Microbiology lesson plan for Medicine student- Practical

Saturday 10-12

Corresponding Teacher: Dr. Mojtahedi

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Introduction to laboratory safety, rules and equipment, culture media and streak methods	**Major:** Medicine	**Semester:**	**Theory / Practical:** Practical
Saturday 10-12 1405/07/18	**Session:** 1	**Teacher:** Dr.Mirkalantari Mrs. Shadkam	**Duration:** 120 min	**Number of students:**
General purpose: Principles of laboratory safety, rules and equipment, application of culture media and streak methods				
Objectives: -Familiarity of the student with the principles of working with autoclave - Familiarity of the student with the method of working with Four - Familiarity of the student with loops, Ances and how to sterilize them - Familiarity of the student with various sterilization methods - Familiarity of the student with the types of potential hazards when working with microorganisms - Familiarity of the student with the principles of biosafety in the microbiology laboratory -Knowing the principles of bacterial culture -Knowing the principles of different methods of bacterial culture -How to read and report the results of bacterial culture -Acquiring the skills required for performing the bacterial culture -Acquiring the skills required for reading and reporting the bacterial culture		**Learning area:** Cognitive - Skills	**Training method:** Lecture by power point	

Topic of the lesson	**Outline**	**Teaching approaches**	**Duration**
- Principles of sterilization methods		Lecture & group discussion	10
Types of equipment used in the microbiology laboratory		Lecture & group discussion	20
How to sterilize the loop		practical	10
Observance of the principles of biosafety		practical	10
Observe safety regulations in the laboratory		practical	10
Grouping and maintaining order		practical	10
Principles and types of bacterial culture methods		practical	20
Principle of performing and reporting of bacterial culture method		practical	20
Performing of bacterial culture by different methods		practical	20
Performing of bacterial culture method by student		practical	20
References:			
Training method: Lecture by power point, Scenario, Problem-based learning ,Q & A, Group discussion			
learning assist tools : Computer, Whiteboard, Training clips , Video projector			
Evaluation Method: Active attendance at the class , Participate in group discussion Final exam (Student guidance and familiarity with the exam is essential for students)			

School of Medicine

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Staining Simple (Metylen blue), compound (gram)	**Major:** Medicine	**Semester:**	**Theory / Practical:** Practical
Saturday 10-12 **1405/07/25**	**Session:** 2	**Teacher:** Dr. Mojtahedi Mrs. Zeynali	**Duration:** 120	**Number of students:**

General purpose: Principles and application of bacterial staining and acquisition of necessary skills for doing them

Objectives:	**Learning area:** **Cognitive-Skill**	**Training method:** Lecture, Practical
- Knowing the principles of staining of bacteria - Knowing the principles of different methods of bacterial staining - How to read and report the results of bacterial stain - Acquiring the skills required for performing the bacterial staining - Acquiring the skills required for observation and reporting the bacterial staining		

Topic of the lesson	**Duration**	**Outline**	**Teaching approaches**
Principles and types of bacterial staining methods	20 minutes		Lecture
Principle of performing and reporting of bacterial staining method	20 minutes		Lecture
Performing of bacterial staining by different methods	20 minutes		Practical
Performing of bacterial staining method by student	20 minutes		Practical
Summarizing the studied issues	20minutes		Group discussion

References: Mahon Diagnostic Microbiology, Baily and Scott's Diagnostic Microbiology

Training method: Lecture, practical, Problem-based learning ,Q & A, Group discussion

learning assist tools : Computer, Whiteboard, Training clips , Video projector

Evaluation Method: Active attendance at the class , Participating in doing methods and group discussion
Final exam (Student guidance and familiarity with the exam are essential for students)

School of Medicine

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Antibiogram (disk diffusion and E-test)	**Major:** Medicine	**Semester:**	**Theory / Practical:** Practical
Saturday 10-12 1405/08/02	**Session:** 3	**Teacher:** Dr. Razavi Mrs. Najafi	**Duration:** 120 min	**Number of students:**

