



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

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|--|---|---|------------|--|---|---------------------------------|---|------------|---|
| Course Title | | Biotechnological Control Methods in Agriculture | | | | | | | |
| Course Code | | TBY328 | | Course Level | | First Cycle (Bachelor's Degree) | | | |
| ECTS Credit | 3 | Workload | 75 (Hours) | Theory | 2 | Practice | 0 | Laboratory | 0 |
| Objectives of the Course | | It is aimed to learn of biotechnical practise in the control against pest and disease. | | | | | | | |
| Course Content | | Plant molecular methods for the diagnosis of diseases and pests, beneficial organisms, resistance genes used in the control against diseases and pests, microbial simbiot and herbicide resistance genes, transgenic plants in diseases and pests endurance, genetically modified natural enemies to pests, effects of transgenic plants on non-target organisms, use of transgenic insects to control, biotechnological potential of entomopathogens, antimicrobial peptides, molecular methods for the determination of plant diseases and pests, insecticide resistance. | | | | | | | |
| Work Placement | | N/A | | | | | | | |
| Planned Learning Activities and Teaching Methods | | | | Explanation (Presentation), Discussion | | | | | |
| Name of Lecturer(s) | | | | | | | | | |

Assessment Methods and Criteria

| Method | Quantity | Percentage (%) |
|---------------------|----------|----------------|
| Midterm Examination | 1 | 40 |
| Final Examination | 1 | 70 |

Recommended or Required Reading

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| 1 | Biological and Biotechnological Control of Insect Pests(Jack E. Rechcigl, N.A. Rechcigl) |
| 2 | Yellow Biotechnology II: Insect Biotechnology in Plant Protection and Industry (Andreas Vilcinskas) |

| Week | Weekly Detailed Course Contents | |
|------|---------------------------------|---|
| 1 | Theoretical | General information about the plant pathogens |
| 2 | Theoretical | Some important disease on plants |
| 3 | Theoretical | Some important pest on plants |
| 4 | Theoretical | Molecular methods used in diagnosis of plant disease and pests. |
| 5 | Theoretical | The resistance mechanism of plants |
| 6 | Theoretical | microbial symbionts and herbicide resistance genes |
| 7 | Theoretical | Pathogens resistance in transgenic plants, |
| 8 | Intermediate Exam | Midterm exam |
| 9 | Theoretical | Transgenic natural enemies for pests |
| 10 | Theoretical | effects of transgenic plant on out of target organism |
| 11 | Theoretical | Using of transgenic pests on control |
| 12 | Theoretical | Biological potential of entomopathogens |
| 13 | Theoretical | Antimicrobial peptides |
| 14 | Theoretical | determination of insecticidal tolerance on plant pests and disease with molecular methods |
| 15 | Theoretical | Herbicide resistant Transgenic plant |

Workload Calculation

| Activity | Quantity | Preparation | Duration | Total Workload |
|---------------------------------------|----------|-------------|----------|----------------|
| Lecture - Theory | 14 | 2 | 2 | 56 |
| Assignment | 2 | 2 | 1 | 6 |
| Midterm Examination | 1 | 5 | 1 | 6 |
| Final Examination | 1 | 6 | 1 | 7 |
| Total Workload (Hours) | | | | 75 |
| [Total Workload (Hours) / 25*] = ECTS | | | | 3 |

*25 hour workload is accepted as 1 ECTS



Learning Outcomes

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|---|---|
| 1 | Knows biotic stress sources of plants protection methods |
| 2 | Determining the potential emergence of new diseases and pests |
| 3 | Knows using biotechnic methods for pests |
| 4 | Knows tolerance mechanism on plants |
| 5 | Knows using of entomopathogens |

Programme Outcomes (Agricultural Biotechnology)

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|---|--|
| 1 | To be able to develop skills in identifying, modeling and solving problems in agricultural biotechnology |
| 2 | To be able to synthesize life and engineering sciences for the effective resource planning of agricultural biotechnology applications |
| 3 | To be able to interpret about living organisms structure, metabolic and physiological processes in order to propose biotechnological solutions to the agricultural problems |
| 4 | To be able to analyze genomic, metabolomic and proteomic information via bioinformatic tools. |
| 5 | To have the ability to analyze collected data and interpret the results. |
| 6 | To have the ability of individual working ability and to make independent decisions, to work in inter-disciplinary and interdisciplinary teamwork, to communicate by expressing their ideas orally and in writing, clearly and concisely |
| 7 | To have the awareness of professional liabilities and ethics |
| 8 | To be able to follow current national and international problems |

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 | 2 | 2 | 3 | 1 |
| P2 | 2 | 3 | 3 | 3 | 2 |
| P3 | 5 | 5 | 5 | 5 | 5 |
| P4 | 1 | 1 | 1 | 1 | 1 |
| P5 | 3 | 3 | 3 | 3 | 3 |
| P6 | 2 | 1 | 1 | 1 | 2 |
| P7 | 3 | 3 | 3 | 3 | 3 |
| P8 | 2 | 2 | 2 | 2 | 2 |

