



# **DEPARTMENT OF MATHEMATICS**

## **MUHAMMED ABDURAHIMAN MEMORIAL ORPHANAGE (MAMO) COLLEGE**

[Govt. Aided First Grade College & Affiliated to University of Calicut.  
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### **CURRICULUM FOR CERTIFICATE COURSE**

## **CERMA006: PROGRAMMING IN MATLAB**

**OFFERED DURING THE**  
**ACADEMIC YEAR 2019-20**  
**[APPROVED BY ACADEMIC COMMITTEE, MAMO COLLEGE]**



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## INSTITUTIONAL VISION, MISSION & OBJECTIVES 01



**VISION:** Build Scientifically Oriented, Intellectually Accomplished, Morally Upright and Socially Committed youth who can play a constructive role in Nation Building.



**MISSION:** Intellectual, social and economic empowerment of the youth in general and women, minorities, orphans and the destitute in particular by providing quality, value-based higher-education.



**OBJECTIVES:** Pursuit of Excellence, Harnessing technology, Thrust on value-based education, Nurturing Excellence and Moulding the youth for Nation Building



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# VISION, MISSION, OBJECTIVES & CORE VALUES OF THE DEPARTMENT **02**



VISION

**VISION:** Educating students to excel in all their endeavours for the betterment of the society and nation



MISSION

**MISSION:** Empowers students to fulfil their moral, professional, social and economic financial responsibilities



**OBJECTIVES:** (a) Develop a positive attitude towards Mathematics and to appreciate its practical applications in life, (b) Develop problem solving skills and the ability to use mathematics in everyday life, (c) Develop problem solving skills and the ability to use mathematics in everyday life and (d) Use mathematical language effectively and accurately.



VALUES

**CORE VALUES:** Practical Orientation, Intellectual Enlightenment, Social Commitment, Moral Uprightness, Ethical Self-Fashioning, Cultural Enrichment, International Outlook, Aesthetic Sensibility, Vocational Excellence and Psychological Stability.



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## B.Sc. MATHEMATICS: PROGRAMME EDUCATIONAL OBJECTIVES (PEOs) 03

After 4 to 5 years of graduation, the career and professional accomplishments attained by the B.Sc Mathematics Graduates would reflect that the programme really prepared the graduates to deal with the real world, where they could apply and use the skills and knowledge they have learned to good use

Specifically, the graduate would be able to:

-  **PEO1:** Have significant opportunities in various service domains at National and International levels like banking, insurance, government jobs, consultancy, teaching, defense, industry, research and entrepreneurial pursuit.
-  **PEO2:** Have leadership quality to handle all kind of circumstances in diversities by providing interdisciplinary and multidisciplinary learning environment.
-  **PEO3:** Inculcate value system while working in a team assigned with a important targets they will contribute through their critical thinking and



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mathematical competence holding the ethical values.



**PEO4:** Achieve peer recognition as an individual or as a team member having specialized knowledge and expertise to investigate, formulate, analyse and implement on the problems of pure, applied and computational mathematics to compete at global level.



**PEO4:** Have continuous learning attitude to adopt new skills and techniques to overcome the problems related with new technologies.



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## B.Sc MATHEMATICS: PROGRAMME SPECIFIC OUTCOME (PSOs) 04

On the successful completion of the B.Sc. Mathematics Programme, the graduates would be able to:



**PSO1:** Understand the mathematical concepts and applications in the field of algebra, real and complex analysis, optimization, differential equations, Vector calculus etc.



**PSO2:** Adopt changing scientific environment in the process of sustainable development by using mathematical tools



**PSO3:** Handle the advanced techniques in algebra, analysis, optimization, differential equations, engineering, finance and actuarial science to analyse and design algorithms solving variety of problems related to real life problems.



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**PSO4:** Have necessary language skills and expertise in the field of research and developments through seminar and project.



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# B.Sc MATHEMATICS: PROGRAMME OUTCOMES (POs) 05

On the successful completion of the B.Sc. Mathematics Programme, the graduates would be able to:



**PO1: KNOWLEDGE DOMAIN:** Demonstrate an understanding of the basic concepts in mathematics, statistics, operations research and their importance in the solution of some real- world problems.



