KOMAR UNIVERSITY OF SCIENCE AND TECHNOLOGY
(KUST)

Medical Bacteriology Syllabus (Theory) Spring 2016			
Course Title	Medical Bacteriology		
Course Code	MLS3330	No. of Credits	3
Department	Medical Laboratory Science (MLS)	College	Science
Pre-requisites Course Code	Introduction to Microbiology and Lab MLS2405C	Co-requisites Course Code	
Course Coordinator(s)	Dr. Sirwan M. MUHAMMED		
Email	sirwan.muhammed@komar.edu.iq	IP No.	
Other Course Teacher(s)/Tutor(s)	Mr. Alan Ahmed (Lab instructor)		
Class Hours	Sunday : 10:30-11:30 & 13:00- 14:30 (room 112 S2 &113 S1) Wednesday: 10:30-11:30 & 13:00- 14:30 (room 112 S2 &113 S1)		
Contact Hours	Per your request		
Course Type	Departmental course		
Offer in Academic Year	Spring 2016		

COURSE DESCRIPTION

This course provides learning opportunities in the basic principles of medical bacteriology and infectious disease. It covers systemic pathogenic bacteria including gas gangrene, tuberculosis, mycoplasma and chlamidial diseases of human and also their mechanisms of infectious disease, transmission, principles of aseptic practice, and the role of the human body's normal microflora. Relevant clinical examples are provided. It also provides opportunities to develop informatics and diagnostic skills, including the use and interpretation of laboratory tests in the diagnosis of infectious diseases.

COURSE OBJECTIVE:

Knowledge should include definition, historical perspectives, classification,
habitats, epidemiology, morphology, cultural characteristics, metabolism, genetics, molecular and antigenic structure, laboratory isolation and identification, virulence and pathogenicity, tissue reactions, clinical features and syndromes, susceptibility, prevention including vaccines and recent developments.

COURSE LEARNING OUTCOMES

On successful completion of this semester the learner will be able to:

1-	Describe which anatomic locations in the human body contain normal flora versus those locations which are normally sterile and the major types of bacteria that comprise the normal flora in each of these sites
2-	Understand the epidemiology, pathogenesis, antigenic characteristics of bacteria.
3-	Describe the laboratory diagnosis of infectious diseases and recognize how to isolate bacteria.
4-	Recognize the treatment of infectious diseases caused by bacteria.
5-	Elicit the infections of various organs and systems of the human body.
6-	Explain how bacteria can circumvent destruction by the host immune system in order to effectively colonize humans and produce disease.
7-	Explain the mechanism of action, development of resistance and rational use of antimicrobials.

GUIDELINES ON GRADING POLICY

To receive a passing grade and proceed to the next MLS course, the student must earn a 65%.

Grading will be based on a percent scale			
A	95-100%	C	70-74%
A-	94-90%	C-	65-69%
B+	87-89%	D+	60-64%
B	83-86%	D	55-59%
B-	80-82%	D-	50-54%
C+	75-79%	F	0-49%

COURSE TEACHING AND LEARNING ACTIVITIES

Class Materials (syllabus and handouts) will be available to the students prior to the lecture time. Also, any other information relevant to the class will be send to the students via email.
Electronic tools can make classes more efficient. PowerPoint is regularly used to deliver lectures in classroom. In addition, incorporating visual image or brief video into PowerPoint slideshows to make the lectures more interesting.

COURSE ASSESSMENT TOOLS

Assessment Method	DESCRIPTTION	Assessment Weight
Quizzes	Students will take 6 **schedule** quizzes over the course and the highest **5 quiz** marks will be counted toward the final grade. Any change in the schedule will be communicated in class as well as via email.	**10%**

Class Participation	Students are strongly encouraged to attend classes. Attendance and participation in class and lab are mandatory and may be used to determine your grade. This class will include discussions of ideas related to medically important bacteria. You should participate in the discussion and record the information in your notes	**5%**
Presentations	Together with two or three partners, you will be asked to give 10-15 minute presentation in class on a selected topic of microbiology. I will encourage students to involve in active learning strategy i.e. students will start to join the teacher to explain the required lecture. You will need to answer questions concerning your presentation and submit questions about presentations given by other students.	**5%**
Test	During the course schedule, students will take two **tests** before midterm and final examination. The format for the exams will include multiple-choice questions, matching, fill-in-the-blank and short answers.	**20%**
Midterm Exam	A midterm exam is an exam given near the middle of an academic grading term, or near the middle of any given semester. The exam is supervised by a committee of faculty members.	**20%**
Search Activity	Encouraging students to think more deeply and discussions. Also seeking for information to answer questions.	**5%**
Final Exam	Final examination will be held at the end of a course of study. The format for the exams will include multiple-choice questions, matching, fill-in-the-blank and short answers. Exams will focus on materials that were discussed in the weeks immediately preceding the exam.	**35%**

ESSENTIAL READINGS: (Journals, textbooks, website addresses etc.)

