



# Central International University-CIU

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## Master's Degree in Education in General Mathematics, MSc.Ed. EGM.

A) Course: Education in General Mathematics, MSc.Ed. EGM.

Duration: 3 Semesters (18 months), 6 months per semester.

Credits: 180 Credits.

B) Module Details:

Semester 1 Modules:

1. Module Code: EGM101

- Module Name: Foundations of Mathematics Education
- Study Hours: 150
- Credits: 15

2. Module Code: EGM102

- Module Name: Advanced Topics in Algebra Education
- Study Hours: 150
- Credits: 15

3. Module Code: EGM103

- Module Name: Pedagogical Approaches in General Mathematics
- Study Hours: 120
- Credits: 12

Semester 2 Modules:

4. Module Code: EGM201

- Module Name: Geometry and Trigonometry Education
- Study Hours: 180
- Credits: 18

5. Module Code: EGM202

- Module Name: Statistics and Probability Education
- Study Hours: 180
- Credits: 18

6. Module Code: EGM203

- Module Name: Assessment and Evaluation in Mathematics Education
- Study Hours: 120
- Credits: 12

**Semester 3 Modules (Elective):**

7. Module Code: EGM301

- Module Name: Technology Integration in Mathematics Education
- Study Hours: 150
- Credits: 15

8. Module Code: EGM302

- Module Name: Research Methods in Mathematics Education
- Study Hours: 150
- Credits: 15

9. Module Code: EGM303

- Module Name: Special Topics in Mathematics Education
- Study Hours: 120
- Credits: 12

**Note: A Dissertation should be included in Semester 3.**

**D) Detailed Outline of Syllabus:**

1. *Foundations of Mathematics Education (EGM101):*

- Historical Development of Mathematics
- Philosophy of Mathematics Education
- Cognitive Development Theories

2. *Advanced Topics in Algebra Education (EGM102):*

- Linear Algebra
- Abstract Algebra
- Algebraic Structures

3. *Pedagogical Approaches in General Mathematics (EGM103):*

- Instructional Design in Mathematics
- Differentiated Instruction
- Classroom Management in Mathematics

4. *Geometry and Trigonometry Education (EGM201):*

- Euclidean Geometry
- Trigonometric Functions
- Geometric Constructions

5. *Statistics and Probability Education (EGM202):*

- Descriptive and Inferential Statistics
- Probability Distributions
- Statistical Inference

6. *Assessment and Evaluation in Mathematics Education (EGM203):*

- Formative and Summative Assessment
- Rubrics and Assessment Tools
- Data-Driven Decision Making in Education

7. *Technology Integration in Mathematics Education (EGM301):*

- Use of Educational Software
- Online Resources for Mathematics Education
- Interactive Whiteboards in the Mathematics Classroom

8. *Research Methods in Mathematics Education (EGM302):*

- Qualitative and Quantitative Research Methods
- Action Research in Mathematics Education
- Ethical Considerations in Educational Research

9. *Special Topics in Mathematics Education (EGM303):*

- Current Issues in Mathematics Education
- Cross-disciplinary Approaches in Mathematics Education
- Trends in Mathematics Curriculum Development

**E) Practicals:** Practicals will be included in Modules 2, 4, 5, and 7.

**F) Industrial Attachment (Semester 3):** Students will undergo a 3-month industrial attachment involving classroom observations, curriculum development, and engagement in educational institutions or relevant organizations.

**G) Research Topics (Semester 3):** Research topics may include:

- “Impact of Technology Integration on Mathematics Learning Outcomes”
- “Effective Strategies for Teaching Geometry in Middle Schools”
- “Assessment Practices in Advanced Algebra Courses”

#### H) Benefits of the Course:

1. Enhanced knowledge and skills in mathematics education.
2. Increased employability in educational institutions.
3. Contribution to advancements in mathematics education.
4. Opportunities for research and publication.
5. Development of critical thinking and problem-solving skills.
6. Preparation for leadership roles in education.
7. Networking with professionals in the field.
8. Exposure to cutting-edge topics in mathematics education.
9. Contribution to community development through education.
10. Versatility for teaching various mathematical concepts.

#### I) Entrepreneurship Benefits:

1. Mathematics tutoring services.
2. Educational content creation for online platforms.
3. Mathematics curriculum development consultancy.
4. Development of educational apps for mathematics.
5. Establishment of a mathematics education training center.

#### J) Inventions and Discoveries: Learners can contribute to:

1. Innovative mathematics teaching tools.
2. Educational games for algebra and geometry.
3. Development of an interactive online mathematics learning platform.
4. Research in effective pedagogical strategies for diverse learners.
5. Contribution to the development of inclusive mathematics education practices.

#### K) Employment Opportunities:

##### 1. Local:

- Ministry of Education
- Local Schools and Colleges

##### 2. International:

- UNESCO
- International Schools

#### L) Recommended Books:

- "Thinking Mathematically" by John Mason and Leone Burton
- "How Students Learn: Mathematics in the Classroom" by M.S. Donovan and J.D. Bransford
- "The Art of Problem Solving" by Richard Rusczyk