**PO2: PROBLEM ANALYSIS:** Analyse and solve the well-defined problems in mathematics statistics, and operations research. Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decision. Find, analyse, evaluate and apply information systematically and shall make defensible decisions.



**PO3: PRESENTATION AND INTERPRETATION OF DATA:** Demonstrate the ability to manipulate and visualize data and to compute standard statistical summaries.



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**PO4: ETHICS:** Analyse relevant academic, professional and research ethical problems and commit to professional ethics and responsibilities with applicable norms of the data analysis and research practices.



**PO5: MODERN TOOL USAGE:** Learn, select, and apply appropriate methods and procedures, resources and computing tools with an understanding of the limitations.



**PO6: COMMUNICATION:** Effectively communicate about their field of expertise on their activities, with their peer and society at large. Such as, being able to comprehend and write effective reports and design documentation, make effective presentations.



**PO7: PROJECT MANAGEMENT:** Apply Knowledge and understanding of principles of mathematics and statistics effectively as an individual, and as a member or leader in diverse teams to manage projects in multidisciplinary environment.



**PO8: INDIVIDUAL AND TEAM WORK:** Work effectively as an individual, as a member or leader of various teams, and in multi-disciplinary settings.



**PO9: DESIGN/DEVELOPMENT OF SOLUTIONS:** Model the real-world problems in to mathematical equations and draw the inferences by finding appropriate solutions.



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**PO10: LIFE-LONG LEARNING:** Continue to acquire mathematical knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in mathematics.



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## CERTIFICATE COURSE

# CERMA006: PROGRAMMING IN MATLAB 06

## COURSE CURRICULUM

Course Name	Programming in MatLab
Course Code	CERMA006
Year	2019-20
Course Designer	Mr. Mohiyudheen N
Couse Duration	30 Hrs
Course Schedule	November to February
Maximum Students Intake	60 Students



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#### 1. COURSE LEVEL

Foundational, skill-oriented certificate programme.

#### 2. PREREQUISITE

None.

#### 3. COURSE INTAKE & ADMISSION

Maximum 60 students will be given admission to the course based on First-Come-First-Serve basis. All the students of the MAMO College are eligible for free enrolment for the course. The enrolment notification will be issued for the course well in advance of the commencement of the course.

#### 4. COURSE COORDINATOR

Mr. Mohiyudheen N, Assistant Professor, Department of Mathematics

#### 5. COURSE PREAMBLE

Matlab Programming is one of the most important technical programming languages and skills today. In this course, we will start learning Matlab from a beginner level and slowly ease our way into more advanced topics and programs. This course is a general Matlab Programming training, and it means that regardless of your major and field of study Matlab Programming is an easy and understandable programming language and is an excellent choice for those who want to learn to program for the first time. As a result, MATLAB is being used in a wide variety of domains from the natural sciences, through all disciplines of engineering, to finance, and beyond, and it is heavily used in industry. Hence, a solid background in MATLAB is an indispensable skill in today's job market.



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#### 6. DURATION

Total Duration: 30 Hrs. [Contact Hrs. 20 Hrs., Lab Hours: 6 Hrs and Assessment Works: 4]

#### 7. CURRICULUM FOCUS

Enhance the employability of the learners through curriculum enrichment for additional skill development.

#### 8. COURSE OBJECTIVES

Learners are exposed to

- (a) Solve numerical computation, visualization and application development.
- (b) Matrix manipulations
- (c) Plotting of functions and data
- (d) Implementation of algorithms.

#### 9. SKILL EXPECTED

On the successful completion of the course, learners will be able to:

- (a) Computer Programming
- (b) Programming Language
- (c) Cultivate problem analysing and problem solving skills.

