The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Introduction to laboratory safety, rules and equipment	**Major:** Pharmacy	**Semester:** 4	**Theory / Practical:** Practical
	Session: 1	**Teacher:** Dr.Razavi	**Duration :** 120 min	**Number of students:**
General purpose:				
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	**Learning area:** Cognitive - Skills	**Training method:** Lecture by power point		

- 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			
Duration	**Topic of the lesson**	**Outline**	**Teaching approaches**
10min	- Principles of sterilization methods		Lecture & group discussion
10min	Types of equipment used in the microbiology laboratory		Lecture & group discussion
10min	How to sterilize the loop		practical
10min	Observance of the principles of biosafety		practical
10min	Observe safety regulations in the laboratory		practical
20min	Grouping and maintaining order		
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:** Culture and Staining	**Major:** Pharmacy, Medicine	**Semester:** 4	**Theory / Practical:** Practical
	Session: 2	**Teacher:** Dr. Mirkalantari	**Duration :** 135 min	**Number of students:** 60

General purpose: Principles and application of bacterial culture methods, staining of bacteria and acquisition of necessary skills for doing them

Objectives:	**Learning area:**	**Training method:**
- 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 - 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	**Cognitive- Skill**	Lecture, Practical

Topic of the lesson	**Duration**	**Outline**	**Teaching approaches**
Principles and types of bacterial culture methods	15minutes		Lecture
Principle of performing and reporting of bacterial culture method	15 minutes		Lecture
Performing of bacterial culture by different methods	15 minutes		Practical
Performing of bacterial culture method by student	15 minutes		Practical
Principles and types of bacterial staining methods	15 minutes		Lecture

Principle of performing and reporting of bacterial staining method	15 minutes		Lecture
Performing of bacterial staining by different methods	15 minutes		Practical
Performing of bacterial staining method by student	15 minutes		Practical
Summarizing the studied issues	15 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:	**Title:**	**Major:**	**Semester:**	**Theory / Practical:**
Microbiology	Antibiotic susceptibility test, Study of previous session results	Pharmacy, Medicine	4	Practical
	Session:	**Teacher:**	**Duration :**	**Number of students:**
	3	Dr. Darban	120 min	60
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			**Learning area:** **Cognitive- Skill**	**Training method:** Lecture, Practical

- 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			
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:	**Title:**	**Major:**	**Semester:**	**Theory / Practical:**
Microbiology	Staphylococcaceae, Blood Culture	Pharmacy, Medicine	4	Practical
	Session:	**Teacher:**	**Duration :**	**Number of students:**
	4	Dr. Talebi	120 min	60
General purpose: Observing and performing the routine laboratory methods for diagnosis of Staphylococcaceae family				

Objectives: - 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 - Observing and performing of the routine diagnostic methods for *S. aureus*, *S. epidermidis*, *S. saprophyticus*	**Learning area: Cognitive-Skill**	**Training method:** Lecture, Practical	
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
- 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:** Streptococcaceae, Throat Culture	**Major:** Pharmacy, Medicine	**Semester:** 4	**Theory / Practical:** Practical
	Session: 5	**Teacher:** Dr. Talebi	**Duration :** 120 min	**Number of students:** 60

General purpose: Observing and performing the routine laboratory methods for diagnosis of Streptococcaceae family

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 throat culture - Knowing how to culture throat specimens - Observing and performing of the routine diagnostic methods for *Streptococcus pyogenes*, *Streptococcus agalactiae, Streptococcus pneumoniae* and Enterococcus -		

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 throat sampling and culture method	10minutes		Lecture
- Preparing a specimen for throat culture and culturing throat specimens	20minutes		Practical
- Viewing smears of Streptococcus	10minutes		Practical

- Observing and doing the routine diagnostic methods for *Streptococcus pyogenes*, *Streptococcus agalactiae, Streptococcus pneumoniae* and Enterococcus	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)			

Medical School

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Enterobacteriaceae (lactose positive and negative bacteria), Urine culture, study of previous session results	**Major:** Pharmacy	**Semester:** 4	**Theory / Practical:** Practical
	Session: 6	**Teacher:** Dr.Razavi	**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 & 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 urine & 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)

