

COURSE APPROVAL REQUEST

CHECKLIST

COURSE NAME/DEPARTMENT/NUMBER: \_\_Medical Microbiology \_\_\_\_\_\_\_\_

CLUSTER REQUIREMENT: \_\_\_\_\_Science – 2B\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

FACULTY CONTACT/EMAIL/PHONE: \_\_James T. Griffith [jgriffith@umassd.edu](mailto:jgriffith@umassd.edu) 8328

Please be certain that your application contains all of the following components:

A Master Syllabus including the following elements:

A list of learning outcomes for the course that contains both course-specific outcomes as well as the learning outcomes for the University Studies (US) Cluster Requirement.

Descriptions of assignments and assessments that will be used to evaluate students’ success in meeting the US Cluster Requirement learning outcomes.

Examples of texts and required materials for the course.

Example of the course schedule/list of topics.

Examples of assignments that will be used in the course.

A general explanation of the course’s content and goals.

**A general explanation of the course’s content and goals.**

**Course Catalog Description**

The theoretical basis for an in-depth understanding of organisms of medical importance. Stress shall be placed on bacterial physiology as it relates to disease. Quality control, statistical methods, and current literature shall be analyzed.

**Course Overview:**

*Together with its companion laboratory course, the goal of this course is to evaluate infectious disease in the light of time, place, patient attributes, and environment. For example, Human Parasitology cannot be understood without a grasp of the socio-economic, geographic, and health-status criteria of a specific group of humans.*

*From the Scandinavian countries where it is somewhat rare to countries in the sub-Saharan region where parasitic infection rates can be as high as 30%, the issues of transmission, prevention, diagnosis, and treatment require discussions of water quality, social and eating habits of indigenous peoples, availability and types of health care, etc.*

*The issues of world-wide virology must not only include these criteria but also the role of habitat loss as it applies to vectors. Across all divisions (Bacteriology, Mycology, Parasitology, Virology and prions) the changing climate, availability of vectors, correct and indiscriminate use of antimicrobials, and financial resources must be addressed.*

**Learning Outcomes Specific to Parasitology (in Black) Learning Outcomes with regard to Global Social and/or Political and/or Economic Perspectives (in Blue)**

By the end of this course, the student shall be able to:

University Studies Objectives

1. Analyze and evaluate the use of scientific information in the context of social, economic, environmental or political issues.

2. Apply scientific theories and knowledge to real-world problems.

3. Effectively communicate scientific information in writing.

MLS 313 Medical Microbiology Objectives

5. distinguish between exogenous and endogenous foreign material as they relate to immune defenses of a host organism

6. explain the nature of infectious disease in terms of host vs. parasite

7. define the terms

invasiveness

pathogenicity

virulence

toxigenicity

113. list three (3) basic needs provided to the parasite by a host

114. discuss the likelihood of a single organism being either a parasite or a host

115. list the three (3) major groups of medically significant animal parasites that parasitize animals

116. compare and contrast the concepts of parasite and predator

117. identify the following from direct smears, concentration techniques, wet mounts and/or other visual media

