Jordan University of Science and Technology
Faculty of Applied Medical Sciences
Department of Medical Laboratory Sciences
Course Syllabus

Course Information	
Course Title	Clinical Microbiology I (4 credit hours)
Course Code	Lm 331
Prerequisites	B231
Course Website	
Course Coordinator	Dr. Suhaila Al-Shboul
Office Location	M5, Rm 20
Office Phone #	Ex. 23770
Office Hours	To be announced
E-mail	sashboul@just.edu.jo
Lab Supervisor	Mr. Ra'ed Obaidat

Course Description

Instruction in the theory, practical application, and pathogenesis of clinical microbiology, including collection, setup, identification, susceptibility testing, and reporting procedures. The laboratory exercises will provide the student with the most comprehensive experiences possible, but will rely mainly on the commonly measured differential characteristics of select bacterial groups.
The structure of microorganisms including the pathogenic properties of bacteria, fungi, and viruses are examined in detail. Basic genetic and molecular biological concepts are integrated and connected to clinical manifestations of disease.
Students acquire an understanding of the physiological and virulence properties of microorganisms and epidemiological factors contributing to human infectious disease; and an introduction to the activities and uses of antimicrobial agents for asepsis and treatment.

Textbook	
Title	Bailey and Scott's Diagnostic Microbiology
Author(s)	Forbes, Sahm, Weissfeld
Publisher	Mosby Elsevier
Year	2007
Edition	12th edition
Book Website	http://evolve.elsevier.com/Forbes
Other references	The book website above will lead the students to links specific to diagnostic Microbiology JUST Library

Assessment		
Assessment	**Expected Due Date**	**Percentage**
First lecture Exam	**7th week**	22 %
Second Lecture Exam	**13th week**	23 %
Final Lecture Exam	To be announced (assigned by registration department)	30 %
First Lab Exam	**To be announced**	15%
Final Lab Exam	**To be announced**	10%
Attendance	Absolute for all students	

Course Objectives	**Percentage**
1. Identify bacterial pathogens by means of key characteristics of metabolism, morphology, and pathogenesis.	10%
2. Recommend optimal specimen type and collection procedures for those specimens, given data in a case history.	10%
3. Select optimal methods for the isolation and identification of common pathogens found in clinical specimens.	10%
4. Apply appropriate laboratory techniques for the identification of pathogenic microorganisms isolated from clinical specimens.	15%
5. Demonstrate knowledge of the disease processes associated with specific etiologic agents, associating clinical findings with the agents of common diseases.	5%
6. Discuss the mechanism of action of various antibiotics and antimicrobial agents.	5%
7. Perform and interpret antimicrobial susceptibility testing procedures.	15%
8. Practice safe laboratory procedures for the handling of biohazardous agents.	15%
9. Practice quality control and quality assurance according to contemporary clinical laboratory standards.	15%

Teaching & Learning Methods

- Power point lectures
- Laboratory experiments , Unknowns

Teaching duration:

- 2 lectures per week; 75 minutes per lecture
- 16 week laboratory sessions; 3 hours per session
- Daily follow-up in the lab

Reference(s) **Handouts**	
1. Handouts	
2. Text book	
3. Additional reading-JUST library	

Useful Resources

Internet-links to Diagnostic Microbiology
Jordan University of Science and Technology Library

