



Prepared by

**Medical Microbiology and Immunology
&
Medical Parasitology Departments**

Contact Information of Staff Responsible for Block PRD-105

Heads of the Departments	
Prof. Asmaa Nasr Eldin Thabet <i>Professor of Medical Microbiology and Immunology</i> Email: validalielsayed@gmail.com	Prof. Hanaa Ahmed El-Hady <i>Professor of Medical Parasitology</i> Email: hanaaelhady@yahoo.com
Department Coordinators	
Dr Ekram Abd El Rahman Mahmoud Dr. Dina Hamada Dr. Amira Ismail <i>Lecturer of Medical Microbiology and Immunology</i> Email: dr.ekram.ar@gmail.com	Dr. Hesham Ibrahim <i>Professor of Medical Parasitology</i> Contact: 01288555737

Contents

Topic	Page
Basic information about the block	3
Block map	4
NARS competencies covered by the block	5
Professional information about the block	6
Block aims	6
Intended Learning Outcomes	6
Structure of the block	9
Learning methods	10
Methods of Student Assessments	11
Block evaluation	12
Block contents	13
Lecture topics and their intended learning outcomes	13
Practical topics and their intended learning outcomes	17
Self-directed learning and group discussion topics and their intended learning outcomes	19
Cases and their ILOs	20
Seminars	21
Formative assessment	22
Blueprint	23
Study resources	27
Lecture Outlines	28
Outlines of topics for self-directed learning and group discussions	43
Block timetable	46

Basic Information about the Block

**Medical Microbiology and
Immunology &
Medical Parasitology Departments**

Basic Information of the block

Program on which the course is given Bachelor of Medicine and Surgery (M.B., B.Ch.).

Elements (Major or Minor) of the program: Undergraduate

Departments offering the course: Microbiology and Parasitology
Departments.

Academic year/level: 1st year, 2nd semester.

Date of specification approval: 2024-2025

Title: Principle of the disease I

Code: PRD-105

Credit points:12

Weeks: 8 weeks

Lecture: 66 hours

Practical: 40 hours

Student learning activities: 150 hours {self -directed learning (SDL) .
10 hrs. formative assessment}

Case- based group discussion: 30 hrs.

Total: 296 hours

Block Map

Block	Points	weeks	learning activities		
			contact hours/points	formative assessment/ feedback	Assignments
Principle of diseases	12	8 weeks	124 hrs 5.5 points	0.5point	6 points

NARS competencies covered by the block**NARS areas covered by the block**

The competency areas of the NARS- Medicine competency framework are 1- The graduate as a health care provider.

- 2- The graduate as a health promoter.
- 3- The graduate as a professional.
- 4- The graduate as a scholar and scientist.
- 5- The graduate as a member of the health team and a part of the health care system.
- 6- The graduate as a lifelong learner and researcher.

Sub competencies

- 1.1 Take and record a structured, patient centered history.
- 1.2 Adopt an empathic and holistic approach to the patients and their problems.
- 1.3 Assess the mental state of the patient.
- 1.4 Perform appropriately-timed full physical examination of patients, appropriate to the age, gender, and clinical presentation of the patient while being culturally sensitive.
- 1.5 Prioritize issues to be addressed in a patient encounter.

- 2.1 Identify the basic determinants of health and principles of health improvement.
- 2.2 Recognize the economic, psychological, social, and cultural factors that interfere with wellbeing.
- 2.3 Discuss the role of nutrition and physical activity in health.
- 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.

Professional Information:**Block Aims:****Overall Aims**

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

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.
- A19-** Discuss principles of immunoparasitology.
- A20-** State the basics of infection control

B- Intellectual skills:

- B1-** Differentiate the microorganism morphology

- B2- Explain genotypic variations and recombinant DNA technology
- B3- Compare between the different sterilization methods.
- B4- Select the proper antimicrobials.
- B5- Explain the laboratory diagnosis of viral diseases
- B6- Demonstrate the laboratory diagnosis of fungal diseases
- B7- Explain the role of immune system in health and disease

B8- Demonstrate different types of parasitic infections

B9- Explain host-parasite relationships.

