

uCertify

Course Outline

Fundamental Concepts of MATLAB Programming



04 Aug 2025

1. Exercises, Quizzes, Flashcards & Glossary

Number of Questions

2. Expert Instructor-Led Training

3. ADA Compliant & JAWS Compatible Platform

4. State of the Art Educator Tools

5. Award Winning Learning Platform (LMS)

6. Chapter & Lessons

Syllabus

Chapter 1: Preface

Chapter 2: Basics of MATLAB

Chapter 3: Expressions and Basic Commands of MATLAB

Chapter 4: Data Types, Variables and Operators

Chapter 5: Decision Control Statements

Chapter 6: Loops Control Statements

Chapter 7: Vectors

Chapter 8: Matrix

Chapter 9: Arrays

Chapter 10: Strings

Chapter 11: Functions

Chapter 12: Data Import and Export

Chapter 13: Plotting a Graph

Chapter 14: Graphics

Chapter 15: Basic Algebra in MATLAB

Videos and How To

1. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields.

Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

2. **ADA Compliant & JAWS Compatible Platform**

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

3. **State of the Art Educator Tools**

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

4. **Award Winning Learning Platform (LMS)**

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**

1. Best Postsecondary Learning Solution

- **2015**

1. Best Education Solution
2. Best Virtual Learning Solution
3. Best Student Assessment Solution
4. Best Postsecondary Learning Solution
5. Best Career and Workforce Readiness Solution
6. Best Instructional Solution in Other Curriculum Areas
7. Best Corporate Learning/Workforce Development Solution

- **2016**

1. Best Virtual Learning Solution
2. Best Education Cloud-based Solution
3. Best College and Career Readiness Solution
4. Best Corporate / Workforce Learning Solution
5. Best Postsecondary Learning Content Solution
6. Best Postsecondary LMS or Learning Platform
7. Best Learning Relationship Management Solution

- **2017**

1. Best Overall Education Solution
2. Best Student Assessment Solution
3. Best Corporate/Workforce Learning Solution
4. Best Higher Education LMS or Learning Platform

- **2018**

1. Best Higher Education LMS or Learning Platform
2. Best Instructional Solution in Other Curriculum Areas
3. Best Learning Relationship Management Solution

- **2019**

1. Best Virtual Learning Solution
2. Best Content Authoring Development or Curation Solution
3. Best Higher Education Learning Management Solution (LMS)

- **2020**

1. Best College and Career Readiness Solution
2. Best Cross-Curricular Solution
3. Best Virtual Learning Solution

5. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: Preface

Chapter 2: Basics of MATLAB

- Objective
- Introduction
- Importance of MATLAB
- The MATLAB interface

- The Features of MATLAB
- The MATLAB paradigm
- Applications of MATLAB
- The MATLAB setup
- Some helpful screenshots
- Conclusion

Chapter 3: Expressions and Basic Commands of MATLAB

- Objective
- Introduction
- Expression checking
- Valid expression
- Invalid expression
- Notations
- Comments
- Basic commands
- Conclusion

Chapter 4: Data Types, Variables and Operators

- Introduction
- Type conversion
- Variable
- Some important commands
- Operators in MATLAB
- Set operations
- Conclusion

Chapter 5: Decision Control Statements

- Objective
- Introduction
- Types of decision making
- Conclusion

Chapter 6: Loops Control Statements

- Objective
- Introduction
- Types of loops
- The jumping statements

- Conclusion

Chapter 7: Vectors

- Objective
- Introduction
- Types of vectors
- Accessing value from vector
- Deletion of data from vector
- Basic operations of vector
- Appending of vectors
- Magnitude of vector
- The dot product of a vector
- Scalar operations of vectors
- Conclusion

Chapter 8: Matrix

- Objective
- Introduction
- Accessing value from the matrix

- Deletion of data from the matrix
- Concatenation of matrices
- Identity and inverse of matrices
- Scalar operations of matrix
- Determinant of matrix
- Transpose of matrix
- Conclusion

Chapter 9: Arrays

- Objective
- Introduction
- Why array?
- Types of array
- Declarations and initialization of an array
- Predefined functions in an array
- Some other functions
- Multi-dimensional arrays
- Sorting of arrays

- Accessing data in cell arrays
- Conclusion

Chapter 10: Strings

- Objective
- Introduction
- An array of character in rectangular form
- Functions of strings
- Arrays, functions for identifying parts of strings, find and replace substrings
- Functions for string comparison
- Some other functions
- Conclusion

Chapter 11: Functions

- Objective
- Introduction
- Types of functions
- Conclusion

Chapter 12: Data Import and Export

- Objective
- Introduction
- Why Data Import?
- Low-level file I/O
- Import text data files with low-level I/O
- Data export
- Conclusion

Chapter 13: Plotting a Graph

- Objective
- Introduction
- Types of plot
- Various commands and functions
- The view() function
- Conclusion

Chapter 14: Graphics

- Objective
- Introduction

- Types of graphics objects
- Object properties
- Using the handle
- Conclusion

Chapter 15: Basic Algebra in MATLAB

- Objective
- Introduction
- The solve() function
- The root() function
- The disp() function
- Solving linear equations
- Solving quadratic equations
- Solving higher order equations
- Expanding and collecting equations in MATLAB
- Factorization and simplification of algebraic expressions in MATLAB
- The calculus in MATLAB
- Solving limits

- Left and right sided limits
- Differential formations
- Derivatives of logarithmic, exponential and trigonometric functions
- Maxima and minima of a curve
- The solution of differential equations
- Integration
- Definite integral using MATLAB
- Calculations of polynomials
- Roots of the polynomials
- Polynomial curve fitting
- Conclusion

You can't stay away! Get

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