#### 10. COURSE OUTCOMES

Upon the successful completion of the course, learners will be able to:



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CO No	Course Outcome(CO)	Skill/Knowledge Attainment Level Based on Revised Bloom's Taxonomy
CO1	Know the basic concepts of MATLAB software.	Understand
CO2	Understand the procedures, algorithms, and concepts required in solving specific problems.	Understand
CO3	Code solutions to problems in MATLAB, in a legible and efficient way.	Apply
CO4	Solve different types of mathematical problems and draw various types of graphs using MATLAB.	Apply

## 11. MAPPING OF COs WITH PSOs AND POs

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4
CO1	1	3	1	1	1	1	2	1	1	1	1	1	1	2
CO2	1	1	1	2	2	2	3	1	2	1	3	1	1	1
CO3	2	1	2	2	1	1	1	1	1	2	2	1	1	1
	1	1	2	1	1	1	1	2	1	1	1	2	2	1
AVG	1.3	1.5	1.5	1.5	1.3	1.3	1.8	1.3	1.3	1.3	1.8	1.3	1.3	1.3



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## 12. MODULE-WISE COURSE CONTENTS

### MODULE 1:

**MODULE DURATION:** 14 Hrs. [Contact Hrs. 10 Hrs. Lab Hours: 2 Hrs and Assessment Works: 2]

**MODULE CONTENT:** Introduction to MATLAB Programming: Basics of MATLAB programming, Anatomy of a program, Variables and assignments, Data types, Operators, Working with complex numbers, Mathematical operations, Functions for input and output.

**MODULE OUTCOME:** On successful completion of the module learners can familiarize with the fundamental computer programming concepts such as variables, control structures, functions and many others..

### MODULE 2

**MODULE DURATION:** 16 Hrs. [Contact Hrs. 10 Hrs., Lab Hours: 4 Hrs. and Assessment Works: 2]

**MODULE CONTENT:** Introduction to vectors in Matlab: Defining a Vector, Accessing elements within a vector, Basic operations on vectors Strings, String functions, Cell array, Creating cell array, Introduction to Matrices in Matlab: Defining Matrices, Matrix functions, Matrix operations, Vector functions.

**MODULE OUTCOME:** On successful completion of the module learners will learn the powerful support MATLAB provides for working with matrices.

### REFERENCES:

1. Amos Gilat, *MATLAB An Introduction With Applications 5ed*, Publisher: Wiley.



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2. C. F. Van Loan and K.-Y. D. Fan., *Insight through Computing: A Matlab Introduction to Computational Science and Engineering*, SIAM Publication, 2009.

#### ADDITIONAL REFERENCES & STUDY MATERIALS:

3. Y.Kirani Singh, B.B. Chaudhari, *MATLAB Programming*, PHI Learning, 2007.
4. Krister Ahlersten, *An Introduction to Matlab*, Bookboon.com.
5. RudraPratap, *Getting Started with MATLAB*, Oxford University Press

### 13. DELIVERY MODE

course employs multi-mode delivery mechanism including contact lecture, online courses from coursera, Online and offline course works and Laboratory sessions.

### 14. DELIVERY SCHEDULE

November to February.

### 15. DETAILED COURSE DELIVERY PLAN

Hour	Delivery Mode and Activity	Topics to be Covered
1	Contact Hour - 1: Classroom Discussion	Introducing the Course
2	Contact Hour - 2: Classroom Discussion	Introduction to MatLab Programming: Basics of MatLab programming.
3	Contact Hour - 3: Classroom Discussion	Anatomy of a program.
4	Contact Hour - 4: Classroom Discussion	Variables and assignments. Data types,, Mathematical operations,



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Hour	Delivery Mode and Activity	Topics to be Covered
5	Contact Hour - 5: Classroom Discussion	Data types.
6	Assessment Hour - 1	Assignment to Create MatLab Programming
7	Contact Hour - 6: Classroom Discussion	Operators
8	Contact Hour - 7: Classroom Discussion	Working with complex numbers
9	Lab Hour - 1	Basics of MatLab programming
10	Contact Hour - 8: Classroom Discussion	Mathematical operations
11	Contact Hour - 9: Classroom Discussion	Functions for input and output.
12	Lab Hour - 2	Working with complex numbers, Mathematical operations, Functions for input and output.
13	Assessment Hour - 2	Assignment to Create MatLab Programming
14	Contact Hour - 10: Classroom Discussion	Review of Module 1
15	Contact Hour - 11: Classroom Demonstration	Introduction to vectors in Matlab: Defining a Vector
16	Contact Hour - 12: Classroom Demonstration	Accessing elements within a vector
17	Contact Hour - 13 Classroom Demonstration	Basic operations on vectors Strings
18	Contact Hour - 14 Classroom Demonstration	String functions



