Medical Parasitology I

Department	**Department of Medical Laboratory Sciences**						
Course Title /Code	**Medical Parasitology I** (MeLS2112)						
Program/Target Group	BSc Degree in Medical Laboratory Sciences Year: II Semester: II						
Module Title (Code)	Medical Parasitology (MeLSM2119)						
Module Coordinator	Medical Parasitology module coordinator						
Course EtCTS	7EtCTS						
Course Information	Academic Year _____ Meeting Day _____ Meeting Time _____ Meeting Location: Class Room _____ Lab Room _____						
Instructor's Name	_____						
Instructor's Contact Information	Office No. _____ Phone: +251_____(Only on working hours) E-mail: _____ Office Hour _____						
EtCTS	7 CP/ 189Hr.						
Student Work Load	**Lecture**	**Lab Practice**	**Tutorial**	**Independent Study**	**Assignment**	**Assessment**	**Total**
	48 Hrs.	48 Hrs.	2 Hrs.	63 Hrs.	12 Hrs.	16 Hrs.	189 Hrs.
Course Description	• This course is designed to equip medical laboratory sciences students with the basic concepts of medical Parasitology and general laboratory diagnosis of parasitic diseases of human importance; to provide the students with basic knowledge and understanding of the medically important helminths and their detection and identification in different clinical specimens.						

Course Objective	**General Objective** • At the end of this course the students will be able to describe the morphology, classification, clinical features, pathogenesis, laboratory diagnosis and prevention and control measures of helminthes. It is also intended to equip the students with basic practical skills of laboratory techniques (specimen collection, processing, examination and reporting) and apply quality assurance in medical parasitology laboratory. **Instructional Objectives** **1. Knowledge** • Discuss the concepts of parasitism, the relationships between parasites and host, between parasites and environment and the cultural and socioeconomic factors affecting the transmission of parasites • Explain the general epidemiological aspects of parasites that affect human • Illustrate the life cycle of specific parasites • Explain laboratory quality control in parasitology • List characteristics used to identify helminthic parasites involved in human infections • Classify parasites having medical significance for human • Discuss the concepts of parasitism, the relationships between parasites and host, between parasites and environment and the cultural and socioeconomic factors affecting the transmission of parasites • Explain the general epidemiological aspects of parasites that affect human • List characteristics used to identify helminthic parasites involved in human infections • Describe the general characteristics of Helminthes • Explain the classification of Helminthes • List the most common medically important Helminthes • Describe the life cycle of Helminthes • Explain the morphology, epidemiology, pathogenesis and treatment of Helminthes • Describe the prevention and control measures of Helminthes

	• Compare and contrast the different techniques of Helminthes • Explain laboratory quality control in parasitology **2. Skill** • Perform collection, processing, transportation of parasitological specimens (urine, stool, blood, skin slit, body fluids, tissue biopsy, aspirate) • Examine parasitological specimens using parasitological techniques • Prepare permanent smear for the identification of intestinal protozoa • Prepare reagents to be used in Parasitology 3. **Attitude** • Adhere safety rules in the laboratory
Pre-requisite(s)	
Course Status	Core
Mode of Delivery	Block

Schedule

Day	Contact Hour	Topics	Required Reference
1	4 Hr.	**1. Introduction to Medical Parasitology** 1.1 Definition of terms 1.2 Features of parasites 1.3 Source of infection 1.4 Mode of transmission 1.4.1 Direct mode of transmission 1.4.2 Indirect mode of transmission 1.5 Routes of transmission	Ref # 1 - 7
	3 Hr	Lab • Lab visit and Demonstration of different lab equipment and reagent preparation	
	2 Hr	Assignment I • Reading Assignment	
	3 Hr	Independent Study	

