

**gamax**  
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YOUR INNOVATION.  
OUR PASSION.

# AI and Data Science Curriculum



Gamax Laboratory Solutions helps you overcome your complex engineering challenges. We help a broad spectrum of industries to accelerate the innovation process in the field of R&D. As the sole authorized regional representative for Eastern Europe since 1996, we provide over two decades of expertise with Mathworks, Comsol, and Speedgoat products, software, and training. We offer consultation in project planning and design, research, virtual prototyping, testing, and go to market simulations.

## Foundation / Core MATLAB

**MATLAB Fundamentals**  
(3 Days)

**MATLAB for Data Processing and  
Visualization**  
(1 Day)

**Processing Big Data with MATLAB**  
(1 Day)

**Building Interactive Applications in  
MATLAB**  
(1 Day)

## Code Efficiency

**MATLAB Programming Techniques**  
(2 Days)

**Accelerating and Parallelizing  
MATLAB Code**  
(2 Days)

**Object-Oriented Design with  
MATLAB**  
(2 Days)

## Image & Video Processing

**Image Processing with MATLAB**  
(2 Days)

**Computer Vision with MATLAB**  
(1 Day)

## Statistics, Machine, and Deep Learning

**Machine Learning with MATLAB**  
(2 Days)

**Deep Learning with MATLAB**  
(2 Days)

**Statistical Methods in MATLAB**  
(2 Days)

**Wavelet Analysis with MATLAB**  
(1 Day)

**Signal Preprocessing and Feature  
Extraction for Data Analytics with  
MATLAB**  
(1 Day)

# MATLAB Fundamentals

This three-day course provides a comprehensive introduction to the MATLAB technical computing environment. Themes of data analysis, visualization, modeling, and programming are explored throughout the course. This course is intended for beginning users and those looking for a review.

## Prerequisites

Undergraduate-level mathematics and experience with basic computer operations.

[Detailed course outline >>](#)

DURATION	LEVEL
3 Days	Basic
	

### TOPICS

## Day 1

- Working with the MATLAB User Interface
- Variables and Commands
- Analysis and Visualization with Vectors

## Day 2

- Analysis and Visualization with Matrices
- Tables of Data
- Conditional Data Selection
- Organizing Data

## Day 3

- Analyzing Data
- Increasing Automation with Programming Constructs
- Increasing Automation with Functions

# MATLAB for Data Processing and Visualization

This one-day course focuses on importing and preparing data for data analytics applications. Topics discussed include importing data from multiple sources, processing data, producing informative customized graphics and working with irregular data.

## Prerequisites

MATLAB Fundamentals

[Detailed course outline >>](#)

DURATION	LEVEL
1 day	Medium
	

### TOPICS

## Day 1

- Importing Data
- Processing Data
- Customizing Visualizations
- Working with Irregular Data



# Processing Big Data with MATLAB

This one-day course focuses on adapting existing algorithms to work with a dataset that is too big to fit in memory. You will learn represent big data in MATLAB, adjust existing code to work efficiently with it, and scale up the analysis to take advantage of your own computing resources or a cloud.

## Prerequisites

MATLAB for Data Processing and Visualization, or equivalent experience using MATLAB

[Detailed course outline >>](#)

DURATION	LEVEL
1 day	Medium
	

### TOPICS

## Day 1

- Prototyping Big Data Algorithms
- Handling Custom Data and Algorithms
- Working with Clusters and Clouds

# Building Interactive Applications in MATLAB

This one-day course demonstrates how to create an interactive user interface for your applications in the App Designer environment. You will learn about user interface controls, responsive components, extra dialog windows and how to use them to create a robust and user-friendly interface for your MATLAB app. No prior experience of programming graphical interfaces is required.

## Prerequisites

MATLAB Fundamentals

[Detailed course outline >>](#)

A dark blue rounded rectangle containing course details. On the left, under 'DURATION', it says '1 Day' with three colored circles (orange, black, black) below. On the right, under 'LEVEL', it says 'Medium' with three colored bars (orange, orange, black) below.

DURATION	LEVEL
1 Day	Medium

### TOPICS

## Day 1

- Using the App Designer Environment
- Creating and Updating Plots
- Creating Responsive Components
- Managing Multiple Windows and Apps

# MATLAB Programming Techniques

This two-day course provides hands-on experience using the features in the MATLAB language to write efficient, robust, and well-organized code. These concepts form the foundation for writing full applications, developing algorithms, and extending built-in MATLAB capabilities. Details of performance optimization, as well as tools for writing, debugging, and profiling code are covered.