B10- Differentiate between the infective and diagnostic stages of different parasites
B11- Interpret the immune response to the parasitic infection

B12- Demonstrate when to do hand hygiene and when to wear personal protective equipments

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.
- C4- Identify antigen-antibody reaction in blood grouping , compatibility testing and disease diagnosis.
- C5- Identify tests for diagnosis of some viral infections
- C6- Identify the infective and diagnostic stages of common parasites under microscope
- C7- Operate routine techniques used in medical parasitology
- C8- Practice steps of hand hygiene
- C9- Practice steps for wearing gloves and masks

D- General and transferable skills

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

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, or other 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 various performance indicators and information sources.

D7- Initiate a personal learning plan to enhance professional practice

D8- Identify opportunities and use various resources for learning.

D9- Integrate in inter-professional activities and collaborative

D10- Organize learning time and resources and set priorities

Structure of the block

	Lectures	Practical	SDL	Small group discussions	Formativeassessment	Total
Contact Hours	66	40	150	30	10	296
Credit	2.6	1.7	6	1.2	0.5	12

Methods of Student Assessment:

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	50% MCQ (best answer) 50% Written	40%	72 marks
Practical exam		30%	54 marks
Total		100%	180 marks

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	1 st	2 hrs
A1, A.3, B2, A4	4.5	Bacterial physiology and bacteriophages	1 st	2hrs
A1, A4, B2	2.5, 4.5	Bacterial genetics part (1)	1 st	2 hrs
A1, A4, B2	2.5, 4.5	Bacterial genetics part (2)	1 st	2 hrs
A13, A 14, A15, B 9	2.4, 4.5	Introduction to parasitology I (definitions and terminology)	1 st	1hr
A16, A17, A18, B8,B9	2.4, 4.5	Introduction to parasitology II (methods of infection)		1 hr

	2.4, 4.5	and stages)		1 hr
A1	2.5- 4.7	Anti microbial chemotherapy	2 nd	2hrs
A1, A5	2.4- 4.6	Bacterial pathogenesis	2 nd	2 hrs
A14	2.4- 4.5	Introduction to Trematodes I	2 nd	1hr
A17, A18, B8, B9	2.4- 4.5	Introduction to Trematodes II	2 nd	1hr
A16.1, A17.1, A18.1	1.8- 2.6-4.5	Snails transmitted parasitic disease	2 nd	1hr

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

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

A20, B12, C8-9	1.12, 2.9	Basics of infection control	7 th	1 hr
A.16, A19, B8, B9, B11	2.4-2.6- 4.5-4.6	Introduction to Medically important arthropods II Arthropods causing disease	7 th	1 hr
		Immuno-parasitology		1 hr
			7wks	
		Revisions and Exams	8 th 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	1 st	2hrs
2	A2, B.1 C1, C2 D1, D2	1.11- 4.8	Staining	1 st	2hrs
3.	C1,C6, A18	1.11- 4.8	Stool Analysis + Introduction to Trematodes (Parasitology)	1 st	2hrs
4	A3, B.1, C3 D1, D2	1.11- 4.8	Culture media part I	2 nd	2hrs
5	A3, B.1, C3 D1, D2	1.11- 4.8	Culture media part II	2 nd	2hrs
6	C1, C6, A18	1.11- 4.8	Introduction to Cestodes (Parasitology)	2 nd	2hrs
7	A10, B.7, C4, D1, D2	1.11- 4.8 1.11- 4.8	Serology I	3 rd	2hrs
8	A10, B.7, C4, D1, D2	1.11- 4.8 1.11- 4.8	Serology II	3 rd	2hrs
9.	C1, C6, A18	1.11- 4.8	Introduction to Nematodes (Parasitology)	3 rd	2 hrs
10	A3, B2, C3, D1, D2	1.11- 4.8	Biochemical reactions I	4 th	2 hrs
11	A3, B2, , C3, D1, D2	1.11- 4.8	Biochemical reactions II	4 th	2 hrs
12	C1, C6	1.11- 4.8	Intestinal protozoa (parasitology)	4 th	2 hrs