2	4 Hr	1.6 Host parasite inter-relationship 1.7 Effect of parasites on the host 1.8 Host susceptibility factors 1.9 Escape mechanisms of parasites from the immune system 1.10 General life cycle of parasites 1.10.1 Direct life cycle 1.10.2 Indirect life cycle	Ref # 1 - 7
	3 Hr	Lab • Preparation different reagent for parasitological techniques	
	1Hr	Assessment • Test 1	
	4 Hr	Independent Study	
3	4 Hr	2 **General laboratory diagnosis of parasites** 2.1 Types of specimen (urine, blood, stool, sputum, skin.) 2.2 Collection and preparation of specimen used for parasitological examination 2.3 Preservation of parasites	Ref # 1 – 7
	3 Hr	Lab • Demonstration of collection, preparation and preservation of different parasitological specimens • Macroscopic examination of stool	
	2 Hr	Assignment II • Written Assignment	
	3 Hr	Independent Study	
4	4 Hr	2.4 General techniques used for parasitological examination 2.4.1 Microscopic (saline, iodine, concentration, staining, …) 2.4.2 Chemical (Occult blood, Bile pigments) 2.4.3 Culture, Immunologic, Blotting, PCR 2.4.4 Xenodiagnosis 2.4.5 Reporting results	Ref # 1 - 7

	3 Hr.	Lab • Wet mount preparation (Saline and Iodine) • Demonstration of different concentration techniques • Parasite culture, Immunological and other available parasitological techniques demonstration	
	2 Hr	Assignment III • Reading Assignment	
	1 Hr	• Tutorial	
	2 Hr	Independent Study	
5	4hr	3 **Helminthes** 3.1 Introduction to helminthes 3.2 Classification of helminthes 3.3 General features of Nemathelminthes 3.4 General features of Platyhelminthes 4 **Nemathelminthes** 4.1 Burden and impact on human life 4.2 General features 4.3 **Intestinal Nematodes** 4.4 Ascaris lumbricoides 4.4.1 Epidemiology, Morphology, Transmission and life cycle 4.4.2 Clinical features, Laboratory diagnosis 4.4.3 Treatment, Prevention& control	Ref # 1 – 7
	3Hr	Lab • Direct Wet mount (Saline, eosin , Iodine)&Examination and identification of intestinal parasites	
	1Hr	Assessment • Quiz 1	
	4Hr	Independent work	

6	4hr	4.5 Hookworm (Ancylostoma duodenale and Necator americanus) 4.5.1 Epidemiology, Morphology, Transmission and life cycle 4.5.2 Clinical features, Laboratory diagnosis 4.5.3 Treatment, Prevention& control 4.6 Strongyloides stercoralis 4.6.1 Epidemiology, Morphology, Transmission and life cycle 4.6.2 Clinical features, Laboratory diagnosis 4.6.3 Treatment, Prevention& control	Ref # 1 - 7
	3 Hr	Lab • Direct Wet mount &Examination and identification of intestinal parasites • Occult blood test • Water emergence sem concentration techniques for *S. Stercolaris* larva	
	1 Hr	Assessment • Presentation I	
	4 Hr	Independent Study	
7	4 Hr	4.7 Enterobius vermicularis 4.7.1 Epidemiology, Morphology, Transmission and life cycle 4.7.2 Clinical features, Laboratory diagnosis 4.7.3 Treatment, Prevention& control 4.8 Trichuris trichiura 4.8.1 Epidemiology, Morphology, Transmission and life cycle 4.8.2 Clinical features, Laboratory diagnosis 4.8.3 Treatment, Prevention& control 4.9 **Blood and Tissue nematodes** 4.10 General characteristics 4.11 Wuchereria bancrofti 4.11.1 Epidemiology, Morphology, Transmission and life cycle 4.11.2 Clinical features, Laboratory diagnosis 4.11.3 Treatment, Prevention& control	Ref # 1 - 7

		4.12 Podoconiosis 4.12.1 Causative agent 4.12.2 Epidemiology 4.12.3 Burden 4.12.4 Differential diagnosis with Lymphatic filariasis	
	3 Hr	Lab • Direct Wet mount (Saline, Iodine) & Examination and identification of intestinal parasites	
	2 Hr	Assignment IV • Reading Assignment	
	1 Hr	Assessment • Quiz II	
	2 Hr	Independent Study	
8	4 Hr	4.13 Brugia malayi/timori 4.13.1 Epidemiology, Morphology, Transmission and life cycle 4.13.2 Clinical features, Laboratory diagnosis 4.13.3 Treatment, Prevention& control 4.14 Loa loa 4.14.1 Epidemiology, Morphology, Transmission and life cycle 4.14.2 Clinical features, Laboratory diagnosis 4.14.3 Treatment, Prevention& control 4.15 Onchocerca volvulus 4.15.1 Epidemiology, Morphology, Transmission and life cycle 4.15.2 Clinical features, Laboratory diagnosis 4.15.3 Treatment, Prevention& control 4.16 Trichinella spiralis 4.16.1 Epidemiology, Morphology, Transmission and life cycle 4.16.2 Clinical features, Laboratory diagnosis 4.16.3 Treatment, Prevention& control	Reference no 1-7
	3 Hr	Lab	

