## Course Syllabus

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|---|---|
| **Code - Course Title** | **MAT230 - Algorithm and Programming in Mathematics Education** |
| **Course Type** | III. SEMESTER |
| **Laboratory + Practice** | 2+1 |
| **ECTS** | **3.0** |
| **Language of Instruction** | Türkçe |
| **Course Type** | Area Elective Courses |
| **Course Instructor(s)** | DR. ÖĞR. ÜYESİ AYŞEGÜL ERYILMAZ ÇEVİRGEN |

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| **Mode of Delivery** | Offered face-to-face and in the computer lab. |
| **Prerequisites** | There are no prerequisites for the course. |
| **Courses Recomended** | Technology-focused courses with the code EOS offered in the Faculty of Education are recommended. |
| **Work Placement** | NA |

## Course Syllabus

| Weeks | Learning Outcomes | Topics | Teaching Methods |
|---|---|---|---|
| **Week - 1** | | Basic Programming Concepts: Code, Program, Software, Algorithm, Constant, Variable, Decision structures, Loop, Condition, Operators | |
| **Week - 2** | | Basic Programming Concepts: Code, Program, Software, Algorithm, Constant, Variable, Decision structures, Loop, Condition, Operators | |
| **Week - 3** | | Algorithm Types; Algorithm Notation Types; Algorithm Design and Problem Solving | |
| **Week - 4** | | Algorithm Types; Algorithm Notation Types; Algorithm Design and Problem Solving | |
| **Week - 5** | | Applications Using Basic Programming Concepts (Scratch, Python) | |
| **Week - 6** | | Computational Thinking and Mathematics Education | |
| **Week - 7** | | Algorithmic Thinking and Mathematics Education | |
| **Week - 8** | | Algorithm Design with Mathematics Content | |
| **Week - 9** | | Programming of Designed Algorithms | |
| **Week - 10** | | Algorithm Design and Program Design Applications: Text-based coding, Block-based coding. | |
| **Week - 11** | | Algorithm Design and Program Design Applications: Text-based coding, Block-based coding. | |
| **Week - 12** | | Algorithm Design and Program Design Applications: Text-based coding, Block-based coding. | |
| **Week - 13** | | Algorithm Design and Program Design Applications: Text-based coding, Block-based coding. | |

## Course Syllabus

| Weeks | Learning Outcomes | Topics | Teaching Methods |
|---|---|---|---|
| Week - 14 | | Algorithm Design and Program Design Applications: Text-based coding, Block-based coding. | |

## Learning Outcomes

| # | Learning Outcome |
|---|---|
| 1 | Describe algorithm design principles |
| 2 | Generate algorithms suitable for flow diagrams, input-output concepts, looping, decision structures, decision making and cyclic problems |
| 3 | Prepare programs (such as scratch, code.org) where algorithms and flow charts are visualized |
| 4 | Generate appropriate solution algorithms using function |
| 5 | Explain concepts such as algorithm, programming, problem solving, algorithmic thinking, computational thinking |
| 6 | Interpret concepts such as algorithm, programming, problem solving, algorithmic thinking, computational thinking and their relationship with mathematics education. |

## 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 |
| 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.*

| Assessment Method and Passing Requirements | Quamtity | Percentage (%) |
|---|---|---|

| Assessment Method and Passing Requirements | Quamtity | Percentage (%) |
|---|---|---|
| 1.Midterm Exam | 1 | 40 |
| Final Exam | 1 | 60 |
| | **Sum (%)** | **100** |