Medical Parasitology II

Department	**Department of Medical Laboratory Sciences**						
Course Title /Code	Medical Parasitology II (MeLS2113)						
Program/Target Group	BSc Degree in Medical Laboratory Sciences Year: II Semester: II						
Module Title (Code)	Medical Parasitology (MeLSM2119)						
Module Coordinator	_____						
Course EtCTS	7 EtCTS						
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/ 189 Hr.						
Student Work Load	Lecture	Lab Practice	Tutorial	Independent Study	Assign ment	Assessm ent	Total
	48 Hrs.	48 Hrs.	10 Hrs.	63 Hrs.	10 Hrs.	10 Hrs.	189 Hrs.
Course Description	• This course describes protozoa of medical importance. Geographical distribution, Morphological features, Life cycles, clinical manifestations, modes of transmission, prevention and control, immunopathological aspects, diagnosis and treatment. The biological and clinical perspectives gained in this course will assist students in the recognition, evaluation and management of public health problems or clinical practice involving medically important protozoa.						
Course Objective	**1. 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 protozoa. 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 Protozoology.

2. Instructional Objectives

- Knowledge
    - Define terminologies related to protozoa
    - Describe the general characteristics of protozoa
    - Explain the classification of protozoa
    - List the most common medically important protozoa
    - Describe the life cycle of protozoan parasites
    - Explain the morphology, epidemiology, pathogenesis and treatment of protozoan parasites
    - Describe the prevention and control measures of protozoan infections
    - Compare and contrast the different techniques of protozoan parasites
    - Apply laboratory quality control in Parasitology laboratory
- 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
- Attitude
    - Adhere and promote safety rules in the laboratory

Pre-requisite (s)		Medical Parasitology I	
Course Status		Core	
Mode of Delivery		Block	
Schedule			
Day	**Contact Hour**	**Topics and Sub Topics**	Required Reference
1	2 Hr.	**1. Introduction to Medical Protozoology** 1.1. Definition, Diversity & Importance 1.2. General Morphology & Structure **1.3.** Properties, Taxonomy	Ref # 1
	3 Hr.	**2. Sarcodina (Amoebae)** 2.1 Taxonomy of Amoeba 2.2 Introduction to Sarcodina 2.2.1 Pathogenic Amoeba (Entamoeba histolytica): 2.2.1.1 Epidemiology, Morphology, Transmission and life cycle 2.2.1.2 Clinical features, Laboratory diagnosis 2.2.1.3 Treatment, Prevention& control	Ref # 1; Ref # 2; Ref # 4
	3 Hr	**Laboratory**: • Demonstration of laboratory equipments and supplies used Parasitology laboratory • Preparation of reagents, solutions for parasitological examination	Ref # 3; Ref # 7
	1 Hr	**Assignment I**: • Reading Assignment	
	3 Hr.	**Independent Study:**	
2	2 Hr.	2.2.2 Non – Pathogenic Amoeba (Entamoeba coli, E. hartmanii, polescki, E. gingivalis, E. nana, I. bustchili, E. dispar) 2.2.2.1 Epidemiology, Morphology, Transmission and life cycle 2.2.2.2 Clinical features, Laboratory diagnosis 2.2.2.3 Treatment, Prevention& control	Ref # 1; Ref # 3
	2 Hr.	2.2.3 Free – living Pathogenic Amoeba (Acanthamoeba spp, Naegl	Ref # 1;

		fowleri) 2.2.3.1 Epidemiology, Morphology, Transmission and life cycle 2.2.3.2 Clinical features, Laboratory diagnosis 2.2.3.3 Treatment, Prevention& control	Ref # 3
	1 Hr.	**3. Flagellates (Mastigophora)** 3.1 Introduction to Flagellates 3.2 Oro-Intestinal Flagellates **3.2.1** General Characteristics	Ref # 1; Ref # 2; Ref # 3
	3 Hr	**Laboratory:** • Direct saline/eosin stool examination • Thin and tick blood film preparation and staining	Ref # 3; Ref # 7
	4 Hr	**Assignment II**: • Written Assignment	
3	2 Hr.	**3.2.2 Giardia lamblia** 3.2.2.1 Epidemiology, Morphology, Transmission and life cycle 3.2.2.2 Clinical features, Laboratory diagnosis **3.2.2.3** Treatment, Prevention& control	Ref # 1; Ref # 3
	2 Hr.	**3.2.3 Dientamoeba fragilis, Chilomastix mesnili ,Enteromonas hominis, Retortamonas intestinalis, Trichomonas hominis, T. tenax** 3.2.3.1 General Characteristics, Epidemiology, Morphology 3.2.3.2 Transmission and life cycle 3.2.3.3 Clinical features laboratory diagnosis **3.2.3.4** Treatment, Prevention& control	Ref # 1, Ref # 2;
	1:30 Hr.	**3.2.4 Urogenital Flagellates (Trichomonas vaginalis)** 3.2.4.1 Epidemiology, Morphology, Transmission and life cycle 3.2.4.2 Clinical features, Laboratory diagnosis **3.2.4.3** Treatment, Prevention& control	Ref # 1; Ref # 2
	3 Hr	**Laboratory:** • Formal ether concentration technique	Ref # 3; Ref # 7

