestinal Protozoa-Blood Protozoa

Cytokines

Hypersensitivity

By the end of the lecture the student will be able to :

- State the definition, properties, functions and types of cytokines

By the end of the lecture the student will be able to :

- Outline the definition and types of hypersensitivity reactions
- Describe the mechanisms, and clinical types of each type.
- State the diagnosis and management of hypersensitivity reactions

Contents of the lecture:

- Definition
- Classification
  - Type I hypersensitivity reaction (pathogenesis- clinical types,

Immune tolerance

By the end of the lecture the student will be able to :

- Recognize the definition of tolerance

By the end of the lecture the student will be able to :

- Describe the mechanisms and importance of autotolerance
- State how to induce tolerance

Contents of the lecture:

- Definition
- T cell tolerance
- B cell toterance
- Factors affecting whether an antigen induces tolerance or not
- Clinical importance of tolerance

By the end of the lecture the student will be able to :

- Recall the types, structures and functions of the major histocompatibility complex

Autoimmunity

By the end of the lecture the student will be able to :

Transplantation

Parasitology- Introduction to Medically importantarthropods I- Arthropods transmitted diseases

Tumor immunology

Immunodeficiency Disorders

By the end of the lecture the student will be able to :

- State characteristics that suspect immunodeficiency disorders
- Outline the classification of immunodeficiency disorders
- Recall the molecular defects, manifestations of defects of phagocytic cells,complement, B and T cells (one example of each).

Contents of the lecture:

- General characteristics of immune deficiency diseases
- Classification
  - Primary immune deficiencies (disease, defect and common clinicalmanifestation)

By the end of the lecture the student will be able to:

- List arthropods that act as vectors of diseases to human.

Parasitology- Introduction to Medically importantarthropods I- Arthropods transmitted diseases

Parasitology- Introduction to Medically importantarthropods I- Arthropods transmitted diseases

By the end of the lecture the student will be able to:

- List the role of arthropods in parasitic global health problems bycausing parasitic disease.
- Describ the infective and diagnostic stages and the metgodes of infection of arthropods causing disease.
- Mention principles of immunoparasitology.

Outlines of topics for self-directed learning and group discussions

Immunization

By the end of the lecture the student will be able to :

- Outline the differences between active and passive immunization
- Memorize the types of vaccines with examples
- List the advantages and disadvantages of killed versus living vaccines

Contents of the lecture:

- Definition of immunization

Basics of infection control

By the end of the lecture the student will be able to

- Understand the basic infection prevention principles and recommendations
- Reaffirm Standard Precautions as the foundation for preventing transmission ofinfectious agents during patient care

Contents of the lecture:

By the end of the lecture the student will be able to:

Parasitology- Introduction to Medically importantarthropods I- Arthropods transmitted diseases

Topic (1): Normal flora

ILOs: To

- State the definition of normal flora
- Outline the parts of the body that have normal flora
- Recall the definition of microbiome and their functions
- Describe the functions of normal flora
- Enumerate the harmful effects of normal flora

Topic (2): Bacterial pathogenesis (Bacterial toxins)

ILOs: To:
- Recall the types of bacterial toxins
- Outline the biological effects of toxins

Topic (3): Bacterial genetics

ILOs: To:
- Recall types of mobile genetic elements
- State the formation of multiple drug resistant plasmids
- Outline the importance of multiple drug resistant plasmids
- State the applications of bacteriophages
- Recall the application of DNA cloning

Topic (4): Snails transmitted Trematodes

ILOs: To:
- General skills are stated early in the block.
- Role played by snails in trematodes infection.
- Memorize the stage of parasite in snails.
- Mode of infection of man by this parasite

Topic (5): Classification of bacteria

ILOs:
- **Classificy of clinically important bacteria**
- **Eumerate important members in each group**

Topic (6): Antimicrobial chemotherapy (Chemoprophylaxis- Probiotics)

ILOs:
- State the meaning of chemoprophylaxis
- Outline the general indications of chemoprophylaxis
- Recall few examples
- Describe the meaning of probiotics

Topic (7): Viral structure: Atypical virus like agents

ILOs:
- Recall defective viruses

- Memorize diseases produced by fungal toxins

Topic (8): Classification of viruses

ILOs:
- Classify medically important virus families
- Enumerate the distinguishing features of each family

Topic (9): Life threatening nematode infection

ILOs:
- List nematodes causing chronic diarrhea.
- Memorize diagnostic and infective stages.
- Demonstrate different types of nematodes infections.