		• Concentration Techniques • (Sedimentation)&Examination and identification of intestinal parasites	
	1 Hr	Assessment • Test II	
	4 Hr	Independent Study	
9	4 Hr	4.17 Dracunculus medinensis 4.17.1 Epidemiology, Morphology, Transmission and life cycle 4.17.2 Clinical features, Laboratory diagnosis 4.17.3 Treatment, Prevention& control 4.18 Larva Migrans 4.18.1 Epidemiology, Morphology, Transmission and life cycle 4.18.2 Clinical features, Laboratory diagnosis 4.18.3 Treatment, Prevention& control 5 **Platyhelminthes** 5.1 General characteristics of Platyhelminthes 5.2 Tape worms (Cestodes) 5.3 General characteristics 5.4 Taenia Species (Taenia saginata and solium) 5.4.1 Epidemiology, Morphology, Transmission and life cycle 5.4.2 Clinical features, Laboratory diagnosis 5.4.3 Treatment, Prevention& control	Reference no 1-7
	3 Hr	Lab • Concentration Techniques (flotation)&Examination and identification of intestinal parasites	
	2 Hr	Assignment V • Written Assignment	
	3 Hr	Independent	
10	4 Hr	5.5 Hymenolepis nana 5.5.1 Epidemiology, Morphology, Transmission and life cycle 5.5.2 Clinical features, Laboratory diagnosis	Reference no 1-7

		5.5.3 Treatment, Prevention& control 5.6 Hymenolepis diminuta 5.6.1 Epidemiology, Morphology, Transmission and life cycle 5.6.2 Clinical features, Laboratory diagnosis 5.6.3 Treatment, Prevention& control 5.7 Echinococcus granulosus 5.7.1 Epidemiology, Morphology, Transmission and life cycle 5.7.2 Clinical features, Laboratory diagnosis 5.7.3 Treatment, Prevention& control 5.8 Diphyllobothrim latum 5.8.1 Epidemiology, Morphology, Transmission and life cycle 5.8.2 Clinical features, Laboratory diagnosis 5.8.3 Treatment, Prevention& control	
10	3 Hr	Lab • Examination of persevered specimens and slides and identification of different parasites diagnostic stages	
	1 Hr	Tutorial	
	4 Hr	Independent Study	
11	4 Hr	5.9 The flukes (trematodes) 5.10 General characteristics 5.11 Blood flukes 5.12 General characteristics 5.13 Schistosoma mansoni 5.13.1 Epidemiology, Morphology, Transmission and life cycle 5.13.2 Clinical features, Laboratory diagnosis 5.13.3 Treatment, Prevention& control 5.14 Schistosoma japonicum 5.14.1 Epidemiology, Morphology, Transmission and life cycle 5.14.2 Clinical features, Laboratory diagnosis 5.14.3 Treatment, Prevention& control 5.15 Schistosoma haematobium	Reference no 1-7

		5.15.1 Epidemiology, Morphology, Transmission and life cycle 5.15.2 Clinical features, Laboratory diagnosis 5.15.3 Treatment, Prevention& control 5.16 Schistosoma intercalatum and Schistosoma mekongi 5.16.1 Epidemiology, Morphology, Transmission and life cycle 5.16.2 Clinical features, Laboratory diagnosis 5.16.3 Treatment, Prevention& control 5.17 Cercarial dermatitis	
	3 Hr	Lab • Kato Katz concentration techniques and identification of Schistosoma and other intestinal helminths egg	
11	2 Hr	Assignment VI • Read Assignment	
	1 Hr	Assessment • Test III	
	2 Hr	Independent Study	
12	4 Hr	5.18 **Liver flukes** 5.18.1 Epidemiology, Morphology, Transmission and life cycle 5.18.2 Clinical features, Laboratory diagnosis 5.18.3 Treatment, Prevention& control 5.19 **Intestinal flukes** 5.19.1 Epidemiology, Morphology, Transmission and life cycle 5.19.2 Clinical features, Laboratory diagnosis 5.19.3 Treatment, Prevention& control 5.20 **Lung flukes** 5.20.1 Epidemiology, Morphology, Transmission and life cycle 5.20.2 Clinical features, Laboratory diagnosis 5.20.3 Treatment, Prevention& control 6. Quality assurance in parasitology	Reference no 1-7
	3 Hr	Lab	

