MATLAB-101

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by Burak ÖZPOYRAZ

Byte & Bite Academy

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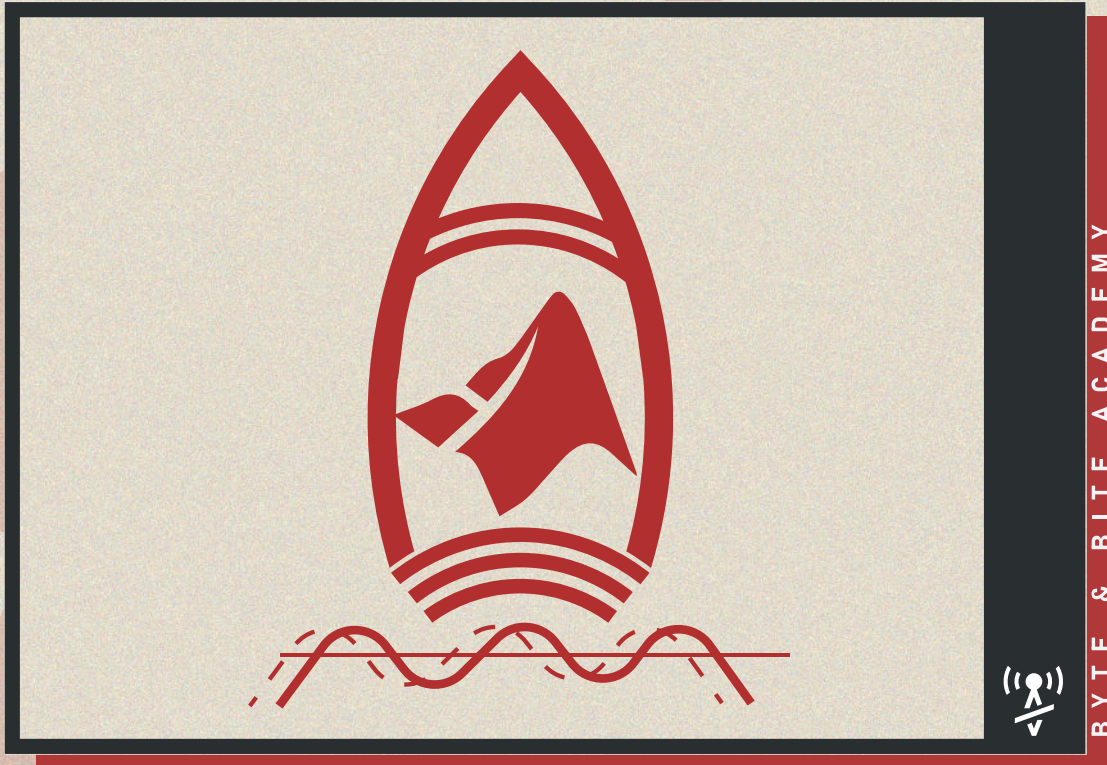
✉ burakozpoyraz@gmail.com

🌐 www.burakozpoyraz.com

GitHub burakozpoyraz

in Burak Özpoyraz

BURAK

OVERVIEW

↳ MATLAB is a matrix-based programming platform specifically designed for engineering and scientific research. With its powerful mathematical tools, extensive function library, and user-friendly interface, it is an indispensable tool for complex computations and data analysis. Widely used in fields such as signal processing, control systems, machine learning, and image processing, MATLAB has a broad application range spanning from academia to industry. It is particularly preferred for enhancing efficiency and fostering innovation in engineering projects.

COURSE DESCRIPTION

↳ The MATLAB-101 course is designed to teach fundamental programming concepts from scratch and ensure the effective use of MATLAB. This course focuses on transforming theoretical knowledge into practice, aiming to develop critical skills such as algorithm design, data analysis, and visualization.

📌 Who Should Take This Course?

↳ Those who have no prior experience with MATLAB but want to learn

↳ Individuals aiming to use MATLAB in engineering, science, and research projects

↳ Those who want to strengthen their programming and algorithm development skills

⏱ Course Duration and Structure

↳ The course has a total duration of **12 hours**, consisting of **6 lessons**, each lasting **2 hours**. Each session includes theoretical explanations, hands-on examples, and real-world problem-solving exercises.

🎯 What Will You Gain from This Course?

↳ Effectively use MATLAB's fundamental concepts and interface

↳ Improve your programming skills

↳ Design algorithms and implement them in MATLAB

↳ Analyze data efficiently using 2D and 3D visualizations

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COURSE CONTENT

LECTURE-1: MATLAB and Programming Basics

- Introduction to MATLAB environment and interface
- Understanding variable definition and data types
- Working with arithmetic operators
- Vector operations and manipulations
- Problem-1: Hands-on application of basic concepts and vector manipulation

LECTURE-2: Matrix Operations

- Understanding matrix creation and manipulation
- Matrix arithmetic and operations
- Problem-2: Matrix-based problem solving

LECTURE-3: Control Structures and Loops

- Implementing condition structures (if-else, switch-case)
- Understanding and utilizing loops (for, while)
- Problem-3: Application of control structures and loops

LECTURE-4: Functions

- Using built-in functions in MATLAB
- Creating custom functions to modularize code
- Working with symbolic functions for advanced calculations
- Problem-4&5: Develop function-based algorithms

LECTURE-5: Data Visualization

- Creating and customizing 2D plots and graphs
- Advanced 3D visualization techniques
- Data representation and interpretation

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LECTURE-6: Coding Challenge

📚 Hands-on coding challenges from **MATLAB Cody** to test your skills and encourage problem-solving

FREQUENTLY ASKED QUESTIONS

1. Is the course free?

Yes, there is no fee required to participate in this course.

2. Do I need any prior knowledge to join the course?

No, the course starts from scratch and covers fundamental programming and MATLAB concepts. You can participate without any prior experience.

3. What equipment do I need for the course?

A computer and access to MATLAB software are sufficient. You can visit MathWorks' website for MATLAB installation.

4. What level will I reach by the end of the course?

By the end of the course, you will have fully learned the fundamentals of MATLAB and significantly improved your algorithm development skills. This will enable you to use MATLAB confidently for projects in your field.

5. Will course materials be shared?

Yes, all course materials will be available via our GitHub repository. Don't forget to give a star to the repo to stay updated :)

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