

**AMERICAN UNIVERSITY OF BEIRUT**  
**Department of Experimental Pathology, Immunology and Microbiology**  
**MBIM 223 (Diagnostic Parasitology)**  
*Spring Semester AY 2019-2020*

**Course Coordinator: Ghassan Matar, PhD**

**Course Lecturers:**

**Ghassan Matar, PhD**

Professor & Chairperson

Department of Experimental Pathology, Immunology and Microbiology, DTS, 2<sup>nd</sup> floor, Office 229, Ext. 5128, Email: [gmatar@aub.edu.lb](mailto:gmatar@aub.edu.lb)

**Hiba El Hajj, PhD**

Assistant Professor

Department of Experimental Pathology, Immunology and Microbiology, DTS, 3<sup>rd</sup> floor, Office 315B, Ext. 4897, Email: [he21@aub.edu.lb](mailto:he21@aub.edu.lb)

**Soha Yazbek, PhD**

Assistant Professor

Division of Health Professions, Medical Laboratory Sciences Program, Van Dyck, 3<sup>rd</sup> floor Office 323, Ext. 4695, Email: [sy21@aub.edu.lb](mailto:sy21@aub.edu.lb)

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**Course Description:** A diagnostic parasitology 4 cr. course offered to MLSP junior students in spring semester of each academic year. The purpose of the course is to provide the basic principles and concepts of parasitic diseases and their laboratory diagnosis. Emphasis is placed on life cycles, pathogenesis, preventive measures and in-depth laboratory identification of the parasites.

**Texts, Resources and Readings:**

- **Textbook:** Practical guide to diagnostic parasitology. Lynne Garcia. ASM Press, 1999, Washington D.C
- **Lectures and Laboratory PowerPoint Presentations:** On Moodle.
- **Laboratory Instructors:** Mr. Bassam El-Hafi and Ms. Nour Sherri

**Teaching Strategies:**

- Lectures
- Laboratory sessions
- Laboratory discussions/Videos
- Assignments

**Course Learning Outcomes: Students are expected to:**

- Describe the parasites’ characteristics, pathogenesis, diseases produced, and symptoms generated.
- Identify in the laboratory the parasites’ stages, cell morphology and cell structures.
- Relate the parasites’ laboratory diagnostic features to the patients’ clinical presentation.
- Perform all the steps required for semen analysis and examination and interpret the results.
- Describe all microscopic & biochemical investigations of urine specimens.
- Learn the methods for collection, transfer and handling of stool samples and samples for the recovery of parasites from other body sites.
- Present case studies in relation to parasitic infections.

**Course Assignments:**

- One mid-term and one final laboratory exam
- One mid-term and one final theoretical exam
- Laboratory reports & drop quizzes

**Grading & Evaluation:**

- Mid-term laboratory exam 15%
- Mid-term theoretical exam 25%
- Final laboratory exam 15%
- Final theoretical exam 35%
- Participation in lab 5%
- Participation in class 5%

**Course Policies:** Students are expected to attend and participate in the lectures and labs and contribute to forum group-work. Students are also expected to abide by the lab safety and lab requirements distributed in their first lab session. Any breach of the lab rules & regulations will be dealt with accordingly. **Students will be dropped from the course if they do not attend 3 lecture hours per semester or miss 2 lab sessions per semester.**

