## Course Syllabus

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| **Code - Course Title** | **MTE611 - Mathematical Proof** |
| **Course Type** | II. SEMESTER |
| **Laboratory + Practice** | 3+0 |
| **ECTS** | **7.5** |
| **Language of Instruction** | Türkçe |
| **Course Type** | Elective Courses |
| **Course Instructor(s)** | PROF. DR. DİLEK TANIŞLI |

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| **Mode of Delivery** | The mode of delivery of this course is\"face to face |
| **Prerequisites** | There is no prerequisite or co-requisite for this course. |
| **Courses Recomended** | There is no recommended optional programme component for this course. |
| **Recommended Resources** | Alibert, D. And Thomas, M. (1991). Research on mathematical prof. In D. Tall (Eds). Advanced Mathematical Thinking. London: Kluwer Akademic Publishers. Azzouni, J. K. (2006).Tracking Reason : Proof, Consequence, and Truth. Oxford University Press. Fletcher, P. (1998). Truth, Proof, and Infinity : A Theory of Constructions and Contructive Reasoning Kluwer Academic. Hanna, G. (1991). Mathematical proof. In D. Tall (Eds). Advanced Mathematical Thinking. London: Kluwer Akademic Publishers. Harel, G. and Sowder, L. (1998). Students proof schemes: Results from exploratory studies. In A. Schoenfeld, J. Kaput and E. Dubinsky (Eds.) Research in Collegiate Mathematics Education III. American Mathematics Society. Washington, D.C. Lay, S. R. (2005). Analysis : With an Introduction to Proof. Pearson/Prentice Hall. Proof and knowledge in mathematics [electronic resource] / edited by Michael Detlefsen. London ; New York : Routledge, 1992. |
| **Work Placement** | N/A |

## Course Syllabus

| Weeks | Learning Outcomes | Topics | Teaching Methods |
|---|---|---|---|
| **Week - 1** | | Philosophy of Mathematics/ The historical development of proof | |
| **Week - 2** | | What is the proof and mathematical proof?/ Useges of “Proof” and “Proving”/ Cognitive Development of Proof | |
| **Week - 3** | | Basic Concepts of Proof/ Proof Methods | |
| **Week - 4** | | The Nature of Mathematical proof, The role and Purpose/ The proof in mathematics Curriculum/ The NCTM Standards and Proof/ Research Perspectives | |
| **Week - 5** | | Proof and Reasoning | |
| **Week - 6** | | Proof and Arguments | |
| **Week - 7** | | Problem Solving and Proof | |
| **Week - 8** | | Understanding the proof for students: and The proof categories and schemas | |

## Course Syllabus

| Weeks | Learning Outcomes | Topics | Teaching Methods |
|---|---|---|---|
| Week - 9 | | Pedagogical Perspective of Proof Teaching/ Theories on Proof Teaching/ Teaching of Proof in The Elementary and MiddleGrades and High School/ Teaching of Proof in College | |
| Week - 10 | | Proof Related Beliefs and Opinions/ The Student’s Difficulties in Mathematical Proof | |
| Week - 11 | | Investigation of researches related to mathematical proof. | |
| Week - 12 | | Investigation of researches related to mathematical proof. | |
| Week - 13 | | Investigation of researches related to mathematical proof. | |
| Week - 14 | | General evaluation | |

## Learning Outcomes

| # | Learning Outcome |
|---|---|
| 1 | Will able to explain the proof, the mathematical proof and the importance of mathematical proof. |
| 2 | Will able to explain the proof in mathematics curriculum and the NCTM standards |
| 3 | Will able to explain the historical development of mathematical proof |
| 4 | Will able to explain the nature of mathematical proof, the role and purpose |
| 5 | Will able to analyze the relationhips between mathematical proof and reasoning |
| 6 | Will able to analyze the mathematical proof methods |
| 7 | Will able to analyze the proof schemas |
| 8 | Will able to analyze the student’s difficulties in mathematical proof |
| 9 | Will able to analyze the researches related to mathematical proof. |

## Sustainable Development Goals

*No content has been provided.*

## Course Theme

*No content has been provided.*

## AKTS Workload

| Activity | Duration (Hour) | Count | Workload |
|---|---|---|---|
| Teorik Derse Katılım | 0 | 0 | 0 |
| Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı) | 0 | 0 | 0 |
| Ödevler | 0 | 0 | 0 |
| Proje - Rapor - Sunum Hazırlama | 0 | 0 | 0 |

## AKTS Workload

| Activity | Duration (Hour) | Count | Workload |
|---|---|---|---|
| Ara Sınav Hazırlığı (sınav süresi dahil) | 0 | 0 | 0 |
| Final Sınavı Hazırlığı (sınav süresi dahil) | 0 | 0 | 0 |
| Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.) | 0 | 0 | 0 |
| Staj Uygulaması | 0 | 0 | 0 |
| | | **Calculated ECTS** | **0** |

## Assessment Method and Passing Requirements

*No content has been provided.*