**intestinal amoeba**

trophozoites and cysts of

*Entamoeba histolytica*

*Entamoeba hartmanni*

*Entamoeba coli*

*Entamoeba polecki*

*Entamoeba nana*

*Entamoeba butschlii*

**intestinal and atrial flagllates**

trophozoites of

*Dientamoeba fragilis*

*Giardia lamblia*

*Chilomastix mesnili*

*Trichomonas hominis*

*Trichomonas tenax*

*Trichomonas vaginalis*

*Enteromonas hominis*

*Retortamonas intestinalis*

cysts of

*Giardia lamblia*

*Chilomastix mesnili*

*Enteromonas hominis*

*Retonamonas intestinalis*

**intestinal cilliates and coccidia**

trophozoites and cysts of *Balantidium coli*

cysts of *Isospora belli*

cysts of *Sarcocytes sp.*

**intestinal nematodes**

ova of

*Trichuris trichiura*

*Enterobius vermicularis*

*Trichostrongylus sp.*

*Trichinella spiralis*

ova and adult forms of *Ascaris lumbricoides*

ova, adult forms rhabiditiform and filariform larvae of *Ancylostoma*

*duodenale*, *Necator americanus*, and *Strongyloides stercoralis*

**blood nematodes** to include microfiliarial stages

**trematodes**

ova, miracidium and adult forms of

*Paragonimus westermanii*

*Clonorchis sinensis*

*Fasciola hepatica*

*Schistosoma mansoni*

*Schistosoma japonicum*

*Fasciolopsis buski*

**cestodes**

ova and scolices of: *Taenia saginata*, *Taenia solium*, and *Dibothrocephalus latus*

ova of *Hymenolepsis sp.*

ova of *Diphylidium caninum*

inverted scolex of *Echinococcus granulosis*

**Cardiovascular System Sporozoans**

trophozoites of *Plasmodium vivax, Plasmodium malariae*, and *Plasmodium*

*ovale*

trophozoites and gametes of *Plasmodium falciparum*

trophozoites and cysts of *Toxoplasma gondii* and *Pneumocystis carinii*

**Hemoflagellates**

trypanosomal stages of

*Trypanosome brucei*

*Trypanosome rangeli*

*Leishmania braziliensis*

*Leishmania donovani*

trypanosomal and critical stages of *Trypanosoma cruzi*

trypanosomal, leptomonal and leishmanial stages of *Leishmania tropica*

118. For the following organisms, apply objectives A through #C

*Entamoeba histolytica*

*Entamoeba coli*

*Endolimax nana*

*Iodamoeba butschlii*

*Dientamoeba fragilis*

*Giardia lamblia*

*Chilomastix mesnili*

*Trichomonas vaginalis*

*Balantidium coli*

*Isopora belli*

*Sarcocystis sp.*

*Ascaris lumbricoides*

*Trichuris trichiura*

*Necator americanus*

*Strongyloides stercoralis*

*Enterobius vermicularis*

*Trichinella spiralis*

*Paragonimus westermani*

*Clonorchis sinensis*

*Fasciola hepatica*

*Schistosoma mansoni*

*Taenia solium*

*Dibothrocephalus latus*

*Plasmodium vivax*

*Plasmodium falciparum*

*Toxopasmau gondii*

*Tripanosoma brucei*

*Leishmania braziliensis*

*Leishmania donovanii*

*Wucheria bacrofti*

A. graphically display the life cycle of the organisms including in the graph the names of the life cycle stages, the names of the primary and subsequent hosts and the nature of the transformation of the important life cycle stages

B. graphically display the basis of the pathophysiology of the infestation, the diagnostic stages, the severity of the disease, the principle means of curative and preventative therapy and the point/points in the life cycle where the clinical laboratory scientist may become involved

C. correlate the life cycle stages of the organism with the pathophysiological processes in the patient

D. compare and contrast the attributes of host, vector and parasite in the context of geographic, socio-economic, diet and accessibility to health care to include population density, governmental interference with agriculture or economic planning, adequacy of nutrition in specific age/gender groups, and the role of capitalist pharmaceutical companies in the treatment of "orphan diseases" or the development of "orphan medication ".

**Assignments and assessments that will be used to evaluate student success in meeting the US Cluster Requirement learning outcomes.**

U.S. OBJECTIVE 1

Examinations composed of both objective questions and essay questions. Examples of question used in the last two years are:

1. Describe the geopolitical consequences of the following:

\* population with an average diet of 2,200 cal/day (US)

\* population in which 1/3 of the population having malaria

\* population in which 90% have adult helminths

\* population in which 8% have acute tuberculosis

2. In what ways, in what location and in what geopolitical situations are parasites of humans associated with "stunting"

3. According to the World Health Organization, what percent of world deaths are attributable to unde rnutrition?

a. 8

b. 15

c. 27

**d. 53**

e. 71

U.S. OBJECTIVE #2

4. Which of the following anti-parasitics was successful in treating *Trypanosoma cruzi* was discontinued due to economic reasons by the pharmaceutical companies*?*

a. Bisquinaldine A

**b. Nitrofurtimox**

c. Benznidaole

d. Amphoteracin B

e. Nystatin

U.S. OBJECTVE #3

Discuss the influence of 19th and 20th century colonialist actions on the public health issues seen in 21st century Africa and the Far East.