## Prerequisites

MATLAB Fundamentals or equivalent experience using MATLAB

[Detailed course outline >>](#)

DURATION	LEVEL
2 Days	Medium
	

### TOPICS

#### Day 1

- Structuring Data
- Managing Data Efficiently
- Utilizing Development Tools

#### Day 2

- Creating Robust Applications
- Structuring Code
- Verifying Application Behavior

# Accelerating and Parallelizing MATLAB Code

This two-day course covers a variety of techniques for making your MATLAB code run faster. You will identify and remove computational bottlenecks using techniques like pre-allocation and vectorization. In addition, you will compile MATLAB code into MEX-files using MATLAB Coder. On top of that, you will take advantage of multiple cores on your computer by parallelizing for-loops with Parallel Computing Toolbox and scale up across multiple computers using MATLAB Parallel Server.

## Prerequisites

MATLAB Fundamentals, or equivalent experience using MATLAB

[Detailed course outline >>](#)

DURATION

2 Days



LEVEL

Medium



### TOPICS

## Day 1

- Improving Performance
- Generating MEX-Files
- Parallelizing Computations

## Day 2

- Parallel for-Loops
- Offloading Execution
- Working with Clusters
- GPU Computing

# Object-Oriented Programming with MATLAB

This two-day course focuses on using object-oriented programming techniques to develop and maintain complex MATLAB applications. The main topics are creating custom data types, designing a MATLAB class, building class hierarchies, facilitating multiple references, writing unit tests and synchronizing objects.

## Prerequisites

MATLAB Programming Techniques or equivalent experience using MATLAB

[Detailed course outline >>](#)

DURATION	LEVEL
2 Days	Medium
	

### TOPICS

#### Day 1

- Creating Custom Data Types
- Designing a MATLAB Class
- Building Class Hierarchies

#### Day 2

- Facilitating Multiple References
- Writing Unit Tests
- Synchronizing Objects

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## Prerequisites

MATLAB Programming Techniques or equivalent experience using MATLAB

[Detailed course outline >>](#)

DURATION	LEVEL
2 Days	Medium
	

### TOPICS

#### Day 1

- Creating Custom Data Types
- Designing a MATLAB Class
- Building Class Hierarchies

#### Day 2

- Facilitating Multiple References
- Writing Unit Tests
- Synchronizing Objects

# Image Processing with MATLAB

This two-day course provides a comprehensive introduction of reference-standard algorithms and workflow for image processing, analysis, visualization and algorithm development. Examples and exercises demonstrate the use of appropriate MATLAB and Image Processing Toolbox functionality throughout the analysis process.

## Prerequisites

- MATLAB Fundamentals or equivalent experience using MATLAB.
- Basic knowledge of image processing concepts is strongly recommended.

[Detailed course outline >>](#)

DURATION	LEVEL
2 Days	Medium
	

### TOPICS

#### Day 1

- Importing and Visualizing Images
- Preprocessing Images
- Color and Texture Segmentation
- Improving Segmentation

#### Day 2

- Finding and Analyzing Objects
- Detecting Edges and Shapes
- Spatial Transformation and Image Registration
- Automating Image Registration with Image Features



# Computer Vision with MATLAB

This one-day course provides hands-on experience with performing computer vision tasks with MATLAB and Computer Vision System Toolbox.

Topics included: importing, displaying and annotating videos, detecting objects, estimating direction and strength of motion, tracking objects, removing lens distortion and measuring planar objects.

## Prerequisites

MATLAB Fundamentals or equivalent experience using MATLAB. Image Processing with MATLAB and basic knowledge of image processing and computer vision concepts.

[Detailed course outline >>](#)

DURATION	LEVEL
1 Day	Medium
	

### TOPICS

## Day 1

- Importing, Visualizing, and Annotating Videos
- Detecting Objects
- Estimating Motion
- Tracking Objects
- Camera Calibration

# Statistical Methods in MATLAB

This two-day course focuses on performing statistical data analysis with MATLAB and Statistics and Machine Learning Toolbox. Examples and exercises demonstrate the use of appropriate MATLAB and Statistics and Machine Learning Toolbox functionality throughout the analysis process; from importing and organizing data, to exploratory analysis, to confirmatory analysis and simulation.

