



**AYDIN ADNAN MENDERES UNIVERSITY  
GRADUATE SCHOOL OF HEALTH SCIENCES  
VETERINARY FOOD HYGIENE AND TECHNOLOGY  
FOOD HYGIENE AND TECHNOLOGY (VETERINARY)  
FOOD HYGIENE AND TECHNOLOGY (VETERINARY) MASTER  
COURSE INFORMATION FORM**

Course Title	Advanced Laboratory Techniques								
Course Code	VBH531	Course Level			Second Cycle (Master's Degree)				
ECTS Credit	3	Workload	75 (Hours)	Theory	1	Practice	2	Laboratory	0
Objectives of the Course	The aim of this lecture is to give detailed information about advanced laboratory applications used in food microbiology								
Course Content	ELISA (Enzyme Linked Immunosorbent Assay). RIA (Radio Immun Assay). CFT (Complement Fixation). Hemagglutination, hemagglutination inhibition, immunodiffusion (agar-gel precipitation, immunoelectrophoresis, zone electrophoresis), immunohistochemical methods (direkt and indirekt immunfleurosans), molecular techniques,. Immunofleurosans. Examination of foods for Listeria. Examination of milk and dairy products for Brucella. Detection of bacterial toxins in foods								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Experiment, Demonstration, Discussion, Individual Study, Problem Solving								
Name of Lecturer(s)									

#### Assessment Methods and Criteria

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

#### Recommended or Required Reading

1	Koneman's Color Atlas and Textbook of Diagnostic Microbiology
2	Bergey's manual of systematic bacteriology
3	Handbook of Vertebrate Immunology
4	Veterinary Laboratory Medicine
5	The ELISA Guidebook
6	Temel Mikrobiyoloji
7	İmmunoloji
8	Compendium for foods

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to conventional methods in food microbiology
	Practice	Presentation of instruments and equipment and medias used in microbiological analysis
2	Theoretical	Routine applications in conventional microbiological analysis
	Practice	Routine practices
3	Theoretical	Salmonella detection methods in food
	Practice	Practice on Salmonella detection methods
4	Theoretical	Campylobacter detection methods in food
	Practice	Practice on Campylobacter detection methods
5	Theoretical	Listeria detection methods in food
	Practice	Practice on Listeria detection methods
6	Theoretical	Yersinia detection methods in food
	Practice	Practice on Yersinia detection methods
7	Theoretical	Pseudomonas, mold, and yeast detection methods in food
	Practice	Practice on Pseudomonas, mold, and yeast detection methods
8	Intermediate Exam	Midterm exam
9	Theoretical	Coliform, and E. coli detection methods in food
	Practice	Practice on Coliform, and E. coli detection methods
10	Theoretical	Sulfide reduction bacteria detection methods in food
	Practice	Practice on Sulfide reduction bacteria detection methods



11	Theoretical	ELISA test
	Practice	Practice on ELISA test
12	Theoretical	Polymerase Chain Reaction (PCR)
	Practice	Practice on PCR
13	Theoretical	Multiplex PCR method
	Practice	Practice on Multiplex PCR method
14	Theoretical	Immunomanetic Separation (IMS)
	Practice	Practice on Immunomanetic Separation (IMS)
15	Theoretical	Searching for antibiotics
	Practice	Practice on searching for antibiotics

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	1	14
Lecture - Practice	14	0	2	28
Midterm Examination	1	9	1	10
Final Examination	1	22	1	23
Total Workload (Hours)				75
[Total Workload (Hours) / 25*] = ECTS				3

\*25 hour workload is accepted as 1 ECTS

### Learning Outcomes

1	To gain sufficient knowledge about advanced laboratory techniques
2	To have sufficient knowledge related with ELISA (Enzyme Linked Immunosorbent Assay). RIA (Radio Immun Assay), CFT (Complement Fixation) molecular techniques
3	To know detailed knowledge about Hemagglutination, hemagglutination inhibition, immunodiffusion (agar-gel precipitation, immunoelectrophoresis, zone electrophoresis),
4	To have sufficient information related with immunohistochemical methods (direct and indirect immunofluorescence), immunofluorescence.
5	To have experience to diagnose Listeria and Brucella in food
6	To gain the ability to use the basic knowledge related with advanced molecular applications in food science.

### Programme Outcomes (Food Hygiene and Technology (Veterinary) Master)

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

	L1	L2	L3	L4	L5	L6
P1	5	5	5	5	5	5
P2	5	5	5	5	5	5
P3	5	5	5	5	5	5
P4	5	5	5	4	5	5
P6	5	5	5	5	5	
P9	4	5	5	5	5	5



P10	5	5	5	5	5	5
P11						5
P12						5