		• Direct saline/eosin stool examination	
	1 Hr	**Assignment III**: • Reading Assignment	
	30 Min	**Quiz I**	
	2 Hr.	**Independent Study:**	
	1 Hr.	**3.3 Blood and tissue flagellates** 3.3.1 General Characteristics 3.3.2 Leishmania Species 3.3.2.1 General Characteristics **3.3.2.2** Classification	Ref # 1, Ref # 3, Ref # 9
	2 Hr.	**3.3.2.3 Leishmania tropica complex** 3.3.2.3.1 Epidemiology, Morphology, Transmission and life cycle 3.3.2.3.2 Clinical features, Laboratory diagnosis **3.3.2.3.3** Treatment, Prevention& control	Ref # 1, Ref # 3, Ref # 4, Ref # 10
	3 Hr	Laboratory: • Wet mount urine examination • Thin and tick blood film preparation, staining and examination	Ref # 3; Ref # 7
	2 Hr	Tutorial:	
	3 Hr.	**Independent Study:**	
5	2 Hr.	**3.3.2.4 Leishmania donovani complex** 3.3.2.4.1 Epidemiology, Morphology, Transmission and life cycle 3.3.2.4.2 Clinical features, Laboratory diagnosis **3.3.2.4.3** Treatment, Prevention& control	Ref # 1, Ref # 3, Ref # 8
	1 Hr.	**3.3.2.5 Leishmania Mexicana complex** 3.3.2.5.1 Epidemiology, Morphology, Transmission and life cycle 3.3.2.5.2 Clinical features, Laboratory diagnosis **3.3.2.5.3** Treatment, Prevention& control	Ref # 1, Ref # 3, Ref # 10
	1 Hr.	**3.3.2.6 Leishmania braziliensis complex** 3.3.2.6.1 Epidemiology, Morphology, Transmission and life cycle 3.3.2.6.2 Clinical features, Laboratory diagnosis	Ref # 1, Ref # 8, Ref # 9

		3.3.2.6.3 Treatment, Prevention& control	
	1 Hr.	**3.3.2.7 Leishmania guyanensis complex** 3.3.2.7.1 Epidemiology, Morphology, Transmission and life cycle 3.3.2.7.2 Clinical features, Laboratory diagnosis **3.3.2.7.3** Treatment, Prevention& control	Ref # 1, Ref # 3, Ref # 4
	3 Hr	**Laboratory:** • Permanent smear for the identification of intestinal protozoa Examination of prepared slides	Ref # 3; Ref # 7
	4 Hr.	**Independent Study:**	
6	1 Hr.	3.3.3 Trypanosome species 3.3.3.1 General Characteristics 3.3.3.2 Classification	Ref # 1, Ref # 3, Ref # 10
	3 Hr.	3.3.3.3 African trypanosomiasis 3.3.3.3.1 Epidemiology, Classification, Morphology, Transmission and life cycle 3.3.3.3.2 Clinical features, Laboratory diagnosis 3.3.3.3.3 Treatment, Prevention& control	Ref # 1, Ref # 3, Ref # 4
	3 Hr	**Laboratory:** • Examination of prepared slides • Quantitative Buffy Coat examination	Ref # 3; Ref # 7
	5 Hr.	**Independent Study:**	
7	1 Hr.	**3.3.3.4 American trypanosomiasis** 3.3.3.4.1 Epidemiology, Morphology, Transmission and life cycle 3.3.3.4.2 Clinical features, Laboratory diagnosis **3.3.3.4.3** Treatment, Prevention& control	Ref # 1, Ref # 3, Ref # 4, Ref # 10
	1 Hr.	**4. Ciliates (Balantidium coli)** 4.1 Epidemiology, Morphology, Transmission and life cycle 4.2 Clinical features, Laboratory diagnosis **4.3** Treatment, Prevention& control	Ref # 1, Ref # 3, Ref # 8
	3 Hr	**Laboratory:**	Ref # 3;