Topic (10): Fungal toxins

ILOs: To:
- Outline the types of fungal toxins

ILOs:
- **Steps in the replication cycles of viruses**
- **Mechanism of DNA virus genome replication**
- **Mechanism of RNA virus genome replication**
  - **ssRNA (+) polarity**
  - **ssRNA (-) polarity**

Block timetable (lectures)

Date	Topic	Time
Sunday 19-2- 2023	**Introduction and bacterial structure**	**2hrs**
Monday 20-2-2023	**Bacterial physiology and bacteriophages**	**2hrs**
Tuesday 21-2-2023	**Bacterial genetics (part 1)**	**2hrs**
Wednesday 22-2-2023	**Introduction to Parasitology**	**2hrs**
Saturday 25-2-2023	**Bacterial genetics part 2**	**2hrs**
Sunday 26-2- 2023	**Antimicrobial chemotherapy**	**2hrs**
Monday 27-2-2023	**Bacterial pathogenesis**	**2hrs**
Tuesday 28-2-2023	**Virus structure and classification**	**2hrs**
Wednesday 1-3-2023	**Introduction to Trematodes**	**2hrs**
Saturday 4-3-2023	**Virus genetics and interactions**	**2hrs**
Sunday 5-3-2023	**Virus replication and pathogenesis Role of viruses in diseases**	**2hrs**
Monday 6-3-2023	**Mycology (Fungal structure, reproduction, Fungal diseases)**	**2hrs**
Tuesday 7-3-2023	**innate immunity**	**2hrs**
Wednesday 8-3-2023	**Introduction to Cestodes**	**2hrs**
Saturday 11-3-2023	**Antigens and immunogens**	**2hrs**
Sunday 12-3-2023	**Acquired immunity**	**2hrs**
Monday 13-3-2023	**APC and CMI**	**2hrs**
Tuesday 14-3-2023	**Humeral immunity**	**2hrs**

Wednesday 15-3-2023	**Introduction to Nematodes**	**2hrs**
Saturday 18-3-2023	**Secondary immune response and monoclonal antibodies**	**2hrs**
Sunday 19-3-2023	**Cytokines**	**1hr**
	Immunoprpphylaxis	**1hr**
Monday 20-3-2023	**Complement**	**2hrs**
Tuesday 21-3-2023	**Hypersensitivity**	**2hrs**
Wednesday 22-3-2023	**Intestinal Protozoa**	**2hrs**
Saturday 25-3-2023	**Tumor immunology**	**2hrs**
Sunday 26-3-2023	**Immune tolerance and Autoimmune disease**	**2hrs**
Monday 27-3-2023	**MHC and transplantation**	**2 hr**
Tuesday 28-3-2023	**Immune deficiency and assessment of Cells of immune cells**	**2 hrs**
Wednesday 29-3-2023	**Blood Protozoa**	**2 hrs**
Saturday 1-4-2023	**Basics of Infection control**	**1 hr**
Wednesday 5-4-2023	**Introduction to medically important arthropods**	**2 hrs**

Block timetable (practical)

N.	Practical Topic	wks	Hrs
1.	Microscopy	1st	2hrs
2.	Staining	1st	2hrs
3.	Stool analysis+ Introduction to Trematodes	1st	2hrs
4.	Culture media part I	2nd	2hrs
5.	Culture media part II	2nd	2hrs
6.	Introduction to Cestodes	2nd	2hrs
7.	Serology part I	3rd	2hrs
8.	Serology part II	3rd	2hrs
9.	Introduction to Nematodes	3rd	2hrs
10.	Biochemical reaction part I	4th	2hrs
11.	Biochemical reaction part II	4th	2hrs
12.	Intestinal protozoa	4th	2 hrs
13.	Molecular diagnosis	5th	2hrs
14.	Antibiotic sensitivity 5th	5th	2hrs
15.	Blood protozoa	5th	2hrs
16.	Sterilization and disinfection	6th	2hrs
17.	Diagnosis of viral infections	6th	2hrs
18.	Medically important arthropods	6th	2hrs
19.	Diagnosis of fungal infections	7th	2 hrs
20.	Basics of Infection Control	7th	2hrs

Days	10-12 a.m	12-2 p.m
Saturday	**Group A (para)**	**Group B (para)**
Sunday	**Group A (micro)**	**Group B (micro)**
Monday	**Group C (micro)**	**Group D (micro)**
Tuesday	**Group A (micro)**	**Group B (micro)**
Wednesday	**Group C (micro)**	**Group D (micro)**
Thursday	**Group C (para)**	**Group D (para)**