School of medicine

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Vibrio	**Major:** Pharmacy, Medicine	**Semester:** 4	**Theory / Practical:** Practical
	Session: 7	**Teacher:** Dr. Talebi	**Duration :** 120 min	**Number of students:** 60
General purpose: Observing and performing the routine laboratory methods for diagnosis of Vibrio				
Objectives: - Knowing the different laboratory methods for Vibrio Isolation - Knowing the different laboratory methods for diagnosis of *Vibrio genus* - Knowing the different laboratory methods for diagnosis of *Vibrio cholerae* - Knowing the different laboratory methods for diagnosis of *Vibrio cholerae biotypes*			**Learning area: Cognitive-Skill**	**Training method:** Lecture, Practical

Topic of the lesson	**Duration**	**Outline**	**Teaching approaches**
-Different laboratory methods for Vibrio Isolation	10 minutes		Lecture
-Different laboratory methods for diagnosis of *Vibrio genus*	10minutes		Lecture
-Different laboratory methods for diagnosis of *Vibrio cholerae*	10minutes		Lecture
-Different laboratory methods *Vibrio cholerae biotypes*	10minutes		Lecture
- Viewing smears of *Vibrio cholerae*	10 minutes		Practical

-Observing and doing the routine diagnostic methods for *Vibrio cholerae biotypes*	70 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)			

Medical School

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Non fermentative bacteria , Wound culture , study of previous session results	**Major:** Pharmacy	**Semester:** 4	**Theory / Practical:** Practical
	Session: 8	**Teacher:** Dr.Razavi	**Duration :** 120 min	**Number of students:**
General purpose:				
Objectives: Familiarity of students with the appearance and classification of non-	**Learning area:** Cognitive - Skills	**Training method:** Lecture by power point		

fermentative gram-negative bacilli, pathogenicity and diseases of their important species, their treatment and prevention			
Duration	**Topic of the lesson**	**Outline**	**Teaching approaches**
25min	Characteristics of Pseudomonas Classification Culture media		Lecture & group discussion
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		Lecture & group discussion

	Epidemiology and ways of disease transmission by each Treatment and prevention		
20min	Other important species of Pseudomonas are Stenotrophomonas, Acinetobacter Diseases caused by these species are important in nosocomial infections Epidemiology and their transmission Treatment and prevention of diseases		Lecture & group discussion
			Lecture & group discussion
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)			

The Structure of the Lesson Plan

Lesson: Microbiology	**Title:** Corynebacterium ,Listeria, Clostridium, Bacillus , Spirochetes, study of previous session results	**Major:** Pharmacy	**Semester:** 4	**Theory / Practical:** Practical
	Session: 9	**Teacher:** Dr.Masjedian	**Duration :** 120 min	**Number of students:**

General purpose:

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

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:	**Title:**	**Major:**	**Semester:**	**Theory / Practical:**
Microbiology	Mycobacterium, Actinomycetes, Sputum culture	Pharmacy, Medicine	4	Practical
	Session:	**Teacher:**	**Duration :**	**Number of students:**
	10	Dr. Darban	120 min	60

General purpose: Observing and performing the routine laboratory methods for diagnosis of Mycobacteria and Actinomycetes

Objectives:	**Learning area:**	**Training method:**
- Knowing the different laboratory methods for diagnosis of Mycobacteria - Knowing the different laboratory methods for diagnosis of Actinomycetes - Knowing how to prepare the smear and culturing the sputum - Viewing smears of Mycobacteria and Actinomycetes - Observing and performing of the routine diagnostic methods for Mycobacteria	**Cognitive- Skill**	Lecture, Practical

- Observing and performing of the routine diagnostic methods for Actinomycetes			
Topic of the lesson	**Duration**	**Outline**	**Teaching approaches**
Different laboratory methods for diagnosis of Mycobacteria and sputum culture	20 minutes		Lecture
Different laboratory methods for diagnosis of Actinomycetes	20 minutes		Lecture
Viewing smears of Mycobacteria and Actinomycetes	20 minutes		Practical
Observing and doing the routine diagnostic methods for Mycobacteria	40 minutes		Practical
Observing and doing the routine diagnostic methods for Actinomycetes	20 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)			