**DOUBLE MAJOR PROGRAM IN MATHEMATICS FOR STUDENTS IN ECONOMICS**

1. **Semester**

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| **MATHEMATICS PROGRAM** | **EQUIVALENT COURSE IN ECONOMİCS (ENGLİSH) PROGRAM** |
| **Course code** | **Course name** | **Credit** | **ECTS** | **Course code** | **Course name** | **Credit** | **ECTS** |
| ENG101 | English For Academic Purposes I | (4-0) | 3.5 | ENG101 | English For Academic Purposes I | (4-0) | 3.5 |
| **MATH111** | **Basic Logic and Algebra** | **(3-0)** | **6.0** |  |  |  |  |
| **MATH121** | **Analytic Geometry I** | **(2-1)** | **4.0** |  |  |  |  |
| **MATH135** | **Mathematical Analysis I** | **(4-2)** | **8.5** |  |  |  |  |
| CMPE105 | Introduction to Computers and Programming | (1-2) | 3.0 | CMPE105 | Introduction to Computers and Programming | (1-2) | 3.0 |
| HIST101 | Principles of Atatürk and History of Turkish Revolution I  | (2-0) | 2.0 | HIST101 | Principles of Atatürk and History of Turkish Revolution I  | (2-0) | 2.0 |
| HIST221 | History of Civilization | (3-0) | 3.0 | HIST221 | History of Civilization | (3-0) | 3.0 |
| KRY 111 | Career Planning | (1-0) | 1.0 | KRY 111 | Career Planning | (1-0) | 1.0 |
| ATU 100 | Orientation | (1-0) | 1.0 | ATU 100 | Orientation | (1-0) | 1.0 |
| Total Credit |  | 31 |  |  |  |  |

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| ENG102 | English for Academic Purposes II | (4-0) | 3.5 | ENG102 | English for Academic Purposes II | (4-0) | 3.5 |
| **MATH112** | **Discrete Mathematics and Combinatorics** | (3-0) | 6.0 |  |  |  |  |
| **MATH122** | **Analytic Geometry II** | **(3-0)** | **6.0** |  |  |  |  |
| **MATH136**  | **Mathematical Analysis II** | **(4-2)** | **8.5** |  |  |  |  |
| **CMPE102** | **Computer Programming** | **(2-2)** | **4.0** |  |  |  |  |
| HIST102 | Principles of Atatürk and History of Turkish Revolution II | (2-2) | 2.0 | HIST102 | Principles of Atatürk and History of Turkish Revolution II  | (2-2) | 2.0 |
| Total Credit |  | 30 |  |  |  |  |

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| ENG201 | English for Academic Purposes III | (3-0) | 3.0 | ENG201 | English for Academic Purposes III | (3-0) | 3.0 |
| **MATH231** | **Linear Algebra I** | **(4-0)** | **7.0** |  |  |  |  |
| **MATH251** | **Advanced Calculus I** | **(3-2)** | **8.0** |  |  |  |  |
| **CMPE221** | **Introduction to Object Oriented Programming** | **(2-2)** | **6.0** |  |  |  |  |
| **PHYS101** | **General Physics I** | **(3-2)** | **6.0** |  |  |  |  |
| Total Credit |  | 30 |  |  |  |  |

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| **Course code** | **Course name** | **Credit** | **ECTS** | **Course code** | **Course name** | **Credit** | **ECTS** |
| ENG202 | English for Academic Purposes IV | (3-0) | 3.0 | ENG202 | English for Academic Purposes IV | (3-0) | 3.0 |
| **MATH232** | **Linear Algebra II** | **(4-0)** | **7.0** |  |  |  |  |
| **MATH252** | **Advanced Calculus II** | **(3-2)** | **8.0** |  |  |  |  |
| **MATH262** | **Ordinary Differential Equations** | **(4-0)** | **6.0** |  |  |  |  |
| **PHYS102** | **General Physics II** | **(3-2)** | **6.0** |  |  |  |  |
| Total Credit |  | 30 |  |  |  |  |

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| **MATH331** | **Abstract Algebra** | **(4-0)** | **7.0** |  |  |  |  |
| **MATH351** | **Introduction to Real Analysis** | **(4-0)** | **7.0** |  |  |  |  |
| MATH392 | Probability Theory and Statistics | (4-0) | 7.0 | MATH 291 | Probability Theory and Statistics I | (3-0) | 5.0 |
|   | **Area Elective (1)** | **(3-0)** | **5.0** |  |  |  |  |
|  | General Elective | (3-0) | 4.0 |  | General Elective | (3-0) | 4.0 |
| Total Credit |  | 30 |  |  |  |  |

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| **Course code** | **Course name** | **Credit** | **ECTS** | **Course code** | **Course name** | **Credit** | **ECTS** |
| **MATH346** | **Complex Analysis** | **(4-0)** | **7.0** |  |  |  |  |
| **MATH374** | **Differential Geometry** | **(3-0)** | **6.0** |  |  |  |  |
| **CMPE321** | **Introduction to Data Structures** | **(2-2)** | **5.0** |  |  |  |  |
|  | **Area Elective (2)** | **(3-0)** | **6.0** |  |  |  |  |
| **MATH340** | **Introduction to Data Science and Machine Learning** | **(4-0)** | **6.0** |  |  |  |  |
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| **Course code** | **Course name** | **Credit** | **ECTS** | **Course code** | **Course name** | **Credit** | **ECTS** |
| TURK401 | Turkish Language I | (2-0) | 2.0 | TURK401 | Turkish Language I | (2-0) | 2.0 |
| **MATH357** | **Functional Analysis** | **(3-0)** | **6.0** |  |  |  |  |
|   | **Area Elective (4)** | **(3-0)** | **6.0** |  |  |  |  |
|   | **Area Elective (5)** | **(3-0)** | **6.0** |  |  |  |  |
|   | **Area Elective (6)** | **(3-0)** | **6.0** |  |  |  |  |
|   | General Elective | (3-0) | 4.0 |  | General Elective | (3-0) | 4.0 |
| Total Credit |  | 30 |  |  |  |  |

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| **Course code** | **Course name** | **Credit** | **ECTS** | **Course code** | **Course name** | **Credit** | **ECTS** |
| TURK402 | Turkish Language II | (2-0) | 2.0 | TURK402 | Turkish Language II | (2-0) | 2.0 |
| **MATH411** | **Seminar Studies** | **(1-2)** | **7.0** |  |  |  |  |
|   | **Area Elective (7)** | **(3-0)** | **6.0** |  |  |  |  |
|   | General Elective | (3-0) | 4.0 |  | General Elective | (3-0) | 4.0 |
|   | **Area Elective (8)** | **(3-0)** | **6.0** |  |  |  |  |
|   | General Elective | (3-0) | 5.0 |  | General Elective | (3-0) | 4.0 |
| Total Credit |  | 30 |  |  |  |  |

**Area Elective Courses:**

No more than **two Area Elective Courses can be taken from Economics**. The Area Elective Courses that are taken from **Economics** should be related with Department of Mathematics content and should be approved by the related advisor.

**General Elective Courses:** General Elective Courses are the same for both departments.