**Examples of texts and required materials for the course**

Mahon C, Lehman DC, Manuselis J. Textbook of Diagnostic Microbiology 4th Edition, W.B. Saunders Co., Philadelphia, 2011.

<http://www.who.int/topics/> (malaria, schtosomiasis, Taenia spp., Helminths, etc.)

<Http://www.who.int/entity/foodborne_disease/resources/> - specific organisms

endemic to the US.

<http://www.cdc.gov/parasites/>

http://www.unicef.org/progressforchildren/2007n6/index\_41505.htm

http://www.rarediseases.org/docs/policy/OrphanDrugDevelopmentConference.pdf

**The course schedule/list of topics.**

**MLS 313 Medical Microbiology, 2012**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Date\*** | **Chapter** | **Pages** | **Topic** |
| 1 | 1/30 | 28 | 639-702 | Host-Parasite Relationships (G) |
|  | 2/1 |  |  | Host-Parasite Relationships (G) |
|  | 2/3 |  |  | Host-Parasite Relationships (G) |
| 2 | 2/6 |  |  | Protozoa (G) |
|  | 2/8 |  |  | Protozoa/ Flagellates (G) |
|  | 2/10 |  |  | Flagellates (G) |
| 3 | 2/13 |  |  | Nematodes (G) |
|  | 2/15 |  |  | Nematodes (G) |
|  | 2/17 |  |  | Nematodes (G) |
| 4 | 2/20 | **No** | **Class** | **Presidents’ Day – No Class** |
|  | **2/21 T** | “Monday” |  | Trematodes (G) |
|  | 2/22 |  |  | Trematodes (G) |
|  | 2/24 | 2 | 23-47 | Intro: Bacteriology & Poster Assignment (S) |
| 5 | 2/27 |  |  | Cestodes (G) |
|  | 2/29 |  |  | Cestodes (G) |
|  | 3/2 |  |  | Cestodes (G) |
| 6 | 3/5 |  |  | Arthropods (G) |
|  | 3/7 |  |  | Arthropods (G) |
|  | 3/9 |  |  | Arthropods (G) |
| 7 | 3/12 |  |  | Parasitology (catch up) (G) |
|  | 3/14 |  |  | Parasitology (catch up) (G) |
|  | 3/16 |  |  | Susceptibility and Resistance to Infection (S) |
| **~~B~~** | **~~R~~** | **~~E~~** | **~~~A~~~** | **~~~~~~~~~~~~~~~~~K~~~~~~~~~~~~~~~** |
| 8 | 3/26 | 14 | 316-329 | *Micrococcacea* (S) |
|  | 3/28 | 15 | 330-351 | *Micrococcacea/Streptococcacea* (S) |
|  | **3/30** |  |  | **PARASITOLOGY****EXAM** |
| 9 | 4/2 | 17 | 376-394 | *Streptococcacea/Neisseriaceae* (S) |
|  | 4/4 | 19 | 427-461 | *Enterobacteriaceae* (S) |
|  | 4/6 | 9 | 182-199 | *Enterobacteriaceae* (S) |
| 10 | 4/9 |  |  | *Enterobacteriaceae* (S) |
|  | 4/11 |  |  | *Enterobacteriaceae* (S) |
|  | 4/13 |  |  | *Enterobacteriaceae* (S) |
| 11 | **4/16** | **No** | **Class** | **Patriot’s Day – No Class** |
|  | 4/18 | 21 | 482-501 | *Pseudomonas* spp., etc. (S) |
|  | 4/20 | 20 | 462-481 | *Campylobacter* and *Vibrio* spp. (S) |
| 12 | 4/23 | 18 | 395-426 | *Haemophilus* spp., etc. (S) |
|  | **4/25** |  |  | **POSTER SESSION** (tentative) (S) |
|  | 4/27 | 16 | 352-368 | Non-sporeforming Gram positive bacilli (S) |
| 13 | 4/30 | 16 | 369-375 | *Bacillus* spp. (S) |
|  | 5/2 | 27 | 603-638 | Mycology Taxonomy (G) |
|  | **5/4** |  |  | **BACTERIOLOGY EXAM** (tentative) (S) |
| 14 | 5/7 |  |  | Dermatophytes (G) |
|  | 5/9 |  |  | *Candida* spp., |
|  | 5/11 |  |  | Other opportunistic fungi, (G) |
| (15) | 5/14 |  |  | Systemic & subcutaneous mycoses (G) |
|  |  |  |  |  |
| **FINAL** | **5/17 Th** |  |  | **COMPREHENSIVE FINAL EXAM (S)**  **11:30 AM – 2:30 PM, Thursday, May 17** |

