



**AYDIN ADNAN MENDERES UNIVERSITY**  
**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**  
**FIELD CROPS**  
**FIELD CROPS**  
**FIELD CROPS MASTER**  
**COURSE INFORMATION FORM**

|  |  |          |              |        |                                |          |   |            |   |
|--|--|----------|--------------|--------|--------------------------------|----------|---|------------|---|
| Course Title                                     | Techniques in Molecular Biology I  |          |              |        |                                |          |   |            |   |
| Course Code                                      | BİO543   |          | Course Level |        | Second Cycle (Master's Degree) |          |   |            |   |
| ECTS Credit                                      | 8  | Workload | 199 (Hours)  | Theory | 2                              | Practice | 2 | Laboratory | 0 |
| Objectives of the Course                         | The goal of the course is to teach general molecular biology techniques  |          |              |        |                                |          |   |            |   |
| Course Content                                   | Genomic and plasmid DNA extraction from different organism and tissues, Nucleic acid detection and separation, mutation detection, PCR, PAGE, Agarose gel electrophoresis. |          |              |        |                                |          |   |            |   |
| Work Placement                                   | N/A  |          |              |        |                                |          |   |            |   |
| Planned Learning Activities and Teaching Methods | Explanation (Presentation), Discussion, Individual 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                               | Lecturer notes   |
| 2                               | Sambrook and Russell,(2001) Molecular Cloning, Cold Spring Harbor Laboratory Press, ISBN-0-87969-577-3       |
| 3                               | Temizkan G.,Arda N.(Ed.)(2004),Moleküler Biyolojide Kullanılan Yöntemler,Nobel Kitapevleri,ISBN975-420-347-4 |
| 4                               | Levin B., (2004)Genes VIII, Pearson Education Inc. ISBN-0-19-508956-1  |

| Week | Weekly Detailed Course Contents |  |
|------|---------------------------------|--|
| 1    | Theoretical                     | Structure of biomolecules                      |
| 2    | Theoretical                     | Concentration calculation and buffer solutions |
| 3    | Theoretical                     | General purification methods                   |
| 4    | Theoretical                     | DNA extraction from animals tissues            |
| 5    | Theoretical                     | DNA extraction from plant tissues              |
| 6    | Theoretical                     | DNA extraction from bacteria                   |
| 7    | Theoretical                     | Plazmid DNA extraction                         |
| 8    | Theoretical                     | Fungus DNA extraction                          |
| 9    | Theoretical                     | Methods working with proteins                  |
| 10   | Theoretical                     | Detection of nucleic acid concentration        |
| 11   | Theoretical                     | Agarose gel electrophoresis                    |
| 12   | Intermediate Exam               | Midterm Exam                                   |
| 13   | Theoretical                     | PAGE (Poliacrylamide Gel Electrophoresis)      |
| 14   | Theoretical                     | PCR (Polimerase Chain Reaction)                |
| 15   | Theoretical                     | Restriction endonucleases                      |
| 16   | Theoretical                     | RNA extraction                                 |
| 17   | Final Exam                      | Final Exam                                     |

| Workload Calculation |          |             |          |                |
|----------------------|----------|-------------|----------|----------------|
| Activity             | Quantity | Preparation | Duration | Total Workload |
| Lecture - Theory     | 15       | 2           | 2        | 60             |
| Lecture - Practice   | 15       | 1           | 2        | 45             |
| Assignment           | 2        | 10          | 2        | 24             |
| Midterm Examination  | 1        | 28          | 2        | 30             |



|   |   |    |   |     |
|---|---|----|---|-----|
| Final Examination                       | 1 | 38 | 2 | 40  |
| Total Workload (Hours)                  |   |    |   | 199 |
| [Total Workload (Hours) / 25*] = ECTS   |   |    |   | 8   |
| *25 hour workload is accepted as 1 ECTS |   |    |   |     |

### Learning Outcomes

|   |   |
|---|---|
| 1 | To be able to comprehend biomolecule extraction from the cell |
| 2 | To be able to comprehend Primer design and PCR                |
| 3 | To be able to comprehend Restriction endonucleases            |
| 4 | To be able to comprehend electrophoresis techniques           |
| 5 | To be able to comprehend mutation detection methods           |

### Programme Outcomes (Field Crops Master)

|    |   |
|----|---|
| 1  | To be able to improve and deepen the level of expertise in field crops on the basis of the departments licenses qualifications.   |
| 2  | To be able to recognize the subjects related to field crops, to be able to solve these and make interpretation.   |
| 3  | To be able to have the skills of acting independently, to have power to decide and to create.   |
| 4  | To be able to work in teams between departments   |
| 5  | To be able to give briefing about latest information of Field Crops in written, oral and visual ways.   |
| 6  | To be able to take responsibility for developing the new approaches and to formulate a solution facing unforeseen complex situations of applications,   |
| 7  | To be able to defend the original opinions in both Turkish and in foreign languages by using these languages and communicating effectively.   |
| 8  | To be able to contribute to science by producing knowledge for the aim of improving quality, efficiency and sustainability  |
| 9  | To be able to apply breeding methods in order to improve new varieties for Field Crops.   |
| 10 | To be able to maintain and select the appropriate statistical methods within the framework of the study, evaluation of scientific ethics; to convert the results into a report/dissertation and to offer them by producing scientific publications. |

### 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  | 4  | 3  | 4  | 3  | 4  |
| P2  | 4  | 3  | 4  | 3  | 4  |
| P3  | 4  | 3  | 4  | 3  | 4  |
| P4  | 4  | 3  | 4  | 3  | 4  |
| P5  | 4  | 3  | 4  | 3  | 4  |
| P6  | 4  | 3  | 4  | 3  | 4  |
| P7  | 4  | 3  | 4  | 3  | 4  |
| P8  | 4  | 3  | 4  | 3  | 4  |
| P9  | 4  | 3  | 4  | 3  | 4  |
| P10 | 4  | 3  | 4  | 3  | 4  |