		• Zinc sulfate floatation technique	Ref # 7
	2 Hr	Tutorial:	
	1 Hr	**Examination 1 (Written test)**	
	4 Hr.	**Independent Study:**	
8	1 Hr.	**5. Apicomplexa (Sporozoa)** 5.1 Classification 5.2 General features 5.3 Intestinal Sporozoa **5.3.1** General features	Ref # 1, Ref # 3, Ref # 4, Ref # 10
	1 Hr.	**5.3.2 Cryptosporidium species** 5.3.2.1 Epidemiology, Morphology, Transmission and life cycle 5.3.2.2 Clinical features, Laboratory diagnosis 5.3.2.3 Treatment, Prevention& control	Ref # 1, Ref # 8, Ref # 9, Ref # 10
	1 Hr.	**5.3.3 Isospora belli** 5.3.3.1 Epidemiology, Morphology, Transmission and life cycle 5.3.3.2 Clinical features, Laboratory diagnosis 5.3.3.3 Treatment, Prevention& control	Ref # 1, Ref # 8, Ref # 9, Ref # 10
	1 Hr.	**5.3.4 Cyclospora cayetanensis** 5.3.4.1 Epidemiology, Morphology, Transmission and life cycle 5.3.4.2 Clinical features, Laboratory diagnosis 5.3.4.3 Treatment, Prevention& control	Ref # 1, Ref # 8, Ref # 9, Ref # 10
	3 Hr	**Laboratory:** • Modified acid fast staining	Ref # 3; Ref # 7
	4 Hr	**Assignment IV**: • Written Assignment	
	1 Hr.	**Independent Study:**	
9	1 Hr.	**5.3.5 Sarcocystis species** 5.3.5.1 Epidemiology, Morphology, Transmission and life cycle 5.3.5.2 Clinical features, Laboratory diagnosis	Ref # 1

		5.3.5.3 Treatment, Prevention& control	
	1 Hr.	**5.4 Blood and tissue sporozoa** **5.4.1 General features**	Ref # 1, Ref # 8, Ref # 9
	2 Hr.	**5.4.2 Plasmodium falciparum** 5.4.2.1 Epidemiology, Morphology 5.4.2.2 Transmission and life cycle, Clinical features	Ref # 1, Ref # 5, Ref # 6
	3 Hr	**Laboratory:** • Examination of prepared slides	Ref # 3; Ref # 7
	2 Hr	Tutorial:	
	3 Hr.	**Independent Study:**	
10	1 Hr.	**Plasmodium falciparum……** 5.4.2.3 **Laboratory diagnosis, Treatment** 5.4.2.4 **Prevention& control**	Ref # 1, Ref # 5, Ref # 6
	3 Hr	**Laboratory:** • Modified acid fast staining	Ref # 3; Ref # 7
	1 Hr.	• Written Test 2	
	1 Hr.	• Lab Test 1	
	6 Hr.	**Independent Study:**	
11	2 Hr.	**5.4.3 Plasmodium vivax** 5.4.3.1 Epidemiology, Morphology, Transmission and life cycle 5.4.3.2 Clinical features, Laboratory diagnosis 5.4.3.3 Treatment, Prevention& control	Ref # 1, Ref # 5, Ref # 6
	2 Hr.	**5.4.4 Plasmodium malariae/ovale** 5.4.4.1 Epidemiology, Morphology, Transmission and life cycle 5.4.4.2 Clinical features, Laboratory diagnosis 5.4.4.3 Treatment, Prevention& control	Ref # 1, Ref # 5, Ref # 6
	1 Hr.	**5.4.5 Babesia species** 5.4.5.1 Epidemiology, Morphology, Transmission and life cycle 5.4.5.2 Clinical features, Laboratory diagnosis	Ref # 1

