# AYDIN ADNAN MENDERES UNIVERSITY
# COURSE INFORMATION FORM

| Course Title | Advanced Laboratory Techniques | | | | | | |
|---|---|---|---|---|---|---|---|
| Course Code | VBH531 | | Couse 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). Hemaglutination, hemaglutination 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 |

| 11 | 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 Seperation (IMS) |
|    | Practice | Practice on Immunomanetic Seperation (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 Hemaglutination, hemaglutination 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 Medicine) Master)*

| 1 | |
|---|---|
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |

## 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 |