School of Electrical & Electronics Engineering

Offers

Online Certification Program on

Mastering Simulink: From Basics to Advanced Modeling Techniques in MATLAB

Date: 02nd March - 19th May, 2024

Platform: MS Teams

Course Duration: 32 Hours

Registration Last Date: 18th February, 2024

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www.reva.edu.in

About the Certification Course

The online certificate program on "Mastering Simulink: From Basics to Advanced Modelling Techniques in MATLAB" provides learners with an in-depth understanding of MATLAB and Simulink, enabling them to properly utilise and take advantage of these strong tools. During the course, participants will get an in-depth knowledge of fundamental MATLAB concepts, including as syntax, variables, arrays, and matrices. They will next move to Simulink, where they will delve into Simulink block diagrams, model development, and simulation methods. The programme explores the complexities of frequently utilised blocks and libraries, including mathematical operations, lookup tables, discrete and continuous systems, and engineering applications. As participants continue, they will become proficient in advanced subjects like as signal routing, subsystem administration, and data visualisation using sinks. The course concludes with a practical final project, enabling participants to implement their learned knowledge in a real-life setting. Upon completion of the course, participants will acquire a comprehensive mastery of MATLAB and Simulink, enabling them to effectively solve complex engineering problems.

Objectives of Certification Program

1. Enable participants to achieve proficiency in MATLAB and Simulink usage through a structured and organized learning program.
2. Provide a comprehensive understanding of fundamental MATLAB concepts, covering syntax, variables, arrays, and matrices.
3. Develop participants' capability to create block diagrams, simulate models, and effectively utilize commonly used blocks and libraries in Simulink.
4. Equip learners with advanced modelling approaches, including discrete and continuous systems, signal routing, subsystem management, and data visualization.
5. Facilitate hands-on activities and a culminating project to actively apply acquired knowledge to real-life en   gineering situations.
6. Cultivate practical skills essential for addressing intricate engineering problems through practical applications and project completion.
7. Empower participants with the necessary skills and knowledge to proficiently apply MATLAB and Simulink for a diverse range of engineering applications, fostering confidence in their abilities.

Course Outcomes from Certification Program

Upon completion of the "Mastering Simulink: From Basics to Advanced Modeling Techniques in MATLAB" certification course, participants will achieve the following learning outcomes:

- Gain a solid understanding of MATLAB and Simulink, including their respective environments and the seamless integration between them.
- Develop proficiency in MATLAB basics, including syntax, variable manipulation, arrays, and matrices.
- Acquire advanced modeling skills in Simulink, covering block diagram creation, model simulation, and signal flow analysis.
- Demonstrate a comprehensive understanding of commonly used blocks and libraries within Simulink, with the ability to configure and utilize them effectively.
- Apply mathematical operations in Simulink, encompassing arithmetic, logical, and relational operations.
- Master the use of lookup tables, including an understanding of interpolation methods and their practical applications.

- Competently model discrete-time systems using Simulink, employing sample-and-hold, zero-order hold, and discrete filters.
- Proficiently model continuous-time systems in Simulink, utilizing transfer functions and state-space models.
- Explore real-world engineering applications, using Simulink to model and analyze systems relevant to various industries.
- Develop expertise in subsystem management and signal routing within Simulink, including the use of ports for signal connectivity.
- Utilize sinks for effective visualization and analysis of simulation results, demonstrating proficiency in data monitoring techniques.
- Generate input signals using Simulink sources for a variety of applications.
- Apply the acquired knowledge and skills in a final project, showcasing the ability to solve complex engineering problems using MATLAB and Simulink.
- Present and document the final project, demonstrating effective communication of modeling techniques and solutions.