\*All dates subject to change

Dates\* to note:

Monday, February 20, 2012 Presidents’ Day – No Classes

Tuesday, February 21 Follows Monday class schedule

March 17-25 Spring Break

Friday, March 30 Parasitology Exam

Monday, April 16 Patriot’s Day – No Classes

Wednesday, April 25 Poster Session on Campus

April 22-28 National Medical Laboratory Professionals’ Week

Friday, May 4 Bacteriology Exam

May 1-3 ASCLS:CNE Convention in Providence. Students will be required to present a poster at the poster competition. Judging will be by appointment.

Thursday, May 17 11:30 AM - 2:30 PM Comprehensive Final Exam

Grading Policy:

Parasitology exam = 30% of course grade

Poster session (on campus and PVD) = 10% of course grade

Bacteriology exam = 30% of course grade

Final Exam = 30% of course grade

Attendance Policy:

You are expected to attend class. In the unusual event when a class is missed, you are responsible for any and all material covered, including: handouts, assignments, notes of the lecture and other activities, dates agreed upon or pronounced, and changes in the course schedule. Missed exams or poster session will be graded ZERO except under extenuating circumstances AND if notification is made prior to the exam or poster session. Voice mail (or e-mail) has a time/date stamp and is always available.

Office Hours:

Prof. Griffith, X8328, Dion 216C, M 1-2, T 10-12, Th 11-12, or by appointment

Prof. Scarano, X9239, Dion 324C, T 11-12, W 9:30-10:30, Th 10-12, or by appointment

Students with Disabilities:

The ***Americans with Disabilities Act (ADA)*** of 1990 requires the University to provide reasonable accommodations to any individual who advises the University of a documented disability. In accordance with University policy, if you have a documented disability and require accommodations to obtain equal access in this course, please contact the Center for Access and Success to facilitate reasonable accommodations. **The Center for Access and Success is located in Pine Dale Hall, Room 7136, phone:** [**508-999-8711**](callto:508-999-8711)**.**

Academic Honesty Policy:

In preparation for the standards of professional practice as a health care scientist, a single example of cheating may result in expulsion from this course. “Cheating” or plagiarism in any form as listed in the UMass Dartmouth Student Handbook and the Department of Medical Laboratory Science *Academic Standards* will not be tolerated. In the end, your grade is vastly less significant than your character and ability to practice under pressure toward the benefit of your patients.

In furtherance of your progress in health care study, you have received this day (unless previously received in MLS 301 or 303):

UMD/MLS *Academic Standards* document

UMD/MLS *Use of Academic Space* document

MLS 313 *Course Objectives* document

MLS 313 Course Syllabus (this document)

I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (please PRINT your name) have read, comprehend and agree to abide by the above principles of course conduct and personal responsibility throughout this course.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(signature) (date)

**SIGN THIS FORM AND RETURN IT TO PROF. GRIFFITH**

**STUDENT COPY**

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(signature) (date)