



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title	Metagenomic Analysis of Microbiome								
Course Code	MIK668		Course Level		Third Cycle (Doctorate Degree)				
ECTS Credit	4	Workload	97 (Hours)	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	The objective of this course is to give information about the metagenomic analysis of microbiome								
Course Content	It is necessary to learn and practice whole laboratory steps of microbiome analysis, to be able to transfer the knowledge on microbiota and microbiome to the field and clinical application. For this reason, this course contains the main methods used in the laboratory analysis of microbiota and microbiome; laboratory steps of microbiome analysis by new generation sequencing; determination of target genes, library construction; wet lab steps on the basis of different NGS systems; use of bioinformatic tools and databases; bioinformatic analysis, filtering and quality control of data; sampling and processing of microbiome material; statistical analysis and presentation of microbiome data.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Demonstration, Discussion, Case Study								
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	A Beginner's Guide for Metagenome Analysis
2	Metagenomics for Microbiology

Week Weekly Detailed Course Contents & Teaching Methods

Week	Weekly Detailed Course Contents & Teaching Methods	
1	Theoretical & Practice	Laboratory analysis of microbiota and microbiome: general principles - Introduction of equipment
2	Theoretical & Practice	Microbiota analysis by bacteriological culturing - Microbiota analysis by bacteriological culturing
3	Theoretical & Practice	Microbiome analysis by real-time PCR - Microbiome analysis by real-time PCR
4	Theoretical & Practice	Microbiome analysis by new generation sequencing (NGS) - Microbiome analysis by new generation sequencing (NGS)
5	Theoretical & Practice	Target genes used in microbiome analysis - Target genes used in microbiome analysis
6	Theoretical & Practice	Library construction for microbiome analysis - Library construction for microbiome analysis
7	Theoretical & Practice	Laboratory protocols for microbiome analysis with NGSs - Laboratory protocols for microbiome analysis with NGSs
8	Theoretical & Practice	Bioinformatic tools for microbiome analysis
9	Theoretical & Practice	Processing of sequence data for microbiome analysis
10	Theoretical & Practice	Processing of sequence data for microbiome analysis
11	Theoretical & Practice	The use of reference database in microbiome analysis
12	Theoretical & Practice	Filtering and taxonomic control of microbiome data
13	Theoretical & Practice	Determination of uncultured microorganism by shot-gun sequencing
14	Theoretical & Practice	Sampling and processing of microbiome material, Statistical analysis and presentation of microbiome data

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Lecture - Practice	14	0	2	28
Assignment	5	2	1	15
Reading	1	5	2	7
Midterm Examination	1	5	2	7



Final Examination	1	10	2	12
Total Workload (Hours)				97
[Total Workload (Hours) / 25*] = ECTS				4
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	1. To know sampling and pre-processing steps for microbiome analysis
2	2. To know and be able to perform NGS steps
3	3. To know and be able to perform bioinformatic tools
4	4. To be able to control and evaluate microbiome data
5	5. To be able to perform Metagenomic analysis by him/her self

Programme Outcomes (Microbiology (Veterinary Medicine) Doctorate)

1	Department has the ability to identify and apply information about bacteriology, virology, mycology and has the ability to recognize diseases about veterinary medicine.
2	Department has the ability to take the advantage of technology and has the ability to diagnose, treat and prevent the diseases by using appropriate equipments.
3	Department has the ability to analyze the epidemiological compounds of an animal population and has the ability to get precautions.
4	Department has the ability to test or analyze the diseases and has the ability to evaluate the results.
5	Department has the ability to perform, produce and conclude projects for scientific researches.
6	Department has the ability to donate theoretical and practical knowledge about postgraduate students in the are of microbiology.
7	Graduate students has the ability to perform scientific researches.

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	3	5	4	4	4
P2	5	5	5	5	5
P3	4	3	5	5	4
P4	4	4	4	4	4
P5	4	4	4	3	4
P6	5	3	5	3	5
P7	3	4	5	4	4