		• Examination of persevered specimens and slides and identification of different parasites diagnostic stages	
	1 Hr	Assessment • Presentation II	
	4 Hr	Independent Study	
13	3 Hr Morning	Lab • Examination of persevered specimens and slides and identification of different parasites diagnostic stages	
	3 Hr Afternoon	Lab • Examination of persevered specimens and slides and identification of different parasites diagnostic stages	
	6 Hr	Independent Study	
14	3 Hr Morning	Lab • Examination of persevered specimens and slides and identification of different parasites diagnostic stages	
	3 Hr Afternoon	Lab • Examination of persevered specimens and slides and identification of different parasites diagnostic stages	
	6 Hr	Independent Study	
15	12 Hrs	Independent Study	
16	3 Hrs	Final Written Exam	
	6 Hrs	Final Practical Exam	

Teaching and Learning Methods

- Interactive Lecture, Brainstorming and Discussion
- Case Study, Presentation and Group Discussion
- Computer assisted instruction
- Laboratory Practical and Demonstration
- Individual or Group Tutorial, Home Study

Description of learning materials

- Text Books, Lecture Notes

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Laboratory Manuals and Bench Aids
Visual Aids (Video cassettes, LCD)
Chalk and Board, Flip Charts
Laboratory Equipments, Materials and Supplies

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<tr><td>Assessment
• Assessment in this course will be based on written assignments (20%), three continuous tests (15%). Practical exam (20%), Laboratory report (15%) and Final exam (30%)</td><td>Two individual written assignments, three more non-graded reading assignments and laboratory report writing will be given
• Assignment 1: 0% (Day1)
• Assignment 2: 0% (Day 3)
• Assignment 3: 10% (Day 4)
• Assignment 4: 0% (Day 7)
• Assignment 5: 10% (Day 9)
• Assignment 6: 0% (Day 11)
• Test I: 5% (Day 2)
• Test II: 5% (Day 8)
• Test III: 5% (Day 11)
• Final Practical Exam: 20% (Day 16)
• Final Written Exam: 30% (Day 16)
• Laboratory report 15% (Day 1,2,3,4,5,6,7,8,9,10); 1.5% each.</td><td>Competence to be assessed
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<tr><td>Course expectation</td><td colspan="2">• You should come with appropriate course materials during the lecture and laboratory sessions (handouts, laboratory manuals, laboratory reports)
• Wear gown during the laboratory activities and never wear gown outside the laboratory
• You are expected to actively participate during discussions in the class. If you are working in a group or with a partner, you must be a part of the group.
• Complete the assignments and other activities on time. Use your time for group work and home study effectively.</td></tr>
<tr><td>Course Policy</td><td colspan="2">• Refer to national modular curriculum page No ---</td></tr>
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Reference (s)	1. Heelan J.S, Ingersoll F.W. Essential of Human Parasitology. Delmar 2002. 2. Cheesbrough M. District Laboratory Practice in Tropical Countries. Part 1, Cambridge 1998. 3. Debub University. Parasitology for Health Science Students, lecture note series; 2004. 4. Beaver P.C, et al. Clinical Parasitology. K.M Varghese Company; 9th edition, 1984. 5. Markell et al. Medical Parasitology. W.B Saunders Company 6th edition 1986. 6. Brown H. Basic Clinical Parasitology. ACC Norwalk; 5th edition, 1983. 7. Chiodini P.L. et al. Atlas of Medical Helminthology and Protozoology. Churchill Livingstone, 4th edition; 2001.
Approval Section	Name of Module Coordinator/Course team leader: _____ Signature _____Date:_____ Name of School/Department head_____ 8. Signature _____Date:_____