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P.O. MANASSERY, MUKKAM - 673602



# MUHAMMED ABDURAHIMAN MEMORIAL ORPHANAGE (MAMO) COLLEGE

[Govt. Aided First Grade College & Affiliated to University of Calicut.  
Re-Accredited by NAAC with A Grade]

## DEPARTMENT OF MATHEMATICS

### CURRICULUM FOR CERTIFICATE COURSE IN PROGRAMMING IN MATLAB [CERMA006]

Hour	Delivery Mode and Activity	Topics to be Covered
19	Contact Hour - 15 Classroom Demonstration	Cell array, Creating cell array
20	Lab Hour - 3	Basic operations on vectors String
21	Lab Hour - 4	String functions, Creating cell array
22	Contact Hour -16 Classroom Discussion	Introduction to Matrices in Matlab: Defining Matrices
23	Assessment Hour - 3	Creating cell array
24	Contact Hour - 17: Classroom Demonstration	Matrix functions
25	Contact Hour - 18: Classroom Demonstration	Matrix operations
26	Lab Hour - 5	Matrix functions, Matrix operations
27	Contact Hour - 19: Classroom Discussion	Vector functions.
28	Lab Hour - 6	Vector functions
29	Contact Hour - 20: Classroom Discussion	Review of Module 2
30	Assessment Hour - 4	Course End Assessment

## 16. ASSESSMENT COMPONENTS

Total Marks: 100

**CLASSROOM AND GROUP PARTICIPATION: 20 Marks.** This component aims at testing the course content understanding and the reflection skills and their attainment levels.



Manassery, Mukkam Post,  
Kozhikode, Kerala, India, 673 602.  
email: mamocollege@gmail.com



Office: 0495-2297319  
Principal: 0495-2295121

COORDINATOR  
ACADEMIC COMMITTEE  
MUHAMMED ABDURAHIMAN MEMORIAL  
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**COURSE WORK: 30 Marks.** This component aims at testing the skill attainment levels of the learners in analysing and implementing the real-world problem.

**MID-COURSE ASSIGNMENT: 20 Marks.** This component aims at testing the module-wise attainment levels of the course objectives and course outcome and module outcomes.

**END-COURSE ASSESSMENT: 30 Marks.** This component aims at testing overall attainment levels of the course with respect to course objectives, course outcome and module outcomes.

## 17. COURSE EVALUATION & GRADING

The course evaluation is done/coordinated entirely by the course coordinator. The following 10-point Indirect Grading System is used for awarding grades to students:

Percentage of Mark	Letter Grade	Interpretation	Class
95 and above	O	Outstanding	First Class with Distinction
85 to below 95	A+	Excellent	First Class with Distinction
75 to below 85	A	Very good	First Class with Distinction
65 to below 75	B+	Good	First Class
55 to below 65	B	Satisfactory	First Class
45 to below 55	C	Average	Second Class
35 to below 45	P	Pass	Third Class
Below 35	F	Failure	Fail
Incomplete	I	Incomplete	Fail
Absent	Ab	Absent	Fail



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The grade is awarded by the course-coordinator by considering the overall performance of the learner in all the assessment component of the course.

## 18. GRIEVANCE REDRESSAL

The grievances, if any, can be submitted to the Head of the Department for its redressal. Those grievances that cannot be redressed by HoD can be forwarded to Academic Council of the College for final decision on the matter.

## 19. ISSUANCE OF CERTIFICATES

The Course Completion Certificate will be issued to all the successful candidates showing the Total Marks and Grade Obtained.



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