Textbooks:

- Jawetz, Melnick, and Adelberg's. Medical Microbiology. Twenty-six Edition. McGraw-Hill Companies, Inc. 2013. .

References:

- Stephen H. Gillespie, Peter M. Hawkey. Principles and Practice of Clinical Bacteriology. Second Edition. Wiley. 2006
- Online resources: Todars Online Textbook of Bacteriology, http://textbookofbacteriology.net/
- **Audio & Video of lectures:** http://podcast.ucsd.edu/

COURSE POLICY *(including plagiarism, academic honesty, attendance etc)*

Any kind of dishonesty and/or plagiarism is not acceptable and will be dealt with according to the KUST's Academic Policy will be followed: http://sar.komar.edu.iq/files/Student%20hand%20Book%202013.pdf

Attendance:

- Students are expected to attend all lectures and must attend all tests/examinations, quizzes, and practical exercises.
- There is no make-up work for students who miss classes without official permission.
- Students who have official permission must arrange with the instructor to make-up the missed class/test.

❖ Students are subject to the regulation and policies mentioned in the KUST Student Handbook.
KUST guidelines for lateness are as follows: Three occasions of lateness count as one absence. You can be considered late after 5 minutes of the lecture time. More than 5 minutes lateness can be considered as absent but you may be allowed to sit in the class.

GUIDELINES FOR SUCCESS

1. Come prepared for class (bring all materials to class each day).
2. Pay attention and resist distractions.
3. Be on time.
4. Have a good Attitude.
5. No eating or drinking in class (especially during labs).
6. Be in class every day.
7. Form relationships with others in the class.
8. Be open and honest with the instructor about difficulties you may be having.
9. Be consistent in your daily work and effort.
10. Work both independently and in groups of your peers, who can help you understand the course material.

CHEATING AND PLAGIARISM:

Don't do it! Your work should reflect your own effort and words. Any verified instance of cheating and/or plagiarism will be unpleasant for all involved.
Academic honesty is the ONLY policy in this course. Evidence of plagiarism or cheating is justification for failure on an exam, expulsion from the course.

Course Schedule

Week	Lec	TOPICS	Reading chaps	Assessments	
W1	1 2	**Introduction to medical microbiology** Modern medical microbiology, How Microorganisms Cause Disease, Scope of Microbiology, Importance of Microbiology	1		
W2	3 4	**Pathogenesis of Bacterial Infection** - Common terms used in medical bacteriology, Bacterial virulence factors, Regulation of bacterial virulence factors.	9		
W3	5 6	**Normal Microbial Flora of the Human Body** - Introduction, Significance of the Normal Flora, Mechanisms by which the normal flora competes with invading pathogens., Normal Flora of Skin, GIT, Urogenital, Conjunctival, Host Infection by Elements of the Normal Flora.	10	Quiz 1 Lec 1-4	
		Nawroz Holiday			

W4	**7** **8**	**Spore-Forming Gram-Positive Bacilli: *Bacillus* & *Clostridium* Species** Bacterial characteristics, pathogenesis, mechanism of toxin action, bacteriological diagnosis and infection control of Clostridium genus (*C. tetani*, *C. botulinum*, *C. perfringens*, *C. difficile*) and Bacillus genus: (*B.anthracis* and *B. cereus*)	11		
W5	**9** **10**	**Non-Spore-Forming Gram-Positive Bacilli: *Corynebacterium*, Propionibacterium** ***Corynebacterium diphtheria***, Bacteriological characteristics, bacterial strains, pathogenicity, toxigenicty, bacterial diagnosis and host defense. ***Listeria monocytogenes***: Important Properties of the bacterium, pathogenicity, clinical findings and laboratory diagnosis.	12		Test
W6	**11** **12**	**The Staphylococci and the Streptococci** *Staphylococcus* spp. Bacteriological characteristics, classification and enzymes and toxins: pathogenic action, Diagnostic laboratory tests Resistance of Staphylococci to Antimicrobial Drugs -Streptococcus genus: bacteriological characteristics and classification. *Streptococcus pyogens* (*S. pyogenes* and *S. agalactiae*) and streptococci of the viridans group: -***Enterococcus* genus**: bacteriological characteristics and pathogenic action.	13&14		
W7	**13** **14**	**Enteric Gram-Negative Rodes (Enterobacteriaceae) I: *E coli, Shigella* and Others** Enterobacteriaceae,: an Introduction, Growth Characteristics, Antigenic Structure -*E. coli* an introduction, *E. coli*-associated with urinary tract infection, *E coli* associated diarrheal diseases, *E. coli*-associated with Sepsis and *E coli*-associated with Meningitis. -*Klebsiella-Enterobacter-Serratia*: -Proteus-morganella-providencia group Shigella genus: Typical Organisms Culture, Growth Characteristics, Antigenic Structure, Pathogenesis & Pathology, Toxins, Clinical Findings and Diagnostic.	15	Quiz 3 Lec 9-12	
		Mid-term Exam:			
W8	**15** **16**	***Enteric Gram-Negative Rodes (Enterobacteriaceae) II: Salmonella*** Salmonella genus (Enteric Fevers (Typhoid Fever), Bacteremia With Focal Lesions, Enterocolitis) morphology & Identification, Classification, Variation, Pathogenesis & Clinical Findings, Diagnostic Laboratory Tests, Carriers, Sources of Infection.	15		

