# ESOGÜ Mathematics and Computer Sciences COURSE INFORMATION FORM

| SEMESTER | Fall |
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| COURSE CODE | 821617019 | COURSE NAME | Applications of Category Theory I |
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| SEMESTER | WEEKLY COURSE PERIOD | | | COURSE OF | | | |
|---|---|---|---|---|---|---|---|
| | Theory | Practice | Labratory | Credit | ECTS | TYPE | LANGUAGE |
| 7 | 2 | 2 | 0 | 3 | 5 | COMPULSORY ( x ) ELECTIVE ( ) | Turkish |

| COURSE CATAGORY | | | |
|---|---|---|---|
| Mathematics | Computer | | Social Science |
| x | x | | |

**ASSESSMENT CRITERIA**

| | Evaluation Type | Quantity | % |
|---|---|---|---|
| MID-TERM | 1st Mid-Term | 1 | 50 |
| | 2nd Mid-Term | | |
| | Quiz | | |
| | Homework | | |
| | Project | | |
| | Report | | |
| | Others (……) | | |
| FINAL EXAM | | 1 | 50 |

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| PREREQUIEITE(S) | None. |
| COURSE DESCRIPTION | Category Theory, examples and its relation to other disciplines. |
| COURSE OBJECTIVES | Recognizing Category Theory and using this algebraic structure on other disciplines. |
| ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION | Preparing students for more advanced works in Computer Programming and Algebra. |
| COURSE OUTCOMES | Having detailed knowledge about Category Theory and its relation to other disciplines. |
| TEXTBOOK | Category Theory for Computing Science , M.Barr & C.Wells |
| OTHER REFERENCES | Category Theory Lecture Notes , M.Barr & C.Wells<br>Categories and Computer Science , R.F.C.Walters<br>Categories for the Working Mathematician , S.Mac Lane |
| TOOLS AND EQUIPMENTS REQUIRED | None. |

| COURSE SYLLABUS | |
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| **WEEK** | **TOPICS** |
| 1 | Introduction to Category Theory |
| 2 | Introduction to Category Theory |
| 3 | Examples of Category Theory |
| 4 | Examples of Category Theory |
| 5 | Category Theory's Relation to Other Disciplines |
| 6 | Category Theory's Relation to Other Disciplines |
| 7 | Category Theory's Relation to Other Disciplines |
| 8 | Midterm Exam |
| 9 | Some Major Examples of Category Theory with Other Disciplines |
| 10 | Some Major Examples of Category Theory with Other Disciplines |
| 11 | Some Major Examples of Category Theory with Other Disciplines |
| 12 | Some Major Examples of Category Theory with Other Disciplines |
| 13 | Introduction to Functional Programming Language |
| 14 | Introduction to Functional Programming Language |
| 15,16 | Final Exam |

| NO | PROGRAM OUTCOMES | 3 | 2 | 1 |
|---|---|---|---|---|
| 1 | The ability to apply knowledges of Mathematics - Computer, | **x** | | |
| 2 | To have sufficient theoretical and practical knowledge of Mathematics at international level, | **x** | | |
| 3 | The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects, | | **x** | |
| 4 | The skill to solve and design a problem process in accordance with a defined target, | | **x** | |
| 5 | Skills to analyze data, interpret and apply to other datum and using these data on computer, | **x** | | |
| 6 | The skill to use the modern techniques and computational tools needed for mathematical applications, | **x** | | |
| 7 | The skill to make team work within the discipline and interdisciplinary, | **x** | | |
| 8 | The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics - Computer, | | **x** | |
| 9 | The skill to communicate orally and in written way, in a clear and concise manner by having individual work skills and ability to independently decide and analytical thinking, | | **x** | |
| 10 | The skill to have professional and ethical responsibility, | | **x** | |
| 11 | The skill to have consciousness for quality issues and scientific research, | | **x** | |
| 12 | The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations, | | **x** | |
| 13 | Ability to solve problems in the working life faced to find an appropriate algoritms via mathematical modeling and to write computer programs, | **x** | | |
| 14 | The skill to developed design of software systems at different complex levels, | **x** | | |
| 15 | The credence of necessity of life-long learning and ability to apply the formation long-life learning. | | **x** | |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | | | | |

**Instructor(s):** Prof. Dr. Zekeriya ARVASİ

**Signature**: **Date:**