Course Content		
Week	**Title of the Lecture**	**Lecturer**
1	**General principles in Clinical Microbiology**	Dr. Suhaila
2	**Catalase-Positive, Gram-Positive:** **Gram-Oositive Cocci** • *Staphylococcus, Micrococcus* and similar organisms	Dr. Suhaila
3	**Catalase-negative, Gram-Positive Cocci*:*** • *Streptococci, Enterococcus* and similar organisms	Dr. Suhaila
4	**Non-Branching, Catalase-Positive, Gram-Positive Bacilli:** • Bacillus and similar organisms	Dr. Suhaila
5	**Non-Branching, Catalase-Positive, Gram-Positive Bacilli**: • Listeria, corynebacterium and similar organisms	Dr. Suhaila
6	**Non-Branching, Catalase-Negative, Gram-Positive Bacilli:** • lactobacillus and similar organisms	Dr. Suhaila
7	***Exam 1***	**Dr. Suhaila**
8	**Branching or Partially Acid-Fast Gram-Positive Bacilli:** • *Nocardia* and *Streptomyces*, Rhodococcus and similar organisms	Dr. Mohamad
9	**Gram-Negative Bacilli and Coccobacilli (MacConkey-Positive,Oxidase-Negative):** • *Enterobacteriaceae, Acinetobacter, Stenotrophomonas and other orgasnisms*	Dr. Mohamad
10	**Gram-Negative Bacilli and Coccobacilli *(MacConkey-Positive,Oxidase-Positive):*** • *Pseudomonas, Burkholderia* and similar organisms • *Alcaligenes, Bordetella(non-pertussis), and* similar organisms • *Vibrio, Aeromonas and similar organisms*	Dr. Mohamad
11	**Gram-Negative Bacilli and Cocobacilli (MacConkey-Negative,Oxidase-Positive):** • *Shingomonas. Moraxella, Eikenella, Pasteurella*	Dr. Mohamad

12	**Gram-Negative Bacilli and Coccobacilli (MacConkey-Positive,Oxidase-Variable)*:*** • *Haemophilus* **Gram-Negative Bacilli that are optimally recovered on special media** • *Helicobacter,Campylobacter, Legionella,Brucella, Bordetella pertusis, Bordetella parapertussis, and Francisella*	Dr. Mohamad
13	***Exam 2***	**Dr. Mohamad**
14	**Gram-Negative Cocci** *Neisseria and moraxella catarrhalis*	Dr. Suhaila
15	**Anaerobic Bacteria** • *Overview and General Considerations* • *Lab considerations*	Dr. Suhaila
14	***Mycobacteria and other bacteria with unusual growth requirements*** *Mycobacteria,Obligate intracellular and non-culturable bacterial agents* *Cell-wall deficient bacteria: Ureaplasma and Mycoplasma* *Spirochetes*	Dr. Suhaila
15	**Review**	Dr. Suhaila
16	***FINAL EXAM***	

Additional Notes
<u>Attendance policy</u>: For lectures is 90%. Lab attendance is mandatory. Students who fail to meet the course attendance requirements will be administratively withdrawn from class per the JUST Attendance Policy. **<u>Grades:</u>** Grades are recorded to one decimal place. The semester grade percentage will be determined by rounding up numbers ≥0.5 to the next whole number (e.g., 78.6% = 79% or 78.4% = 78%). **<u>Make-up exam policy:</u>** Missed exams caused by absences for medical or personal emergencies that are approved may be made up with full credit for the exam. If a student misses an exam without an approved excused absence, he/she may not take a make-up exam. The format of make-up exams is at the discretion of the professor and may be multiple-choice, essay, short-answer, oral, etc. **Make-up exams may not be eligible for extra-credit points and/or scaling. (must get an approval from the Dean of Applied Medical Sciences)** Note: Examination(s) are based on ALL materials covered and discussed in class and any material assigned from the required textbook (this will be discussed in class).

Classroom Etiquette:

1. Arrive at class 5-10 minutes early. Settle yourself and turn off your cell phone. Class will begin promptly on time.
2. Please be PRESENT – be attentive and contribute to the class discussion when appropriate. Avoid watching and playing with your cell phone, etc.
3. Stay for the entire class - avoid packing up before the class ends.
4. You may bring sugar-free beverages (water) into the classroom but do not bring and eat food and don't leave your garbage after the class is over.