**Lectures: Tuesday 8:00-9:55 AM**

**Laboratory: Thursday 8:00-9:55 AM**

Lecture	Topic	Lecturer	Date	Location
1.	<b>General Characteristics and Classification of Parasites</b>	Dr. G. Matar	Jan. 28	DTS, Room 224
2.	<b>Intestinal and Urogenital Protozoa:</b> <i>Entamoeba histolytica</i> <i>Entamoeba coli</i> <i>Giardia lamblia</i> <i>Trichomonas vaginalis</i> <i>Balantidium coli</i>	Dr. G. Matar		DTS, Room 224
3.	<b>Intestinal Protozoa:</b> <i>Isospora belli</i> <i>Cryptosporidium parvum</i> <i>Microsporidia</i>	Dr. H. El-Hajj	Feb. 4	DTS, Room 224
4.	<b>Blood Protozoa:</b> <i>Plasmodium vivax</i> , <i>P. ovale</i> , <i>P. malariae</i> , <i>P. falciparum</i>	Dr. H. El-Hajj		DTS, Room 224
5.	<b>Tissue Protozoa:</b> <i>Trypanosoma brucei</i> <i>Trypanosoma cruzi</i> <i>Leishmania donovani</i> <i>Leishmania braziliensis</i> <i>Leishmania tropica</i> <i>Toxoplasma gondii</i>	Dr. H. El-Hajj	Feb. 11	DTS, Room 224
<b>MIDTERM THEORETICAL EXAM</b>			TBD	
6.	<b>Intestinal Nematodes:</b> <i>Enterobius vermicularis</i> <i>Ascaris lumbricoides</i> <i>Tricuris trichiura</i> <i>Ancylostoma duodenale</i>	Dr. H. El-Hajj	Feb. 18	DTS, Room 224
7.	<b>Intestinal Nematodes:</b> <i>Necator americanus</i> <i>Strongyloides stercoralis</i> <i>Trichostrongylus</i> spp.	Dr. H. El-Hajj		DTS, Room 224
8.	<b>Blood and Tissue Nematodes:</b> <i>Trichinella spiralis</i> Filarial forms	Dr. H. El-Hajj		DTS, Room 224
9.	<b>Intestinal Cestodes:</b> <i>Taenia saginata</i> <i>Taenia solium</i> <i>Hymenolepis</i> spp.	Dr. G. Matar	Feb. 25	DTS, Room 224
10.	<b>Intestinal and Tissue Cestodes:</b> <i>Diphyllobothrium latum</i> <i>Dipillidium caninum</i> <i>Echinococcus</i> spp.	Dr. G. Matar		DTS, Room 224
11.	<b>Intestinal Trematodes:</b> <i>Fasciolopsis buski</i> <i>Heterophyes heterophyes</i>	Dr. H. El-Hajj	Mar. 3	DTS, Room 224
12.	<b>Lung and Liver Trematodes:</b> <i>Paragonimus westermani</i> (lung) <i>Fasciola hepatica</i> (liver) <i>Dicrocoelium dentriticum</i> (liver)	Dr. H. El-Hajj		DTS, Room 224
13.	<b>Blood Trematodes:</b> <i>Schistosoma mansoni</i> <i>Schistosoma japonicum</i> <i>Schistosoma haematobium</i>	Dr. H. El-Hajj		DTS, Room 224

14.	<b>Seminal Fluid:</b> Analysis & examination of seminal fluid  <b>Other Bodily Samples:</b> Recovery of possible parasites from other body sites	Dr. S. Yazbek	Mar. 10	DTS, Room 224
15.	<b>Urine analysis:</b> Collection, transportation & macroscopic examination Microscopic examination (cells, casts, crystals and parasites) Biochemical examination Interpretation of urine test results	Dr. S. Yazbek	Mar. 24	DTS, Room 224
	<b>Group Presentations I</b>	H.Hussein H.Alkalamouni	Mar. 17	DTS, Room 224
	<b>Group Presentations II</b>	H.Hussein H.Alkalamouni	Mar. 31	DTS, Room 224
<b>FINAL THEORETICAL EXAM</b>			TBD	

### Laboratory Sessions

Lab Session	Exercise	Lab Instructor	Date	Location
1.	<b>Phenotypic Identification of Parasites</b> (Stool concentration, occult blood testing, fecal and blood smear preparation and examination)	H.Alkalamouni	Jan. 30	DTS, Room 224
2.	<b>Intestinal Protozoa</b>	H.Alkalamouni	Feb. 6	DTS, Lab 205
3.	<b>Blood and Tissue Protozoa</b>	H.Alkalamouni	Feb. 13	DTS, Lab 205
4.	<b>Molecular Laboratory Identification</b> (PCR, Real-time PCR, etc.)	H.Alkalamouni	Feb. 20	DTS, Lab 205
<b>MIDTERM LAB EXAM</b>			TBD	
5.	<b>Intestinal, Blood &amp; Tissue Nematodes</b>	H.Alkalamouni	Feb. 27	DTS, Lab 205
6.	<b>Intestinal &amp; Tissue Cestodes</b>	H.Hussein	Mar. 5	DTS, Room 224
7.	<b>Intestinal, Lung, Liver &amp; Blood Trematodes</b>	H.Hussein	Mar. 12	DTS, Lab 205
8.	<b>Arthropods</b>	H.Hussein	Mar. 19	DTS, Lab 205
9.	<b>Fungi</b>	H.Hussein		DTS, Lab 205
10.	<b>Semen Analysis and Examination</b> (Assess liquefaction, count, and viability, calculation of motility and percent abnormality)	H.Hussein	Mar. 26	DTS, Lab 204
11.	<b>Macroscopic, Biochemical, and Microscopic Urine Examination</b> (Reagent strip, slide identification of cells, casts, and crystals, etc.) + <b>Stool Concentration and Occult Blood Testing</b>	H.Hussein	Apr. 2	DTS, Lab 204
<b>FINAL LAB EXAM</b>			TBD	