### PHILIPPINE ASSOCIATION OF SCHOOLS OF MEDICAL TECHNOLOGY AND PUBLIC HEALTH

Prototype Course Syllabus

<table>
<thead>
<tr>
<th><strong>Course Title:</strong></th>
<th>Parasitology</th>
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</thead>
<tbody>
<tr>
<td><strong>Course Description:</strong></td>
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<tr>
<td>This course deals with the study of human parasites which are of medical importance especially those commonly found in the Philippines. Emphasis is given on the epidemiology, pathogenicity, distribution, life cycle, and laboratory identification of each parasite. Preventive measures against infection and control are also given emphasis.</td>
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<tr>
<td><strong>Course Credit:</strong></td>
<td>3 units (2 units lecture, 1 unit laboratory)</td>
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<tr>
<td><strong>Contact Hours:</strong></td>
<td>2 hours lecture, 3 hours laboratory per week (36 hours lecture and 54 hours laboratory per semester)</td>
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<tr>
<td><strong>Prerequisite:</strong></td>
<td>Human Anatomy and Physiology</td>
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<tr>
<td><strong>Placement:</strong></td>
<td>Third Year, 1st Semester</td>
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<tr>
<td><strong>Terminal Competencies:</strong></td>
<td>At the end of this course, the student is able to:</td>
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<tr>
<td>1.</td>
<td>identify medically important parasites with emphasis on their characteristics, pathophysiology, and diagnostic features.</td>
</tr>
<tr>
<td>2.</td>
<td>perform routine and other laboratory tests used in the identification of parasites in different samples submitted to the laboratory.</td>
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<tr>
<td>3.</td>
<td>discuss the importance of prevention and control of parasitic infection.</td>
</tr>
<tr>
<td>4.</td>
<td>manifest personal and professional values of a medical technologist.</td>
</tr>
<tr>
<td><strong>References:</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Electronic References:**
1. http://www.cdfound.to.it/HTML/intpar1.htm
### Learning Objectives / Intermediate Competencies

At the end of this unit, the student is able to:

1. Define common terms related to parasitology
2. Discuss the types of host
3. Explain the different modes of transmission of parasites
4. Discuss the types of life cycles
5. Explain the pathophysiology and symptomatology of parasitic infection/disease
6. Discuss specimen collection, transport, handling, preservation, processing, and disposal.
7. Characterize an acceptable specimen (stool, urine, etc.) for analysis.
8. Discuss the host-parasite relationships
9. Perform the different techniques used in the identification of parasites
10. Explain the different factors that may alter test results.
11. Discuss the importance of prevention and control of infection

### Content

1. **Introduction to Parasitology**
   1. Definition of Terms
   2. Types of host:
      1. Definitive,
      2. Intermediate,
      3. Reservoir
   3. Modes of transmission and portal of Entry
   4. Types of life cycle
      1. Direct/Homogenic
      2. Indirect/Heterogenic
   5. Pathophysiology and symptomatology of Parasitic Infections
   6. Specimen collection, transport, handling, preservation, processing and disposal.
   7. Specimens for examination of parasites
      1. Criteria for acceptability
      2. Variables that may affect test results
   8. Host-Parasite Relationship
   9. Techniques Used in the Identification of Parasites
      1. Factors that may alter test results
   10. Prevention and Control
      1. Parasitic Infection as a public health problem

### Teaching Strategies

- **Lecture**
- **Laboratory**

<table>
<thead>
<tr>
<th>T.A.</th>
<th>Integrated Method Lecture/Discussion with the use of C.D. (Power Point Presentation)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Laboratory exercises Identification of the different stages of each parasite using prepared slides</td>
</tr>
</tbody>
</table>

### Skills

- Technological Skills
  - Uses technological equipment accurately, properly and in timely manner

### Values

- Obedience
  - Follows established procedures properly
- Technical Skills
  - Motor/Mobility skills

### Evaluation/Assessment

- Unit test
- Performance Evaluation Checklist
- Quizzes
- Periodical Examinations
- Class Participation
- Unit test
- Practical Examination
- Class Participation
- Quizzes

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### Lecture/Laboratory: Laboratory Work

1. **Microscopic Examination**
   1. Direct Fecal Smear
   2. Scotch Tape technique
   3. Concentration techniques
   4. Staining techniques
   5. Thick and thin blood smear
2. Emerging technologies (immunologic methods, etc.)
3. Laboratory Safety
4. Proper Waste Disposal