## Prerequisites

MATLAB Fundamentals and knowledge of basic Statistics and Machine Learning Toolbox.

[Detailed course outline >>](#)

DURATION	LEVEL
2 Days	Medium
	

### TOPICS

## Day 1

- Importing and Organizing Data
- Exploring Data
- Distributions
- Hypothesis Tests

## Day 2

- Analysis of Variance
- Regression
- Working with Multiple Dimensions
- Random Numbers and Simulation

# Wavelet Analysis with MATLAB®

This one-day course shows how to use Wavelet Toolbox™ to perform wavelet analysis on signals. After motivating time-frequency analysis of time-varying signals using wavelets, both continuous and discrete wavelet-based techniques are covered. A background in signal processing is highly recommended for this course.

## Prerequisites

MATLAB Fundamentals or equivalent experience using MATLAB®; signal processing background is highly recommended.

[Detailed course outline >>](#)

DURATION	LEVEL
1 Day	L Medium
	

### TOPICS

## Day 1

- Continuous Wavelet Analysis
- Discrete Wavelet Analysis

# Signal Preprocessing and Feature Extraction for Data Analytics with MATLAB

This one-day course shows how to preprocess time-based signals and extract key features in the time and frequency domains. This course focuses on creating, importing, visualizing signals, preprocessing to improve data quality and extracting features in the time and frequency domains. No prior knowledge on signal processing is needed for this course.

## Prerequisites

MATLAB Fundamentals or equivalent experience using MATLAB

[Detailed course outline >>](#)

DURATION	LEVEL
1 day	Medium
	

### TOPICS

## Day 1

- Explore and Analyze Signals (Time Series) in MATLAB
- Preprocess Signals to Improve Data Set Quality
- Extract Features from Signals

# Machine Learning with MATLAB

This two-day course focuses on data analytics and machine learning techniques in MATLAB using functionality within Statistics and Machine Learning Toolbox and Deep Learning Toolbox. The course demonstrates the use of unsupervised learning to discover features in large data sets and supervised learning to build classification, predictive and regressive models and neural networks.

## Prerequisites

MATLAB Fundamentals

[Detailed course outline >>](#)

DURATION

2 Days



LEVEL

Medium



### TOPICS

## Day 1

- Importing and Organizing Data
- Finding Natural Patterns in Data
- Building Classification Models

## Day 2

- Improving Predictive Models
- Building Regression Models
- Creating Neural Networks

# Deep Learning with MATLAB

This two-day course provides a comprehensive introduction to create, train, and evaluate different kinds of deep neural networks. This course focuses on convolutional neural networks and long short-term memory networks to perform classification, regression, forecasting, solving custom problems and improving the performance.

## Prerequisites

MATLAB Fundamentals and Deep Learning with Onramp

[Detailed course outline >>](#)

DURATION

2 Days



LEVEL

Medium



### TOPICS

## Day 1

- Transfer Learning for Image Classification
- Interpreting Network Behavior
- Creating Networks
- Training a Network

## Day 2

- Improving Network Performance
- Performing Image Regression
- Using Deep Learning for Computer Vision
- Classifying Sequence Data
- Generating Sequences of Output

# The Value of an Experienced Training Expert

Our training courses are developed by MathWorks' team of training engineers with exclusive product knowledge gained from working closely with product developers. They acquire significant hands-on experience by using new products months before they are released and are always current on new capabilities.

## Learn Relevant Skills

Each course contains a set of learning objectives designed to help participants quickly master necessary skills. Our hands-on approach allows participants to practice, apply, and evaluate their knowledge in the classroom.

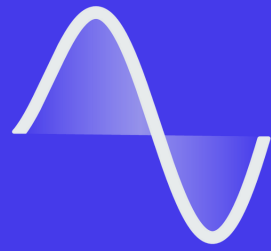
## Receive Expert Instruction

Our training employs industry-accepted best practices for adult learning and technical instruction, and has developed course content that facilitates a "Presentation, Practice, Test" approach to learning. All training engineers have been selected based on their theoretical knowledge, technical education, experience, and teaching ability.

## Increase Team Success Rates

According to post-training surveys, teams who receive 40 hours of training meet project objectives three times as often as those who receive 30 hours or less. This increase in training time raises the likelihood of meeting objectives by 90%.





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YOUR INNOVATION.  
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# Expand your knowledge