General purpose: Principles and application of antibiogram methods and acquisition of necessary skills for doing it

Objectives: - Knowing the principles of antibiotic susceptibility test - Knowing the principles of different methods of antibiogram - How to read and report the results of antibiogram methods - Acquiring the skills required for performing the diffusion disc method - Acquiring the skills required for reading and reporting the diffusion disc method	**Learning area: Cognitive-Skill**	**Training method:** Lecture, Practical	
Topic of the lesson	**Duration**	**Outline**	**Teaching approaches**
Principles and types of antibiogram methods	20 minutes		Lecture
Principle of performing and reporting of disc diffusion method	20 minutes		Lecture
Performing of disc diffusion method by teacher	20 minutes		Practical
Performing of disc diffusion method by student	40 minutes		Practical
Summarizing the studied issues	20 minutes		Group discussion

References: Mahon Diagnostic Microbiology, Baily and Scott's Diagnostic Microbiology

Training method: Lecture, practical, Problem-based learning ,Q & A, Group discussion

learning assist tools : Computer, Whiteboard, Training clips , Video projector

Evaluation Method: Active attendance at the class , Participating in doing methods and group discussion
Final exam (Student guidance and familiarity with the exam are essential for students)

School of medicine

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Blood Culture, Throat culture, Staphylococcaceae, study of previous session results	**Major:** Medicine	**Semester:**	**Theory / Practical:** Practical
Saturday 10-12 1405/08/09	**Session:** 4	**Teacher:** Dr. Dehghan Mrs. Baseri	**Duration:** 120 min	**Number of students:**

General purpose: Observing and performing the routine laboratory methods for diagnosis of Staphylococcaceae family, Blood Culture, Throat culture

Objectives:	**Learning area: Cognitive-Skill**	**Training method:** Lecture, Practical	
- Knowing the different laboratory methods for diagnosis of staphylococcus genus - Knowing the different laboratory methods for diagnosis of *Staphylococcus aureus* - Knowing the different laboratory methods for diagnosis of *Staphylococcus epidermidis and Staphylococcus saprophyticus* - Knowing how to prepare a specimen for blood culture - Knowing how to culture blood specimens - Knowing how to prepare a specimen for throat culture - Observing and performing of the routine diagnostic methods for *S. aureus*, *S. epidermidis*, *S. saprophyticus*			
Topic of the lesson	**Duration**	**Outline**	**Teaching approaches**
-Different laboratory methods for diagnosis of staphylococcus genus	10 minutes		Lecture
-Different laboratory methods for diagnosis of *Staphylococcus aureus*	10minutes		Lecture
-Different laboratory methods for diagnosis of *Staphylococcus epidermidis and Staphylococcus saprophyticus*	10minutes		Lecture

-Preparing a specimen for blood culture and culturing blood specimens	20minutes		Practical
-Preparing a specimen for throat culture	20minutes		practical
- Viewing smears of Staphylococcus	10 minutes		Practical
-Observing and doing the routine diagnostic methods for *S. aureus*, *S. epidermidis*, *S. saprophyticus* identification	60 minutes		Practical
References: Mahon Diagnostic Microbiology, Baily and Scott's Diagnostic Microbiology			
Training method: Lecture, practical, Problem-based learning ,Q & A, Group discussion			
learning assist tools : Computer, Whiteboard, Training clips , Video projector			
Evaluation Method: Active attendance at the class , Participating in doing methods and group discussion Final exam (Student guidance and familiarity with the exam are essential for students)			

School of medicine

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Body fluids culture (CSF), Streptococcaceae, Neisseriaceae, study of previous session results	**Major:** Medicine	**Semester:**	**Theory / Practical:** Practical
Saturday 10-12 1405/08/16	**Session:** 5	**Teacher:** Dr. Dehghan Mrs. Kadivarian	**Duration:** 120 min	**Number of students:**

General purpose: Observing and performing the routine laboratory methods for diagnosis of Body fluids culture (CSF), Streptococcaceae, Neisseriaceae