### Laboratory: Laboratory Work

1. **Microscopic Examination**
   1. Direct Fecal Smear
   2. Scotch Tape technique
   3. Concentration techniques
   4. Staining techniques
   5. Thick and thin blood smear
2. Emerging technologies (immunologic methods, etc.)
3. Laboratory Safety
4. Proper Waste Disposal

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At the end of this unit, the student is able to:

1. Describe the general
morphology of nematodes
2. Explain the pathophysiology, life cycle, infective stages, modes of transmission, prevention and control
3. Describe the diagnostic features of each parasite.
4. Enumerate the different specimens used for identification
5. Identify correctly the diagnostic features of each parasite.
6. Perform the laboratory tests
7. Discuss specimen collection, transport, processing, preservation and disposal

2. Trichinella spiralis
3. Capillaria philippinensis
4. Phasmarhabditis rediviva
5. Ascaris lumbricoides
6. Toxocara canis
7. Necator americanus
8. Ancylostoma duodenale
9. Ancylostoma braziliense
10. Ancylostoma caninum
11. Strongyloides stercoralis
12. Enterobius vermicularis
13. Gnathostoma spinigerum
14. Angiostrongylus cantonensis
15. Wuchereria bancrofti
16. Brugia malayi
17. Loa loa
18. Onchocerca volvulus
19. Mansonella perstans
20. Mansonella streptocerca
21. Mansonella ozzardi

Lecture:
1. Morphology
2. Pathophysiology
3. Life cycle
4. Specimens used for identification
5. Diagnostic features of each stage
6. Prevention and control

Laboratory:
1. Identification of parasites using clinical specimens and prepared slides
2. Laboratory Safety
3. Proper Waste Disposal

At the end of this unit, the student is able to:
1. Describe the general morphology of nematodes
2. Explain the pathophysiology, life cycle, infective stages, modes of transmission, prevention and control
3. Describe the diagnostic features of each parasite.
4. Enumerate the different specimens used for identification

III. Cestodes (Tapeworms)
1. Taenia saginata
2. Taenia solium
3. Hymenolepis nana
4. Hymenolepis diminuta
5. Diphyllobothrium latum
6. Echinococcus granulosus
7. Spirometra mansoni

Lecture:
1. Morphology
2. Pathophysiology

Integrated Method Lecture/Discussion Reporting Case analysis
Laboratory exercises Identification of the different stages of each parasite using prepared slides
Technical skills Prudence Integrity Respect Cooperation Commitment Compassion Love of fellowmen

Unit test Performance Practical exam Evaluation Checklist Quizzes Periodical Examinations Class Participation
<table>
<thead>
<tr>
<th>Identification</th>
<th>Life cycle</th>
<th>Specimens used for identification</th>
<th>Diagnostic features of each stage</th>
<th>Prevention and control</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Identify correctly the diagnostic features of each parasite.</td>
<td>3. Life cycle</td>
<td>4. Specimens used for identification</td>
<td>5. Diagnostic features of each stage</td>
<td>6. Prevention and control</td>
</tr>
<tr>
<td>6. Perform the laboratory tests</td>
<td>Laboratory:</td>
<td>1. Identification of parasites using clinical specimens and prepared slides</td>
<td>2. Laboratory Safety</td>
<td>3. Proper Waste Disposal</td>
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<tr>
<td>7. Discuss specimen collection, transport, processing, preservation and disposal</td>
<td>9 hrs</td>
<td>7 hrs</td>
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<td>12 hrs</td>
</tr>
</tbody>
</table>

At the end of this unit, the student is able to:
1. Describe the general morphology of trematodes
2. Explain the pathophysiology, life cycle, infective stages, modes of transmission, prevention and control
3. Describe the diagnostic features of each parasite.
4. Enumerate the different specimens used for identification
5. Identify correctly the diagnostic features of each parasite.
6. Perform the laboratory tests
7. Discuss specimen collection, transport, processing, preservation, and disposal

IV. Trematodes
1. *Fasciola hepatica*
2. *Fasciolopsis buski*
3. *Paragonimus westermani*
4. *Schistosomes*
5. *Heterophyes heterophyes*
6. *Opisthorchis*
7. *Echinostoma ilocanum*
8. *Clonorchis sinensis*
9. Others

