

**(Parasitology) Course Catalogue**

**2021-2022**

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| **College/ Institute** | **Koya Technical Institute** | |
| **Department** | **Medical Laboratory Technology** | |
| **Module Name** | **Parasitology** | |
| **Module Code** | **PAR402** | |
| **Semester** | **fourth Semester** | |
| **Credit** | **5** | |
| **Module type** | **Core** | |
| **Weekly hours** | **4** |  |
| **Weekly hours (Theory)** | **(2)hr Class** | **()hr Workload** |
| **Weekly hours (Practical)** | **(2)hr Class** | **()hr Workload** |
| **Lecturer (Theory)** | **Maysoon Omar Nasraddin** | |
| **E-Mail** | [**maysoon.nasraddin@epu.edu.iq**](mailto:maysoon.nasraddin@epu.edu.iq) | |
| **Lecturer (Practical)** | **Dlshad Saadullah Osman** | |
| **Email** | [**dlshad.othman@epu.edu.iq**](mailto:dlshad.othman@epu.edu.iq) | |

**Course Book**

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| * **Course overview:** * **The Medical Parasitology course provides an overview of the human parasites and their diseases. Topics include the basic concept of protozoan parasite classes, Sarcodina, Flagellate ciliate, sporozoa and medical helminthology. Special emphasis is placed on topics that related to humans health such as host-pathogen interactions and laboratory diagnostic methods.** **The earliest agents of human infection to have been observed were parasites. Medical parasitology deals with the parasites which cause human infections and the disease they produce. Parasites are organisms that infect other living beings. They live in or on the body of other living beings, the host and obtain shelter and nourishment from it. They multiply or undergo development in the host.** * **These subjects are important for medical laboratory techniques departments’ student, because the requirements future job of these students is diagnosis of disease agents and the parasite which cause the disease. By learning the contents of this subject, students can able to do the essential activities.** * **Getting information is very important because of the infections of humans caused by parasites number in the billions and range from relatively innocuous to fatal. The diseases caused by these parasites constitute major human health problems throughout the world. (For example, approximately 30 percent of the world's population is infected with the nematode Ascaris lumbricoides.) The incidence of many parasitic diseases (e.g., schistosomiasis, malaria)** * **Ministry of Higher Education and Scientific research** * **Directorate of Quality Assurance and Accreditation**      * **. Course objective:** * **After participating in the course, students would be able to:**   **1. Define and classify the medically important parasites based on morphology, biology and clinical criteria**  **2. Describe the life cycle, morphology, infective stage stages, diagnosis stage, sources of infection and mode of transmission of each parasite with a view of prevention and control of parasitic diseases.**  **3. Identify the parasites at different stages of life cycle, their vectors and hosts by microscopic examination.**  **4. Identify the deferent larval stages of the parasites during life cycle and pathogenesis steps.**  **5. Apply suitable methods for parasites detection.**  **6. Use applicable tools for parasitic disease control and prevention.**  **7. Combine between vectors and parasitic disease to make a good control plan.**  **pathogen** | | |
| * **Learning Outcomes:**   **1. Apply principles of safety, quality assurance, and quality control.**  **2. Evaluate specimen acceptability.**  **3. Describe basic morphology and physiology of parasites.**  **4. Classify parasites.**  **5. Perform appropriate laboratory techniques used in the processing of specimens and**  **identification of parasites**  **6. Evaluate and correlate test results with patient condition(s).** | | |
| * **Student's obligation**   **This subject is very important because of directly related to health and therefore to obtain the students more and enough information about it they are needing in to the lectures and they participtate by their activity example writing repotts or preparing seminars** | | |
| * **Forms of teaching**   We will be responsible for providing lecture handouts/notes in advance to students in order to have a copy of materials. All possible facilities for students will be applied in the class such as projector, whiteboard, pens, animation videos for further information and clarification. | | |
| * **Assessment scheme**   ‌x% Mid theory exam  x% Mid practical exam  x% Quiz  x% Activity  x% Reports  x% Seminars  x% Assignment  x% Homework  x% Final theory exam  x% Final practical exam | | |
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| * **Course Reading List and References‌:**   **▪ Useful references:**  **Textbooks: Name of the Textbook:**  **1- Parasitology for medical and clinical laboratory professionals Authors: John W. Ridley Publisher: Delmar Cengage learn ISBN: 978-1-4354-4816-2 Year: 2012 References:**  **2-.Medical Parasitology Authors: Arora and Arora Edition: Third ISBN: 978-81-239-1850-1 Year:2011**    **3. Title: Medical Parasitology Authors: Abhay R. Satoskar; Gary L. Simon;Peter J. Hotez;Moriya Tsuji Edition:1st ISBN:978-1-57059-695-7 Library Year: 2009.**    **useful link:** [**http://www.cdc.gov/dpdx/freeLivingAmebic/dx.html**](http://www.cdc.gov/dpdx/freeLivingAmebic/dx.html) | | |
| **Course topics (Theory)** | **Week** | **Learning Outcome** |
| **Introduction of parasitology** | Week 1 | Definitions , types of parasite, host parasite relationship, geographical distribution, pathogenesis, common name, scientific name, life cycle |
| **Introduction of protozoa** | Week 2 | General introduction about Protozoa which comprise, shape, life method, reproductive mode, movement method by flagella, pseudopodia and cilia, life cycle, laboratory diagnosis, classification of protozoa |