Objectives:	**Learning area: Cognitive-Skill**	**Training method:** Lecture, Practical
- Knowing the different laboratory methods for diagnosis of streptococcus genus - Knowing the different laboratory methods for diagnosis of *Streptococcus pyogenes* - Knowing the different laboratory methods for diagnosis of *Streptococcus agalactiae* - Knowing the different laboratory methods for diagnosis of *Streptococcus pneumoniae* - Knowing the different laboratory methods for diagnosis of *Enterococcus* - Knowing how to prepare a specimen for CSF - Knowing how to culture CSF - Observing and performing of the routine diagnostic methods for Neisseriaceae -		

Topic of the lesson	**Duration**	**Outline**	**Teaching approaches**
- Different laboratory methods for diagnosis of *Streptococcus pyogenes*, *Streptococcus agalactiae*, *Streptococcus pneumoniae* and *Enterococcus*	20 minutes		Lecture
- Principles of CSF sampling and culture method	10minutes		Lecture
- Preparing a specimen for CSF culture and culturing	20minutes		Practical
- Viewing smears of Streptococcus	10minutes		Practical
- Observing and doing the routine diagnostic methods for *Streptococcus pyogenes*, *Streptococcus agalactiae*, *Streptococcus pneumoniae* and Enterococcus	40 minutes		Practical
- Different laboratory methods for diagnosis of Neisseriaceae	20minutes		Practical

References: Mahon Diagnostic Microbiology, Baily and Scott's Diagnostic Microbiology
Training method: Lecture, practical, Problem-based learning ,Q & A, Group discussion
learning assist tools : Computer, Whiteboard, Training clips , Video projector
Evaluation Method: Active attendance at the class , Participating in doing methods and group discussion Final exam (Student guidance and familiarity with the exam are essential for students)

Medical School

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Enterobacteriaceae (lactose positive bacteria), Urine culture, study of previous session results	**Major:** Medicine	**Semester:**	**Theory / Practical:** Practical
Saturday 10-12 1405/08/23	**Session:** 6	**Teacher:** Dr.Razavi Mr.Asadzadegan	**Duration :** 120 min	**Number of students:**

General purpose:

Objectives:	**Learning area:**	**Training method:**
- Familiarity of students with different laboratory methods of identifying Enterobacteriaceae - Familiarity of the student with how to do urine culture - View smears related to gram-negative bacilli - Familiarity of the student with how to report urine culture	Cognitive - Skills	Lecture by power point

Duration	**Topic of the lesson**	**Outline**	**Teaching approaches**
45min	- Familiarity of students with different laboratory methods of identifying Enterobacteriaceae		Lecture & group discussion & practical

30min	- Familiarity of the student with how to do urine & culture		Lecture & group discussion & practical
15min	- View smears related to gram-negative bacilli		Lecture & group discussion & practical
15min	- Familiarity of the student with how to report urine & culture		Lecture & group discussion & practical
References:			
Training method: Lecture by power point, Scenario, Problem-based learning ,Q & A, Group discussion			
learning assist tools : Computer, Whiteboard, Training clips , Video projector			
Evaluation Method: Active attendance at the class , Participate in group discussion Final exam (Student guidance and familiarity with the exam is essential for students)			

Medical School

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Enterobacteriaceae (lactose negative bacteria), stool culture, study of previous session results	**Major:** Medicine	**Semester:**	**Theory / Practical:** Practical
Saturday 10-12 **1405/08/30**	**Session:** 7	**Teacher:** Dr.Razavi Mr. Biglari	**Duration:** 120 min	**Number of students:**
General purpose:				
Objectives: - Familiarity of students with different laboratory methods of identifying Enterobacteriaceae - Familiarity of the student with how to do stool culture - View smears related to gram-negative bacilli - Familiarity of the student with how to report stool culture	**Learning area:** Cognitive - Skills	**Training method:** Lecture by power point		
Duration	**Topic of the lesson**	**Outline**	**Teaching approaches**	

