



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

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|--|---|---|----------------------|--|---|--------------------------------|---|------------|---|
| Course Title | | Enzyme Biochemistry | | | | | | | |
| Course Code | | BİO523 | | Course Level | | Second Cycle (Master's Degree) | | | |
| ECTS Credit | 8 | Workload | 200 (<i>Hours</i>) | Theory | 2 | Practice | 2 | Laboratory | 0 |
| Objectives of the Course | | The aim of this course is to explain the properties of the enzymes and principles of catalytic mechanisms | | | | | | | |
| Course Content | | Enzyme structure, classification, catalytic mechanisms, kinetics, activation and inhibition | | | | | | | |
| Work Placement | | N/A | | | | | | | |
| Planned Learning Activities and Teaching Methods | | | | Explanation (Presentation), Experiment, Demonstration, Discussion, Case Study, Individual Study, Problem Solving | | | | | |
| Name of Lecturer(s) | | Prof. Kubilay METİN | | | | | | | |

Assessment Methods and Criteria

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

Recommended or Required Reading

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| 1 | Biyokimyanın Prensipleri (Lehninger), David L. Nelson & Michael M. Cox ; Nedret Kılıç, Palme Yayıncılık, 2005 |
| 2 | Biyokimya I, II, Engin Gözükara, Nobel Tıp Kitabevi, İstanbul, 1997 |
| 3 | Enzymes, A Practical Introduction to Structure, Mechanism and Data Analysis, Robert A. Copeland, A. John Wiley and Sons Inc. Publication, 2000 |
| 4 | Enzyme Chemistry Impact and applications, C. J. Suckling, C. L. Gibson, A. R. Pitt, Blackie Academic and Professional, 1998. |

| Week | Weekly Detailed Course Contents | |
|------|---------------------------------|--|
| 1 | Theoretical | Common features of enzymes |
| | Preparation Work | Enzyme purification |
| 2 | Theoretical | Classification of enzymes |
| | Preparation Work | Enzyme purification |
| 3 | Theoretical | Enzymatic catalyst mechanism |
| | Preparation Work | Enzyme purification |
| 4 | Theoretical | Enzyme kinetics |
| | Preparation Work | Enzyme activity assays |
| 5 | Theoretical | Factors influencing enzyme activity |
| | Preparation Work | Factors influencing enzyme activity (pH and temperature) |
| 6 | Theoretical | Inhibition of enzymes |
| | Preparation Work | Factors influencing enzyme activity (pH and temperature stability) |
| 7 | Theoretical | Allosteric enzymes |
| | Preparation Work | Factors influencing enzyme activity (Substrate concentration) |
| 8 | Theoretical | Allosteric enzymes |
| | Preparation Work | Factors influencing enzyme activity (Substrate concentration) |
| 9 | Intermediate Exam | Mid exam |
| 10 | Theoretical | Enzyme specificity |
| | Preparation Work | Enzyme specificity |
| 11 | Theoretical | Enzymatic catalyst mechanism |
| | Preparation Work | Enzymatic catalyst mechanism |



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|----|------------------|--|
| 12 | Theoretical | Regulation of enzyme activity |
| | Preparation Work | Regulation of enzyme activity |
| 13 | Theoretical | Determination of enzyme activity, spectrophotometric applications. |
| | Preparation Work | Determination of enzyme activity, spectrophotometric applications. |
| 14 | Theoretical | Structure and function of coenzymes. |
| | Preparation Work | Structure and function of coenzymes. |
| 15 | Final Exam | Final Exam |

Workload Calculation

| Activity | Quantity | Preparation | Duration | Total Workload |
|--|----------|-------------|----------|----------------|
| Lecture - Theory | 15 | 0 | 2 | 30 |
| Lecture - Practice | 15 | 0 | 2 | 30 |
| Assignment | 7 | 0 | 5 | 35 |
| Project | 7 | 0 | 5 | 35 |
| Laboratory | 10 | 0 | 5 | 50 |
| Reading | 4 | 0 | 2 | 8 |
| Quiz | 4 | 0 | 2 | 8 |
| Midterm Examination | 1 | 0 | 2 | 2 |
| Final Examination | 1 | 0 | 2 | 2 |
| Total Workload (Hours) | | | | 200 |
| [Total Workload (Hours) / 25*] = ECTS | | | | 8 |

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

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|---|---|
| 1 | To be able to learn the Enzyme structure |
| 2 | To be able to classify the enzymes |
| 3 | To be able to learn the mechanisms of catalysis |
| 4 | To be able to get the Enzyme kinetics |
| 5 | To be able to analyze Activation and inhibition of enzymes |
| 6 | To be able to get Information about the measurement of enzyme activity and kinetic characterization |

Programme Outcomes (Field Crops Master)

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|----|---|
| 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 | L6 |
|----|----|----|----|----|----|----|
| P1 | 4 | 3 | 4 | 3 | 4 | 3 |
| P2 | 4 | 3 | 4 | 3 | 4 | 3 |
| P3 | 4 | 3 | 4 | 3 | 4 | 3 |
| P4 | 4 | 3 | 4 | 3 | 4 | 3 |
| P5 | 4 | 3 | 4 | 3 | 4 | 3 |
| P6 | 4 | 3 | 4 | 3 | 4 | 3 |
| P7 | 4 | 3 | 4 | 3 | 4 | 3 |



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|-----|---|---|---|---|---|---|
| P8 | 4 | 3 | 4 | 3 | 4 | 3 |
| P9 | 4 | 3 | 4 | 3 | 4 | 3 |
| P10 | 4 | 3 | 4 | 3 | 4 | 3 |