		5.4.5.3 Treatment, Prevention& control	
	3 Hr	**Laboratory:** • Rapid diagnostic tests for plasmodium species • Quantitative Buffy Coat examination	Ref # 3; Ref # 7
	4 Hr.	**Independent Study:**	
12	1 Hr.	**5.4.6 Toxoplasma gondii** 5.4.6.1 Epidemiology, Morphology, Transmission and life cycle 5.4.6.2 Clinical features, Laboratory diagnosis 5.4.6.3 Treatment, Prevention& control	Ref # 1
	2.30 Hr.	**6. Microsporidium species (Encephalitozoon hellem Enterocytozoon bieneusi Encephalitozoon intestinalis)** 6.1 Epidemiology, Morphology, Transmission and life cycle 6.2 Clinical features, Laboratory diagnosis **6.3** Treatment, Prevention& control	Ref # 1; Ref # 3; Ref # 9; Ref # 10
	3 Hr	**Laboratory:** • Rapid diagnostic tests for plasmodium species	Ref # 3; Ref # 7
	2 Hr	Tutorial:	
	30 Min	Quiz II	
	3 Hr.	**Independent Study:**	
13	3 Hr	**Laboratory:** • Examination of prepared slides	Ref # 3; Ref # 7
	3 Hr	**Laboratory:** • Modified acid fast staining	Ref # 3; Ref # 7
	6 Hr.	**Independent Study:**	
14	3 Hr	**Laboratory:** • Thin and tick blood film preparation, staining and examination	Ref # 3; Ref # 7
	3 Hr	**Laboratory:** • Examination of prepared slides	Ref # 3; Ref # 7
	2 Hr	Tutorial:	
	4 Hr.	**Independent Study:**	

15	8 Hr.	**Independent Study:**	
	2 Hr.	• Final Written Examination	
16	7 Hr.	**Independent Study:**	
	5 Hr.	• Final Laboratory Examination	

Teaching 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

Learning Materials:

- Text Books, Lecture Notes
- Laboratory Manuals and Bench Aids
- Visual Aids (Video cassettes, LCD)
- Chalk and Board, Flip Charts
- Laboratory Equipments, Materials and Supplies

Assessment • Assessment in this course will be based on written assignments (12%), two continuous tests (10%). Practical exam (20%), Laboratory report (18%) and Final exam (40%)	Two individual written assignments, two more non-graded reading assignments and laboratory report writing will be given • Assignment 1: 0% (Day1) • Assignment 2: 6% (Day 2) • Assignment 3: 0% (Day 3) • Assignment 4: 6% (Day 8) • Laboratory report 18% (Day 1,2,3,4,5,6,7,8,9,10, 11 and 12); 1.5% each.	**Competence to be assessed:** • • • •
	• Written Exam I: 5% (Day 7) • Written Exam II: 5% (Day 10) • Laboratory Exam I: 5% (Day 10) • Laboratory Exam II: 15% (Day 13) • Final Exam: 40% (Day 14)	

Course Policy	• Refer to national modular curriculum page No ----
Reference (s)	**Required texts:** 1. Awole M., Cheneke W. Medical Parasitology for Medical laboratory Technology students. Upgraded lecture Notes Series .2006. 2. P.L. Chiodini, A.H. Moody and D.W. Manser. Atlas of Medical Helminthology and Protozoology 2nd edition; 2003. Churchill Living Stone. 3. Cheesbrough M. District laboratory practice in tropical countries United Kingdom, Cambridge university press, 2009, part I 4. Beaver, P.C. Jung, R.C. and Cupp, E.W. 1984 Clinical Parasitology. 9th Edition Lea and Febiger, Philadelphia. 5. Wilcox, A. Manual for the microscopical diagnosis of malaria in man. U.S. Department of Health, Education and Welfare, Washington, D.C. 1960 6. Basic Malaria Microscopy World Health Organization, Geneva, Switzerland. 1991 7. WHO. Manual of Basic Techniques for a Health Laboratory, 2nd ed; 2003 8. Gillespie S,Pearson R.D. Principles and practice of Clinical Parasitology .John Wiley and Sons Ltd, 2001 9. Garcia LS, Bruckner DA. Diagnostic Medical Parasitology. 3rd Edition. ASM Press, Washington DC. 1997. 10. Neva FA, Brown HW. Basic Clinical Parasitology.6th Edition. Appleton and Lange, Norwalk Connecticut. 1994. **Recommended study books** 1. National Committee for Clinical Laboratory Standards. Use of Blood Film Examination for Parasties. Tenative Guideline M15-T National Committee for Clinical Laboratory Standards, Villanova, PA 1992 2. Ash LR, Oreil TC. Atlas of Human Parsitology. 4th Edition. ASCp Press, Chicago.1997. 3. Gillespie, S.H. and Hawkey, P.M. Medical Parasitiology: A Practical Approach. IRL Press New York 1994 pp191-208

Approval Section	Name of Module Coordinator/Course team leader: _____ Signature _____Date:_____ Name of School/Department head_____ Signature _____Date:_____