

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
MOLECULAR TECHNIQUES in CLINICAL MICROBIOLOGY	MKBD2131390	Fall Semester	2+4	4	15
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	Turkish				
Course Level	Third Cycle (Doctorate Degree)				
Course Type	Elective				
Course Coordinator	Assist.Prof. Özlem GÜVEN				
Name of Lecturer(s)	Assist.Prof. Özlem GÜVEN				
Assistant(s)					
Aim	To explain the molecular biology techniques used in the detection and identification of microorganisms in samples and to determine antimicrobial resistance and to apply basic techniques.				
Course Content	This course contains; Access to microorganism genetic information (websites, programs and usage application),Methods used in nucleic acid isolation,Polymerase chain reaction (PCR),Quantitative polymerase chain reaction (qPCR),Methods used in RNA detection; RT-PCR, RT-qPCR,Dijital PCR,Sanger sequencing method,Next generation sequencing methods - I,Next generation sequencing methods - II,Microbial whole genome sequencing: application in clinical microbiology and public health,Methods used in microorganism genotyping,Current methods in molecular microbiology laboratory,Technical problems and solution suggestions encountered in the methods used in molecular biology,Problems and solution suggestions regarding specificity, sensitivity and interpretation of results in molecular microbiology tests.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
Explains molecular methods used in the field of microbiology and applies basic methods.			10, 16, 17, 9	A	
Evaluates the problems encountered in molecular biology tests and offers solutions.			10, 16, 17, 9	A	
Lists the sources of access to genetic information and the computer programs used.			16, 6, 9	A	
Teaching Methods	10: Discussion Method, 16: Question - Answer Technique, 17: Experimental Technique, 6: Experiential Learning, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Access to microorganism genetic information (websites, programs and usage application)				
2	Methods used in nucleic acid isolation				
3	Polymerase chain reaction (PCR)				
4	Quantitative polymerase chain reaction (qPCR)				
5	Methods used in RNA detection; RT-PCR, RT-qPCR				
6	Dijital PCR				
7	Sanger sequencing method				
8	Next generation sequencing methods - I				
9	Next generation sequencing methods - II				
10	Microbial whole genome sequencing: application in clinical microbiology and public health				
11	Methods used in microorganism genotyping				
12	Current methods in molecular microbiology laboratory				
13	Technical problems and solution suggestions encountered in the methods used in molecular biology				
14	Problems and solution suggestions regarding specificity, sensitivity and interpretation of results in molecular microbiology tests				
Evaluation Methods		Weight(%)			
Midterm Exam		50			
General Exam		50			

Resources
1. Koneman's Color Atlas And Textbook of Diagnostic Microbiology. 7th ed. Jones & Bartlett Learning; 2016.
2. PCR Detection of Microbial Pathogens. Humana Press, 2016.
3. Molecular Microbiology: Diagnostic Principles and Practice. 3. Edt. ASM Press, 2016