W9	**17** **18**	**Vibrios, Campylobacters, Helicobacter & Associated Bacteria** Vibrio cholera: morphology & Identification, V cholerae Enterotoxin, Pathogenesis & Pathology, Clinical Findings, diagnostic Laboratory Tests, -Campylobacter genus: (*C. jejuni* & C. *coli*), Diagnostic Laboratory Tests, Epidemiology & Control, -Helicobacter (*Helicobacter pylori*) Morphology & Identification, Pathogenesis &Pathology, Clinical Findings, Diagnostic Laboratory Tests. Immunity and treatment, Epidemiology & Control.	17	Quiz 4 Lec 13-16	
W10	**19** **20**	**Pseudomonads & Anaerobic Bacteria** Scientific content of the subject: Pseudomonas genus, opportunistic enterobacteria and Moraxella genera, Acinetobacter, Aeromonas and Plesiomonas. Bacteriological characteristics and classification. Ecology, pathogenic action, bacteriological diagnosis and infection control.	16		
W11	**21** **22**	**Haemophilus, Bordetelia & Legioneliae** **Haemophilus genus**: (*H. influenzae* , *Haemophilus ducreyi and Haemophilus aegyptius*) Morphology and culture, Pathogenesis and clinical pictures, Diagnosis., Therapy, Epidemiology and prevention, ***Bordetella* genus**: (*Bordetella pertussis*) Important Properties, Pathogenesis &Epidemiology, Clinical Findings, Laboratory Diagnosis, Prevention. ***Legionella* genus**: Classification, Morphology and culture, Pathogenesis and clinical picture, Legionnaire's disease & Pontiac fever, Diagnosis, Therapy, Epidemiology and prevention.	18	Quiz 5 Lec 17&20	
W12	**23** **24**	***Brucelia, Yersinia, Franciselia & Pasteurelia*** ***Brucella* genus**: bacteriological characteristics and classification. Brucellosis: pathogeny, bacteriological diagnosis and infection control. **Francisella genus**: Bacteriological characteristics and classification. ***F.tularensis.*** ***Tularèmia***: pathogeny, bacteriological diagnosis and infection control. ***Yersinia* genus**: bacteriological characteristics and classification. *Y. enterocolítica* and *Y. pseudotuberculosis*: Pathogenic action; bacteriological diagnosis and infection control. *Y. pestis*. **Bubonic plague**: pathogeny, bacteriological diagnosis and infection control.	18&19		**Test**

W13	**25** **26**	**The Neisseriae & Unusual Bacterial Pathogens *Neisseriae* genus** (*N. gonorrhoeae* and *N. meningitides*) : Bacteriological characteristics and classification. N. gonorrhoeae. Gonococcic urethritis: pathogeny, bacteriological diagnosis and infection control. *N. meningitidis*. Meningococcic meningitis: pathogeny, bacteriological diagnosis and infection control. **Bacteroides** (Gram-negative anaerobic bacteria): Morphology and culture, Pathogenesis and clinical pictures, Diagnosis, Therapy, Epidemiology and prevention.	20	Quiz 6 Lec 21&24	
W14	27 **28**	**Mycobacteria** *Mycobacterium* genus: bacteriological characteristics and classification. *M. tuberculosis*. Tuberculosis: pathogeny, bacteriological diagnosis and infection Control. *M. leprae*. Leprosy: pathogeny, bacteriological diagnosis and infection control. Atypical mycobacteria: pathogenic action; bacteriological diagnosis and infection control	23		
W15	29 **30**	Revision		Quiz 7 Lec 25&28	
W16		**Final Exam: All Lectures**			