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

Group Discussion Topics

No.	ILOs	Topics	wks	Hrs
1.	A1, A5, D1-10	Normal flora	1 st	1hr
2.	A1, A5, D1-10	Bacterial pathogenesis: Bacterial toxins	1 st	1hr
3.	A1, A4, B.2D1-10	Bacterial genetics: Mobile genetic elements, applications of DNA cloning and bacteriophage	1 st	2hrs
4.	A14, A17, A18 B8.2, B9.2	Snails transmitted Trematodes	2 nd	2 hrs
5.	A1, A5, D1-10	Classification of bacteria	2 nd	1 hrs
6.	A1, A7, B4 D1-10	Antimicrobial chemotherapy: Chemoprophylaxis- Probiotics	2 nd	1hr
7.	A1, A.8, D1-D10	Viral structure: Atypical virus like agents	3 rd	1 hr
8.	A1, A.8, D1-D10	Classification of viruses	3 rd	2 hr
9.	A14, A17, A18 B8, B9, D1-D10	Life-threatening nematode infection	4 th	2 hrs
10.	A1, A8, D1-10	Fungal diseases: Fungal toxins	4 th	1hr
11.	A1, A.8, D1-D10	Replication of viruses	4 th	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	5 th	2hr
14.	A15, A16, A18, B9, D1-10	Arthropods transmitted and causing diseases..	7 th	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	3 rd	2hrs
2.	A8, B5, D1, D2,D3	Short cases on viral infections	3 rd	1hr
3.	A8, B5, B.6 D1, D2, D3	Short cases on fungal infections	5 th	1hr
4.	B8, B9, B10	Hepatosplenomegaly	6 th	1hr
5.	A16, B8, B10,	Diarrhea	6 th	1hr
6.	A12, B7, D1- 4, C4	Short cases in immunology	6 th	2 hrs
7.	A. 12 B7, D1-4, C4	Short cases in immunology	7 th	2hrs
	Total		7 weeks	10 hrs

Formative assessment

. Formative:

This is used to monitor student's learning to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning.

It's given at least once in the form of quizzes that is made available for the students at the E-learning site at the end of the block.

Answers are presented instantly after the attempts and discussed on the students groups or in person with the teaching staff

Questions should be consistent with the level of the final exam. The student's attendance is a condition for entering the summative exams. The electronic or paper achievement file must be used to follow up on the students' evaluation, and its completion is a condition for entering the final exams

Blueprint of the block

N.	Topic (Lectures)	Hours	Total marks	Mid-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	3 marks	2 marks	1 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 mark		1 mark
6	Introduction to parasitology II (definitions and terminology) Methods of infection and stages of parasites	2 hrs	3 marks	2 marks	1 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	3 marks	2 marks	1 marks
10	Virus genetics and interactions	2 hr	3 marks	2 marks	1 mark
11	Introduction to Trematodes	2 hrs	6 marks	3 marks	3 marks
12	Snails transmitted-parasitic diseases	1 hr	1 mark	1 mark	
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	3 marks	2 marks	1 marks
15	innate immunity	2 hrs	3 marks	2 marks	1 marks
16	Antigens and immunogens	2 hr	3 marks	2 marks	1 marks
17	Introduction to Cestodes	2 hrs	4 marks	2 marks	2 marks
18	Parasitic diseases caused by larval stages of cestodes	1 hr	2 marks	1 mark	1 mark

