COURSE SYLLABUS

BSC 250 Microbiology and Human Disease Spring 2017

Instructor: Travis Cyphert, Ph.D.
Assistant Professor
Office: S-202 B
Email: cyphert@marshall.edu
Office Phone: 696-3154

Office Hours: Tuesday 9-1 pm, Thursday 12-1 pm, Friday 12-1pm

Classroom: Lecture: BBSC 101 2:00 - 3:15 pm Tuesday and Thursday

Lab: WAEC 1231 201: 8:00 - 9.50 Thursday
202: 10:00 - 11.50 Thursday
203: 10:00 - 11:50 Friday

Course Description: BSC 250 Microbiology and Human Disease (4 Cr)
Introduction to microbiology with emphasis on the role of microorganisms in the disease process. **Does not count toward a major in Biological Sciences**.
PR: BSC 227 or equivalent with a grade of C or better

Textbook and other requirements:
1. Microbiology (A Human Perspective) Nester, Anderson, Allen & Nester (8th Ed. 2016)

2. **Response Card NXT: Rcxr-03 CLICKER, Turning Technologies, 2013 (REQUIRED)**

COURSE POLICIES:

1) Attendance: Your attendance is expected for each lecture and laboratory session in this course. Attendance is not taken for lectures but I do take attendance in the labs. Absence from either lecture or laboratory will make this course especially difficult. You are responsible for any lecture material missed by being absent. **Laboratory sessions cannot be made up due to the nature of the laboratory.** Absences from exams due to illness, death in the family, or institutional

activities will be excused with the appropriate written notification to the instructor. In the case of illness, you should provide a physician's note stating that you could not be present during the exam period for medical reasons. **Missed exams or quizzes can be made up only in the case of a University approved absence or a weather related closure**. It is your responsibility to be familiar with University policy, which can be found in the academic calendar or at this web address: http://www.marshall.edu/academicaffairs/policies

In case of a university approved absence for an exam, you must contact me with in 1 week to arrange for a make up exam. If you fail to contact me within this time you will receive a "0". YOU HAVE TO CONTACT ME. I WILL NOT CONTACT YOU. In case of absence for a sporting event or other University sanctioned activity, arrangements to make up the exam must be made BEFORE the day of the exam. Failure to follow either of these policies will result in you being considered absent without excuse for the exam. A make up exam may be, completely long answer or oral format.

1) Academic Dishonesty: Any form of academic dishonesty will not be tolerated. Refer to Undergraduate Catalogue for definitions of cheating, falsification, bribes and complicity.

2) Students with Disabilities: The Marshall University H.E.L.P. program is committed to providing assistance through individual tutoring, mentoring and support, as well as fair and legal access to educational opportunities for students diagnosed with Learning Disabilities (LD) and related disorders such as ADD/ADHD. If you have, or believe you may have, a handicap or learning disability that will make it difficult for you to complete this course as structured, please contact the H.E.L.P. office in Myers Hall at 696-6252 (http://www.marshall.edu/help/). The H.E.L.P. program will assess your situation and provide information designed to help me meet your educational needs.

3) Electronic Devices: Please turn off all cell phones. No electronic devices will be needed, and none will be permitted, during exams. The use or access of an electronic device during an exam will be considered academic dishonesty. Lectures may be taped during the lecture and lab components of the course.

4) Grading Policy: Your grade for this class will be based upon your performance on **3 lecture exams, 2 lecture quizzes, and 2 laboratory exams/quizzes**. Exams ands quizzes will be composed of multiple choice, multiple/multiple choice, fill in the blank, as well as a few problem solving and critical thinking questions. Grading scale for this course will be: 100-90 (A), 89-80 (B), 79 -70 (C), 69-50 (D), and below 50 (F). In the event of illness or family death missed exams may be made up by mutual arrangement

between the professor and student. **Everyone starts the semester with 40 out of 40 points for lab attendance. If you miss one lab with an unexcused absence, you loose 15 points and you now have 25 out of 40 points. Missing 2 or more labs that are unexcused will result in the lowering of your grade by one letter grade. University excused absences will not result in any points lost.**

5) Laboratory Polices:

Safety: Live bacterial cultures are used in this course, since your laboratory desk is shared with at least 5 other students it is necessary to disinfect your work area each time you come to lab. It is also necessary to wash your hands with any of the various antiseptics provided after finishing the laboratory period. No eating or drinking is permitted in this laboratory. In the event of a spilled culture, notify the instructor immediately so that the contaminated area can be treated with a disinfectant.

Attendance: Laboratory attendance is required and it is not possible to make up missed laboratory sessions. **Two or more unexcused absences from the lab will result in lowering your grade one letter.**

One quiz and one lab final (which is cumulative), consisting multiple choice, short answer and problem solving questions will be used to assess student performance in the laboratory. **Also, the mid-term lab quiz will have lab technique assessments.**

Lecture Course Objectives – Students completing this course should:

1) Recognize the major groups of microorganisms comprising the microbial world including viruses, bacteria, fungi and protozoans and algae.
2) Understand the transfer of information: DNA to protein
3) Understand the anatomy, physiology, growth and genetic exchange mechanisms in bacteria.
4) Understand the host-parasite relationship and the role of microorganisms in the disease process.
5) Understand the basic host defense mechanism in preventing microbial diseases including non-specific and specific immune responses.
6) Understand the immune response in cancer, organ transplantation, autoimmunity and hypersensitivity reactions.

7) Understand the origin and pathogenesis of selected bacterial, viral and mycotic diseases in man.