Examination Hygiene:

1. Neither faculty proctors nor testing proctors present during an examination may be asked to interpret questions or give definitions. If there is an error identified on a question, a correction will be announced and written on the board at the front of the room. It is your responsibility to make the appropriate correction on the examination.
2. All backpacks, computer cases, briefcases, and purses must be in an area designated by the faculty.
3. No food or beverages allowed in the exam room
4. No cell phones, calculators, or other electronic items.
5. Please dress appropriately for possible variations in room temperature.

Practical Clinical Microbiology I Course Syllabus

Course Information	
Course Title	Clinical Microbiology I
Course Code	Practical Clinical Microbiology I - Lm331
Prerequisites	B 231
Course Website	
Instructor	Dr. Suhaila Al-Shboul
Office Location	M5, Rm 20
Office Phone #	Ex. 23770
Office Hours	To be announced
E-mail	sashboul@just.edu.jo
Lab Supervisor	Raed Obaidat

Course Description
Clinical Microbiology I and its laboratory are courses designed to teach clinical microbiology to medical laboratory students. The laboratory exercises for this course are explained in detail in lectures and in laboratory handouts. Step-by-step instructions are supplied with each exercise along with pertinent background information so that the procedures, for the most part, are self-explanatory. The laboratory exercises will to provide the student with the most comprehensive experiences possible, but will rely mainly on the commonly measured differential characteristics of select bacterial groups.

Textbook	
Title	Bailey and Scott's Diagnostic Microbiology
Author(s)	Forbes, Sahm, Weissfeld
Publisher	Mosby Elsevier
Year	2007
Edition	12th edition
Book Website	http://evolve.elsevier.com/Forbes
Other references	-The book website above also provides additional suggested websites related to diagnostic Microbiology -JUST Library

Assessment		
Assessment	**Expected Due Date**	**Percentage**
Lab reports	Daily	5 %
Quizzes	Daily	5 %
Unknown Sample Identification	To be announced	5 %

Final Laboratory Exam	To be announced	10 %
Attendance	Absolute for all students	

Course Objectives	Percentage
1. To develop students' proficiency in aseptic handling of bacteriology specimens.	15%
2. To enable students to correctly choose the proper media for bacteriology specimens and to correctly process them.	15%
3. To enable students to identify unknown organisms using techniques presented in laboratory exercises.	15%
4. To enable students to make the correct choice regarding the recommend optimal clinical specimen type and the collection method.	10%
5. To enable the application of appropriate laboratory techniques for the identification of pathogenic microorganisms isolated from clinical specimens.	15%
6. To enable students to perform antimicrobial susceptibility testing and interpret the corresponding results.	15%
7. To increase students' skills regarding the application of appropriate laboratory safety procedures during the handling of biohazardous agents.	15%

Teaching & Learning Methods

- Laboratory experiments , Unknowns

Teaching duration:

- Daily follow-up in the lab

Reference(s) **Handouts**	
1. Handouts	
2. Text book	
3. Additional reading-JUST library	

Useful Resources

Internet-links to Diagnostic Microbiology

Jordan University of Science and Technology Library

Week	**Clinical Microbiology Lm331-Laboratory**

1	Laboratory safety procedures and policies
2	Staining techniques, and microscopic procedures
3	Specimen collection and transport Media preparation and culture techniques, isolation procedures, purification techniques, and identification Sterilization
4	Gram positive cocci- Staphylococcus and Micrococcus
5	Gram positive cocci - Streptococcus
6	Gram Positive Bacilli-Spore Formers and None Spore Formers
7	Gram -Negative Cocci- Neisseria
8	**Unknown I**
9	Enteric Gram Negative Bacilli.
10	None Fermenting Gram Negative Bacilli.
11	Gram Negative Coccobacilli, Haemophilus,Brucella,Bordetella, Yersinia, Francisella, and Pasteurella.
12	**Unknown II**
13	Acid Fast Bacteria.
14	Antimicrobial testing and antimicrobial effectiveness
15	Final Laboratory Exam
16	Period for University Final Exams