# AYDIN ADNAN MENDERES UNIVERSITY
## COURSE INFORMATION FORM

| Course Title | Topology | | | | | | |
|---|---|---|---|---|---|---|---|
| Course Code | MTK505 | | Couse Level | Second Cycle (Master's Degree) | | | |
| ECTS Credit | 8 | Workload | 200 *(Hours)* | Theory | 3 | Practice | 0 | Laboratory | 0 |
| Objectives of the Course | The purpose of this course is to introduce students to the topics in the course content. | | | | | | |
| Course Content | Basic concepts, bases, subbases and local bases, closure, interior, boundary, product spaces, quotient spaces, continuity, separation axioms, sequences and nets, metric spaces, complete metric spaces, compactness, connectedness. | | | | | | |
| Work Placement | N/A | | | | | | |
| Planned Learning Activities and Teaching Methods | | | Explanation (Presentation), Discussion, Individual Study, Problem Solving | | | | |
| Name of Lecturer(s) | | | | | | | |

## Assessment Methods and Criteria

| Method | Quantity | Percentage (%) |
|---|---|---|
| Midterm Examination | 1 | 30 |
| Final Examination | 1 | 70 |

## Recommended or Required Reading

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| 1 | M. Koçak, Introduction to General Topology and Solved Problems, Nisan Publ., 2020. |
| 2 | J. R. Munkres, Topology, Prentice Hall, 2000. |

| Week | Weekly Detailed Course Contents | |
|---|---|---|
| 1 | Theoretical | Bases, subbases and local bases |
| 2 | Theoretical | First and second countable spaces |
| 3 | Theoretical | Closure, interior and boundary |
| 4 | Theoretical | Product spaces |
| 5 | Theoretical | Quotient spaces |
| 6 | Theoretical | Continuous functions |
| 7 | Theoretical | Homeomorphisms |
| 8 | Theoretical | T0, T1 and Hausdorff spaces, Midterm exam |
| 9 | Theoretical | Regular, completely regular and normal spaces |
| 10 | Theoretical | Sequences and nets |
| 11 | Theoretical | Metric spaces |
| 12 | Theoretical | Complete metric spaces |
| 13 | Theoretical | Compactness |
| 14 | Theoretical | Connectedness |

## Workload Calculation

| Activity | Quantity | Preparation | Duration | Total Workload |
|---|---|---|---|---|
| Lecture - Theory | 14 | 0 | 3 | 42 |
| Individual Work | 14 | 0 | 8 | 112 |
| Midterm Examination | 1 | 18 | 2 | 20 |
| Final Examination | 1 | 24 | 2 | 26 |
| | | | 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 | Ability to determine the topology by means of a base or subbase |
| 2 | Ability to define continuous and discontinuous functions between topological spaces |
| 3 | Ability to determine the points that a sequence or a net converges in a topological space |

| 4 | Ability to determine the topology generated by a metric |
| 5 | Ability to explain the concepts of compactness and connectedness and their relations with other topological concepts |

**Programme Outcomes** *(Mathematics Master)*

| 1 | To be able to have an adequate theoretical and practical domain knowledge. |
| 2 | To be able to comprehend the interdisciplinary interaction associated with Mathematics. |
| 3 | To be able to use theoretical and practical domain knowledge gained in the field of Mathematics. |
| 4 | To be able to interpret knowledge from different disciplines integrating knowledge in the field of mathematics and produce new information. |
| 5 | To be able to define, analyse, model and to solve the problems by scientific methods in Mathematics. |
| 6 | To be able to conduct a math related specialistic study independently. |
| 7 | To be able to develop new strategic approaches to solve problems occurred in unforeseen and complex math-related applications by taking responsibility. |
| 8 | To be able to lead in situations that require solving problems related to the mathematics. |
| 9 | To be able to criticize his/her knowledge and skills acquired in the field mathematics. |
| 10 | To be able to transfer his/her ideas and suggestions for solutions to problems by supporting quantitative or qualitative data verbally and in writing. |
| 11 | To be able to communicate both orally and written in a foreign language. |
| 12 | To be able to use computer hardware and information technologies with software required by Mathematics. |
| 13 | To be able to contribute to the solution of the social, scientific, cultural and ethical problems related to the Mathematics, and being able to support the development of social, scientific, cultural and ethical values. |
| 14 | To be able to develop mathematics-related strategies, policies and operational plans, and to evaluate the results obtained within the framework of quality processes. |
| 15 | To be able to use his/her knowledge in the field of mathematics and practical problem-solving skills in interdisciplinary studies. |

**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 | 3 | 3 | 3 | 3 |
| P2 | 1 | 1 | 1 | 1 | 1 |
| P3 | 2 | 2 | 2 | 2 | 2 |
| P9 | 2 | 2 | 2 | 2 | 2 |