Laboratory Course Objectives – Students satisfactorily completing this laboratory component of this course should be able to:

1) Use the bright-field microscope to observe bacteria.
2) Be able to prepare a bacterial smear and complete the Gram Stain procedure.
3) Learn how to prepare culture media and understand different methods of sterilization.
4) Enumerate bacteria using the viable plate count method.
5) Isolate bacteria from your own microbiome.
6) Determine the sensitivity of bacteria to antibiotics and understand the emergence of resistant bacteria.
7) Identify members of the Enterobacteriaceae by their biochemical profiles.
8) Complete the microbiological tests used in testing of potable and recreational water.

Spring 2017 BSC 250 Lecture Syllabus Dr. Travis Cyphert

Microbiology and Human Disease

Week No.	Date	Lecture Topic	Text Chapter
1	01-10-17	First Day Introduction	
	01-12-17	Introduction to the microbial world and Major Groups of Microbes	1
2	01-17-17	Molecules of life: The atom all the way to proteins and between	2
	01-19-17	Microscopy and Microscopic techniques	3
3	01-24-17	Cell morphology –Prokaryotic Cell and Eurkaryotic Cell	3
	01-26-17	Growth of Bacteria (Bacterial Growth Curve)	4
4	01-31-17	Methods to Detect and Measure Growth and Control of Growth	4, 5
	02-02-17	Microbial Metabolism	6
5	02-07-17	Blueprint of life: DNA to Protein	7
	02-09-17	**Class Exam #1 (includes material/lectures for chapters 1-6)** (FIRST 7 LECTURES ARE ON EXAM #1)	
6	02-14-17	Bacterial genetics and gene "sharing"	8
	02-16-17	Identifying, classification, and diversity of microorganisms	10, 11
7	02-21-17	**Quiz on chapters 7, 8, 10, 11 material** (lecture 8-10) /	
	02-23-17	Virus, viroid, prion	13
8	02-28-17	The Innate Immune Response	14
	03-02-17	Adaptive Immune response	15
9	03-07-17	Interactions between Host and Microbe	16
	03-09-17	Immunization	18
10	03-14-17	Epidemiology	19
	03-16-17	**Class Exam #2 (includes material/lectures for chapter 7,8,10,11,13,14,16)** (LECTURES 8-15)	
	03-21-17	SPRING BREAK	20
	03-23-17	SPRING BREAK	20
11	03-28-17	Antimicrobial Medications	20
	03-30-17	Antimicrobial Medications continued	20

12	04-04-17 04-06-17	**Quiz on lectures covering chapters 18, 19, 20** Respiratory System Infections	 21
13	04-11-17 04-13-17	Skin and Wound infections Digestive System Infections	22,23 24
14	04-18-17 04-20-17	Blood and Lymphatic Infections Nervous System Infections	25 26
15	04-25-17 04-27-17	Food Microbiology No Class	30
	Thursday May 4th 12:45pm	**FINAL EXAM on material/lectures on chapters 18, 19, 20,21, 22, 23, 24, 25, 26, 30** (includes everything from Weeks 9 (lecture on 10/21) – 15) **NOT CUMULATIVE**	

Spring 2017 BSC 250 Lab Syllabus Dr. Travis Cyphert

Microbiology and Human Disease

Week beginning	Laboratory Topic
1 01-09-17	Orientation to the Microbiology Lab and Safety Regulations Intro to aseptic technique and microscope
2 01-16-17	Preparation of a Bacterial Smear The Simple Stain, Bright Field Microscopy Isolation of Microbiome
3 01-23-17	Streak plate method (aseptic technique in action) Preparation of a Bacterial Smear The Simple Stain, Bright Field Microscopy
4 01-30-17	Assess streak plates (human microbiome) Isolate one colony from human microbiome Gram stain
5 02-06-17	Preparation of Culture Media (Lecture) Sterilization of Culture Media and Methods of sterilization (Lecture) Viable plate count Streak human microbiome colony on plate
6 02-13-17	Evaluation of Viable Plate Count Pure culture conformation
7 02-20-17	Gram stain/simple stain organism Biochemical Tests to ID Staphylococci Inoculate TSA Slants
8 02-27-17	**MID-TERM LAB QUIZ (has practical portion)**
9 03-06-17	MSA and Blood Carbohydrate fermentation Environment lab isolation
10 03-13-17	Antibiotic Sensitivity Tests (Kirby-Bauer) **E**valuate Carbohydrate Fermentation **E**valuate and pick colony for TSB or streak broth to plate (from environment)

11 03-27-17	**E**valuate Antibiotic Tests Biochemical Tests on Gram-Negative Gram stain environmental colony
12 04-03-17	Microbiology of Water Filtration Evaluate Biochemical results
13 04-10-17	Evaluate Water lab Pick colony for E coli conformation Food microbiology (milk)
14 04-17-17	Evaluate Water lab conformation Evaluate food microbiology Review
15 04-24-17	**LAB FINAL EXAM (cumulative) DURING YOUR NORMAL LAB TIME**

Labs/lab topics could change due to unforeseen complications

Class Point Breakdown

3 Lecture exams worth 100 points each
1 Lab final exam worth 100 points (cumulative)
1 Lab Quiz worth 50 points
2 Lecture Quizzes worth 30 points each (60 points total)
40 Attendance points
50 Lab notebook (question answers)

Total points = 600

Any bonus points or bonus quizzes that occur cannot be made up. You have to be there on the day that they take place.