	4th week				
19	Acquired immunity	2 hr	3 marks		3 marks
20	APC and CMI	2 hrs	3 marks		3 marks
21	Humeral immunity	2 hrs	3 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	2 marks
24	Autoinfection in helminthes infection diseases	1 hr	2 marks		2 marks
	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		3 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 marks
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	2 marks		2 marks
	7th week				
37	Basics of Infection control	1 hr	2 marks		2 marks
38	Introduction to medically important arthropods II	1 hr	1 mark		1 mark
39	Immuno-parasitology	1hr	1 mark		1 mark
	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	1 st	2hrs	2
2.	Staining	1 st	2hrs	2
3.	Stool analysis + Introduction to Trematodes (Parasitology)	1 st	2 hrs	3 marks
4.	Culture media part I	2 nd	2 hrs	3 marks
5.	Culture media part II	2 nd	2hrs	3 marks
6.	Introduction to Cestodes (Parasitology)	2 nd	2 hrs	3 marks
7.	Serology part I	3 rd	2hrs	3 marks
8.	Serology part II	3 rd	2hrs	3 marks
9.	Introduction to Nematodes (Parasitology)	3 rd	2 hrs	3 marks
10.	Biochemical reaction part I	4 th	2 hrs	3 marks
11.	Biochemical reaction part II	4 th	2 hrs	2 marks
12.	Intestinal protozoa (parasitology)	4 th	2 hrs	3 marks
13.	Molecular diagnosis	5 th	2 hrs	3 marks
14.	Antibiotic sensitivity 5 th	5 th	2 hrs	2 marks
15.	Blood protozoa (parasitology)	5 th	2 hrs	3 marks
16.	Sterilization and disinfection	6 th	2 hrs	3 marks
17.	Diagnosis of viral infections	6 th	2 hrs	2 marks
18.	Medically important arthropods (Parasitology)	6 th	2 hrs	3 marks
19.	Diagnosis of fungal infections	7 th	2 hrs	3 marks
20.	Basics of Infection Control	7 th	2hrs	2 marks

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

Block PRD-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

الدور الثاني

Exam	Final 60%	Practical 40%	Total
Microbiology	72	48	120
Parasitology	36	24	60
Total	108	72	180

Study Resources

1. Lecture notes

2. Books: Microbiology

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

Parasitology

- 1- Garcia, Lynne Shore, and David A. Bruckner. Diagnostic Medical Parasitology. New York: Elsevier, 2016

Lecture Outlines

Introduction to microbiology

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

- Define the scope of Medical Microbiology: Bacteriology, Virology, Mycology and Immunology
- 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 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 transference
- 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 transfer

➤ Conjugation

n

➤ Transduction

n

- Transformation
- Mobile genetic elements
 - Gene cassettes
 - Integrations
 - Transposons
 - How do multiple drug resistant plasmids arise
- Recombination
 - Definition of recombination
 - Types of recombination
- Recombinant DNA technology
 - Basics
 - Applications

Bacterial growth:

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

- Recall bacterial growth requirements and phases of growth

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

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

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

Fungal diseases:

Barriers to infection

Cells of the innate immune system

Innate immune function

Recognition (pathogen associated molecular patterns-
receptors)

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

Antigen presenting cells

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.

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

Contents of the lecture:

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

Autoimmunity

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

- Recall the types, structures and functions of the major histocompatibility complex
 - 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).
- General characteristics of immune deficiency diseases
- Classification
 - Primary immune deficiencies (disease, defect and common clinical manifestation)
-

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 different types of parasites.
- Explain host-parasite relationship. 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

Parasitology - Introduction to Trematodes:

Explain host-parasite relationships in Trematodes. State general life cycle of *Fasciola*.

List different stages of *Fasciola*. List community impact of

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.
-

Parasitology- Introduction to Cestodes**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- 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

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.

Parasitology- Introduction to Nematodes

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 parasites response to the parasitic infection.

Parasitology- Introduction to Medically important arthropods I- Arthropods transmitted diseases

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

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

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 of infectious agents during patient care

Contents of the lecture:

Parasitology- Introduction to Medically important arthropods 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:**

- Classify of clinically important bacteria
- Enumerate 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