Lecture: 1. Morphology
2. Pathophysiology
3. Life cycle
4. Specimens used for identification
5. Diagnostic features of each stage
6. Prevention and control

Laboratory: 1. Identification of parasites using clinical specimens and prepared slides
2. Laboratory Safety
3. Proper Waste Disposal

Lecture/Discussion Case studies

Laboratory exercises
Identification of the different stages of each parasite using prepared slides

Technical skills
Prudence
Integrity
Respect
Awareness, appreciation, logical thinking, enthusiasm, perseverance

Unit test
Performance
Practical exam
Evaluation
Checklist
Quizzes
Periodical Examinations
Class Participation

At the end of this unit, the student is able to:
1. Describe the general morphology of protozoa
2. Explain the pathophysiology, life cycle, infective stages, modes of transmission, prevention and control
3. Describe the diagnostic features of each parasite.
4. Enumerate the different specimens used for identification

V. Protozoa
A. Sarcodina
Parasitic Amoeba
1. *Entamoeba histolytica*
2. *Entamoeba coli*
3. *Endolimax nana*
4. *Iodamoeba butschlii*
5. *Entamoeba gingivalis*

B. Rhizopoda (Pathogenic Free-Living Amoeba)
1. *Naegleria fowleri*
2. *Acanthamoeba culbertsoni*
3. *Acanthamoeba polyphaga*

Lecture/Discussion Case studies

Laboratory exercises
Identification of the different stages of each parasite using prepared slides

Technical skills
Prudence
Integrity
Respect
Awareness, appreciation, logical thinking, enthusiasm, perseverance

Unit test
Performance
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Evaluation
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Class Participation
5. Identify correctly the diagnostic features of each parasite.
6. Perform the laboratory tests
7. Discuss specimen collection, handling, processing, preservation and disposal

<table>
<thead>
<tr>
<th></th>
<th>Acanthamoeba castellani</th>
<th>Acanthamoeba astronyxis</th>
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<tbody>
<tr>
<td>Ciliata</td>
<td></td>
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</tr>
<tr>
<td>1. Balantidium coli</td>
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<td>2. Giardia lamblia</td>
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<td>3. Trichomonas vaginalis</td>
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<td>4. Trichomonas hominis</td>
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<td>5. Trichomonas tenax</td>
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<td>6. Dientamoeba fragilis</td>
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<td>7. Chilomastix mesnili</td>
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<tr>
<td>Blood and Tissue Flagellates</td>
<td>Trypanosoma gambiense</td>
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<tr>
<td>2. Trypanosoma rhodesiense</td>
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<td>3. Trypanosoma cruzi</td>
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<td>4. Leishmania brasilienise</td>
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<td>5. Leishmania donovani</td>
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<tr>
<td>E. Sporozoa</td>
<td>Plasmodium falciparum</td>
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<td>2. Plasmodium vivax</td>
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<td>3. Plasmodium malariae</td>
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<td>4. Plasmodium ovale</td>
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<td>5. Isospora belli</td>
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<td>7. Toxoplasma gondii</td>
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<td>8. Sarcocystis hominis</td>
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<td>9. Sarcocystis suihominis</td>
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<td>10. Sarcocystis lindemanni</td>
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<tr>
<td>11. Cryptosporidium spp.</td>
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</tbody>
</table>

Lecture:
1. Morphology
2. Pathophysiology
3. Life cycle
4. Specimens used for identification
5. Diagnostic features of each stage
6. Prevention and control

Laboratory:
1. Identification of parasites using clinical specimens and prepared slides
2. Laboratory Safety
3. Proper Waste Disposal

<table>
<thead>
<tr>
<th></th>
<th>8 hrs</th>
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<td></td>
<td>12 hrs</td>
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</table>

Zennie Aceron  Petrona Benitez  Sergia Cacatian  Zenaida Cajucom  Edwin Cancino  Jacinta Cruz  De Carlos Leon  Oliver Shane Dumaoal  Bernard Ebuen  Nini Lim

Frederick Llanera  Carina Magbojos  Gregorio Martin  Fe Martinez  Josephine Milan  Ferdinand Mortel  Magdalena Natividad  Rodolfo Rabor  Ma. Teresa Rodriguez  Celia Roslin

Anacleta Valdez  Rowen Yolo

and other PASMETH members not cited in this page who in one way or another has contributed greatly to the success of this endeavor…