45min	- Familiarity of students with different laboratory methods of identifying Enterobacteriaceae		Lecture & group discussion & practical
30min	- Familiarity of the student with how to do stool culture		Lecture & group discussion & practical
15min	- View smears related to gram-negative bacilli		Lecture & group discussion & practical
15min	- Familiarity of the student with how to report stool culture		Lecture & group discussion & practical
References:			
Training method: Lecture by power point, Scenario, Problem-based learning ,Q & A, Group discussion			
learning assist tools : Computer, Whiteboard, Training clips , Video projector			
Evaluation Method: Active attendance at the class , Participate in group discussion Final exam (Student guidance and familiarity with the exam is essential for students)			

Medical School

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Non fermentative bacteria, Hand culture, study of previous session results	**Major:** Medicine	**Semester:**	**Theory / Practical:** Practical
Saturday 10-12 1405/09/07	**Session:** 8	**Teacher:** Dr.Mojtahedi Mr. Amini	**Duration :** 120 min	**Number of students:**

General purpose:

Objectives: Familiarity of students with the appearance and classification of non-fermentative gram-negative bacilli, pathogenicity and diseases of their important species, their treatment and prevention	**Learning area:** Cognitive - Skills	**Training method:** Lecture by power point	
Duration	**Topic of the lesson**	**Outline**	**Teaching approaches**
25min	Characteristics of Pseudomonas Classification		Lecture & group discussion

	Culture media		
35min	Important characteristics of Pseudomonas aeruginosa Importance in nosocomial infections Causing diseases Laboratory diagnosis of resulting infections Epidemiology, and ways of transmitting the resulting infections Treatment and prevention		Lecture & group discussion
40min	Important properties of Burcholdria pseudomalea, Malay, Cepassia complex and Gladiolus Types of Burcholdia and how each of them is pathogenic Laboratory diagnosis Epidemiology and ways of disease transmission by each Treatment and prevention		Lecture & group discussion
20min	Other important species of Pseudomonas are Stenotrophomonas, Acinetobacter Diseases caused by these species are important in		Lecture & group discussion

	nosocomial infections Epidemiology and their transmission Treatment and prevention of diseases		
20	Culture of bacteria		practical
20	Hand culture		practical
References:			
Training method: Lecture by power point, Scenario, Problem-based learning ,Q & A, Group discussion			
learning assist tools : Computer, Whiteboard, Training clips , Video projector			
Evaluation Method: Active attendance at the class , Participate in group discussion Final exam (Student guidance and familiarity with the exam is essential for students)			

Medical School

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Corynebacterium, Listeria, Clostridium, Bacillus, Vibrionaceae, Helicobacter, Mycobacterium, study of previous session results, Teeth culture	**Major:** Medicine	**Semester:**	**Theory / Practical:** Practical
Saturday 10-12 1405/09/14	**Session:** 9	**Teacher:** Dr.Mirkalantari Mr. Shirvandehi	**Duration:** 120 min	**Number of students:**

General purpose:

Objectives:	**Learning area:** Cognitive - Skills	**Training method:** Lecture by power point	
Duration	**Topic of the lesson**	**Outline**	**Teaching approaches**
10	Place of **Corynebacterium diphtheriae, Listeria, Actinomycet - Bacillus - Clostridium - Vibrio- Helicobacter, Mycobacterium**		Lecture & group discussion
10	Detecting these bacteria is based on their shape,		Lecture & group discussion
	growth on differential culture media and biochemical traits.		
10	Different diagnostic tests are recommended for bacteria		Lecture & group discussion, practical

60	Describe the tests		Lecture & group discussion, practical
References:			
Training method: Lecture by power point, Scenario, Problem-based learning ,Q & A, Group discussion			
learning assist tools : Computer, Whiteboard, Training clips , Video projector			
Evaluation Method: Active attendance at the class , Participate in group discussion Final exam (Student guidance and familiarity with the exam is essential for students)			