

**Department** : **Clinical Laboratory Sciences**  
**Course Number** : **CLS 412**  
**Course Title** : **Medical Parasitology**  
**Credit Hours** : **3 + 1 = 4**

**Course Description:**

This course deals with the classification, morphological characteristics, life cycles, pathogenicity, epidemiology of parasites, namely:

Protozoa- pathogenic and non-pathogenic amoebae, free living pathogenic amoebae, intestinal and urogenital flagellates, blood and tissue flagellates, ciliates, malarial parasites and other coccidia.

Helminths- Cestodes (pseudophyllidea and cyclophyllidea), Nematodes (intestinal and tissue worms), Trematodes (Intestinal, hepatic and lung flukes). The clinical presentation of the diseases caused by these parasites will be fully discussed, as well as their transmission, prevention and control, and laboratory diagnosis.

**CLS 412: Lectures Outline**

<b>Weeks</b>	<b>Subjects</b>
1.	Introduction to Parasitology - parasites and parasitism, parasitic infections and diseases The Protozoa: classification and structure of Protozoa Of medical importance
2.	Amoebae: Pathogenic (dysentery) amoeba <u>Entamoeba histolytica</u> Non-pathogenic amoebae: <u>Entamoeba coli</u> <u>Endolimax nana</u> , <u>Iodameba butschlii</u> Pathogenic free-living amoeba: <u>Naegleria fowleri</u> <u>Acanthamoeba</u> sp
3.	Intestinal and urogenital flagellates: <u>Giardia</u> sp. <u>Trichomonas</u> sp. Intestinal ciliates: <u>Balantidium coli</u>
4.	Blood and tissues flagellates: <u>Leishmania</u> sp. <u>Trichomonas</u> sp
5.	Malaria Parasites : <u>Plasmodium</u> sp Coccidia: <u>Toxoplasma</u> sp.
6.	Coccidia contd...: <u>Isospora</u> , <u>Sarcocystis</u> <u>Cryptosporidium</u>
7.	Introduction to Cestodes: Pseudophyllidean tapeworm- <u>Diphyllobothrium latum</u>

Cyclophyllidean tapeworm: T. saginata, T. solium,  
T. multiceps, Hymenolepis nana, Diphylidium caninum,

Echinococcus granulosus.

Larval cestodes : cysticercus, hydatid cyst,  
coenurus, plerocercoid

8. Introduction to Nematodes (Nematoda)  
Intestinal worms: Ascaris sp., Trichuris sp  
Enterobius sp
9. Hookworm, Stroglyoides sp  
Tissue worms: Filariae - Wuchereria sp, Brugia ,  
Loaloa, Onchocerca, Dracunculus sp., -  
Larva migrans
10. Introduction to Trematodes - Intestinal flukes: F. buski,  
H. heterophyses, M. yokogawi  
Hepatic flukes: F. hepatica, C. sinensis
11. Hepatic flukes contd... Opisthorchis, D. dendriticum  
Pulmonary flukes: Paragonimus sp.
12. Indirect evidence of parasitic infection

**CLS 412: Laboratory Schedule**

<b>Weeks</b>	<b>Subjects</b>
1.	Introduction: Safety in the laboratory, Care of Instruments Demonstration on the use of microscope, the different types of specimens examined, collection methods and materials.
2.	A. Demonstration of microtitre plates B. Demonstration of parasites. Draw and label <u>Protozoa</u> : Amoebae – Entamoebae histolytica Entamoeba coli, Iodamoeba butschlii, Endolimax nana Pictures of Pathogenic free-living amoebae: Naegleria sp. Acanthamoebae sp.
3.	A. Repeat of previous week parasites demonstrated B. <u>Protozoa</u> ; Intestinal flagellates- Giardia intestinalis Trichomonas hominis Ciliates - Balantidium coli
4.	A. Repeat: Intestinal flagellates, Ciliates

- B. Haemoflagellates: Leishmania sp., Trypanosomes  
 C. Demonstration : stool examination
5. A. Haemoflagellates continued  
 B. Coccidia: Malaria parasites (Plasmodium sp),  
 Toxoplasma sp, --Isospora sp, --Cryptosporidium sp  
 C. Stains: Giemsa, Leishman, Methylene blue & Mayers  
 haemalum  
 D. PRACTICAL QUIZ 1  
 E. Examination of stool specimens - students
6. A. Coccidia cont...  
 B. Examination of stool specimens - students  
 C. Practical Pamphlet - Dr. Bammeke
7. A. Entomology: Demonstration of some insects of  
 medical importance: Musca domestica, Phlebotomus sp  
 mosquitoes  
 B. Demonstration : collection of blood specimens.  
 Students to practice staining methods using Giemsa and  
 Leishman stains
8. A. Helminths: Nematodes: Ascaris lumbricoides  
 Trichuris trichuria, Enterobius vermicularis  
 B. Entomology: repeat of previous week  
 C. Methods: Concentration of stool specimens.
9. A. Nematodes continued – reapeat of previous week  
 B. Hookworms, Strongyloides stercoralis, Dracunculus  
 medinensis, Filariae, Intermediate host - Cyclops  
 C. Examination of stool specimens by students  
 D. PRACTICAL QUIZ 2
10. A. Nematodes continued repeat of previous week  
 B. Helminths :Cestodes - Pseudophyllidean worm-  
 Diphyllobotrium latum, Cyclophyllidean worm - Taenia  
 saginata. Taenia solium, Echinococcus granulosus  
 Hymenolepis nana  
 C. Examination of stool specimens by students
11. A. Cestodes continued,repeat of previous week  
 B. Helminths: Trematodes - Fasciolopsis buski.  
 Fasciolopsis hepatica, Paragonimus sp  
 Schistosomes & The water snail intermediate hosts
12. A Trematodes continued,repeat of previous week.  
 B. Entomology - Glossina sp, Simulium sp. Flea.  
 C. UNKNOWN TEST

13. **Revision**
14. **Final Practical Examination**

**Assessments:**

Mid Term Examination Written:	15
Mid Term Examination Practical:	15
Laboratory Quizzes:	5
Oral Examination:	10
Final Practical Examination:	15
Final Theoretical Examination:	40

**References:**

1. Beaver P.C., Jung R.C. and Cupp E.W., **Clinical Parasitology**, Lea and Febiger, Latest edition
2. Beaver P.C., and Jung R.C., **Animal Agents and Vectors of Human Diseases**, Lea and Febiger – Latest edition
3. Brown H.W., and Neva F.A., **Clinical Parasitology**, Appleton and Lange, Latest edition
4. D.B. Blacklock and T. Southwell, **A Guide to Human Parasitology**, Revised by Davey T.H.- Latest edition
5. Zaman Vigar, **Atlas of Medical Parasitology**, Lea Febiger, Latest edition
6. Ash L.R. and Oriehl, **Atlas of Human Parasitology**, ASCP press, Chicago -Latest edition