| ***Entamoeba histolytica* & E*ntamoeba coli*** | Week 3 | Entamoeba histolytica, Amoebiasis, scientific name, disease, habitat, amoebic dysentery, acute and chronic. pointing to the amoeba which have the same resemblance in shape for the comparison among them practically. Appearance and shape characteristics of trophozoite, and cyst |
| **-Mastogophora: General introduction**  **- Ciliates** | Week 4 | Classification, motion organs. *Giardia lamblia , Trichomonas vaginals, and . Balantidium coli.* : Habitat, disease, characteristics, motion, reproduction, life cycle, laboratory diagnosis    . |
| **Blood flagellates**  ***Leishmania sp*. &*Trypanosoma sp*.** | Week 5 | Introduction about blood flagellates: Special growth stages in vertebrate and invertebrate that comprise   1. Amastigote 2. promastigote 3. Epimastigote 4. - tripomastigote .   *Leishmania tropica , - Leishmania braziliense and -L. donovani*    *Trypanosoma gambience .,- Trypanosoma rhodesie and - Trypanosoma cruzi*. |
| **Blood parasites *Plasmodium sp.*** | Week 6 | : Introduction to malaria parasite in human 1- *P. malaria 2- P. vivax 3- P. falciparum 4- P. ovale*  Disease of each parasite, reason about name, vector, life cycle in human and female anopheles, liver cycle, blood cycle, tissue cycle. Laboratory diagnosis. |
| ***Toxoplasma gondii*** | Week 7 | *Toxoplasma gondii*: Classification, nomenclature of infective stage. Host and types of it. Transmission of parasite to the embryo. Toxoplasmosis. |
| **Introduction to Helminthes** | Week 8 | . Classification, Characteristic of each phylum of helminthes. |
| **Cestoda ... *Echinococcus granulosus***  ***Taenia saginata* & *Taenia solium*** | Week 9 | ***Teania saginata and T. solium***: ***Echinococcus granulosus***  General description of worms, habitat, external morphology, head, neck, mature segment and gravid segment. Intermediate host. Life cycle. Laboratory diagnosis. Shape of eggs. |
| **trematodes..*Fasciola hepatica*** | Week 10 | Introduction about Trematodes and classification method General description of ***Fasciola hepatica*** |
| **trematodes.. Schistosoma sp.** | Week 11 | S. haematobium 2- S. mansoni 3- S. japonicum Reproductive method, its habitat in the body, Disease , life cycle. |
| **Introduction to the Nematodes** | Week 12 | ***Ascars lumbricoids. Entrobius vermicularis***  General description of worms according to the shape.. Life cycle. Laboratory diagnosis.. |
| **Hoook worms** | Week 13 | * A. doudenae and N. americanus General description, Disease, life cycle, Diagnostic Method |
| **Medically important arthropods** | Week 14 | * Introduction to the medical insect |
| **Practical Topics** | **Week** | **Learning Outcome** |
| **Introduction of parasitology** | **1** | . Identify the three groups of clinically significant parasites |
| **Collection of parasite specimens** | **2** | Identify the specimen used and the procedures of collection |
| **Methods of parasite examination** | **3** | Describe the procedures used in the microscopic examination of stool.. Discuss the purpose of a wet prep examination |
| **Amoebic protozoa** | **4** | Differentiate types of pathogenic ameba’s from other non pathogenic amoeba |
| Compare and contrast trophozoites and cysts |
| **Flagellated protozoa** | **5** | Determine the specimen of choice *Giardia intestinalis (lambia)*. |
|  | Determine the specimen of choice and alternative specimen types as well as appropriate diagnostic technique for *Trichomonas vaginali*s |
| **Hemoflagellates** | **6** | Describe the appearance of hemoflagellates on blood smears. , Differentiate between amastigotes, promastigotes, epimastigotes, and trypomastigotes, Identify the specimen of choice for the isolation of hemoflagellates. ( Trypanosoma , Leishmania sp.) |
| **Blood parasites *(Plasmodium species)*** | **7** | Identify the vector of transmission for Plasmodium species |
| Describe how malaria disease is diagnosed in the laboratory and diagnose stages of parasite |
| **Toxoplasma gondi** | **8** | Describe how toxoplasmosis diagnosed in the laboratory |
| **Platyhelminths (cestods)** | **9** | Describe how Taenia saginata and Taenia solium. Diagnosed in lab.  b. Describe the common physical characteristic shared by Cestoda |
| ***Echinococcus granulosus*** | **10** | Describe how echinococcosis diagnosed in the laboratory , Identify eggs of worm |
| **Playhelmiths (trematodes)** | **11** | a. Identify the egg form of *Shistosoma* species  b. Describe how Fasciolosis diagnosed in the laboratory |
| **Nematehelminths (nematode)** | **12** | Identify the egg form of *Enterobius vermicularis (*pin worms).  Diagnosing *Ascars lumriciodes* |
| **Review** | **13** | . List parasites that are commonly mistaken for white blood cells due to their size and shape |
| **Examinations: (theory)**  **: 1.**  **Q1Enumerate general characteristics of protozoa.**  **Q2\ Write briefly about stages of protozoa. Q3\ Count life cycle types of protozoa**  **2. True or false type of exams:**  **1-Cyst is infective stage of Entamoeba gingivalis .**  **2- Giardia lamblia moves by cytoplasmic extensions called Pseudopodia.**  **3-Trichomonas is simplest of all protozoan parasite because it has only trophozoite.**    **.3. FILL BLANK require**   1. **The largest Amoeba present in the large intestine of man is ……………………………………. .** 2. **The pathogenic Trichomonas species in man is …………………………………… .** 3. **The infective stage of Trichomonas sp. Is ……………………….. .**   .  **B- Practical Exam**  **Diagnosing or detection the parasites from samples in laboratory after different procedure for diagnosing it** | | |  |
| * **Extra notes:** | | |
| * **External Evaluator**   The outcome of course book evaluation is commonly more explicit and follows the principles and rules in general. | | |