Outline for Certification Program

Module 1: Introduction to MATLAB and Simulink [8 Hours]

1.1 Overview of MATLAB and Simulink
1.2 MATLAB Basics
1.3 Simulink Basics

Module 2: Commonly Used Blocks and Libraries [8 Hours]

2.1 The Commonly Used Blocks Library
2.2 The Math Operations Library
2.3 The Lookup Tables Library

Module 3: Discrete and Continuous Systems [8 Hours]

3.1 The Discrete Blocks Library
3.2 The Continuous Blocks Library
3.3 Engineering Applications

Module 4: Advanced Topics and Engineering Applications [8 Hours]

4.1 The Ports & Subsystems Library
4.2 The Signal Routing Library
4.3 The Sinks Library
4.4 The Sources Library
4.5 Final Project

About REVA University

REVA University is a State Private University established in Karnataka State under the Government of Karnataka Act No. 13 in the year 2012 in Bengaluru, the IT capital of India. The University is recognised by the University Grants Commission (UGC) and is approved by the AICTE (All India Council for Technical Education). REVA University prides itself in contributing to every student's holistic development. The University currently offers 41 full-time Undergraduate Programmes, 32 full-time Post Graduate programmes, 18 PhD programmes, and certification and diploma programmes. The University offers programmes in Engineering, Architecture, Science and Technology, Commerce, Management Studies, Law, Arts & Humanities, and Performing Arts. Courses are offered in Certificate/Diploma and Post Graduate Diploma too. REVA University facilitates research leading to a Doctoral Degree in all disciplines. The programmes offered by REVA University are well-planned and designed based on methodical analysis and research with emphasis on knowledge assimilation, practical applications, hands-on training, global and industrial relevance, and their social significance.

About School of EEE

The School of Electrical Engineering at REVA University, established in 2014, is dedicated to developing human resources in Electrical and Electronics Engineering. Offering undergraduate programs in 'Electrical and Electronics Engineering' and 'Electrical & Computer Engineering,' as well as postgraduate programs in 'Power and Energy Systems' and doctoral programs, the school boasts a team of well-qualified faculty members specializing in areas such as Power Systems, Power Electronics, VLSI, Signal Processing, Embedded Systems, and Control Systems. The school prioritizes students' welfare, providing individual counseling, additional coaching classes, and soft skill development. With well-equipped laboratories, state-of-the-art computing facilities, and a focus on interactive learning, the school emphasizes practical applications and student-centric teaching methods. Faculty members contribute to reputed journals and conferences, engage in funded research projects, and ensure a holistic educational experience for students through extracurricular and co-curricular activities.

About Course Instructor

Meet Dr. Bansilal Bairwa, an Assistant Professor at the School of Electrical and Electronics Engineering, REVA University, Bengaluru, and the lead instructor for our certification program, "Mastering Simulink: From Basics to Advanced Modeling Techniques in MATLAB." With a robust educational background, including a Ph.D. in Modeling and Performance Analysis of Li-ion Battery for Electric Vehicle Drive Cycles, Dr. Bairwa is an expert in the field. His academic leadership is evident through 48 research papers, two IEEE Best Paper Awards, and two KSCST project grants. Dr. Bairwa's expertise in MATLAB and Simulink is unparalleled, making him an ideal guide for participants seeking a comprehensive understanding, from basics to advanced modeling techniques. Globally recognized, he has chaired sessions at IEEE conferences, delivered keynotes, and demonstrated commitment to education through various development programs. Join Dr. Bansilal Bairwa in our certification program to benefit from his wealth of knowledge, hands-on experience, and leadership in the dynamic realm of Electrical and Electronics Engineering. Whether you're a novice or an experienced professional, Dr. Bairwa's guidance will empower you to master Simulink and excel in the field.

Chief Patrons

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Chancellor, REVA University

Shri. Umesh S. Raju
Pro-Chancellor, REVA University

Patrons

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Advisory Committee

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Associate Professor, School of Electrical and Electronics Engineering

Technical Committee

Dr. Sagar B. S.	Dr. Adithya Ballaji	Prof. Pavan B.

Assessment

As an essential component of the Simulink Certification Course, all participants are required to submit a Final Project Report to demonstrate their proficiency in using Simulink for system modeling and simulation. This report serves as an evaluation of your understanding, application of learned concepts, and ability to solve real-world engineering problems using Simulink.

1. Certificates will be issued to all participants who meet the evaluation criteria and successfully complete the certification requirements.
2. **At the end of this course, participants will also learn how to use LaTeX for writing research papers.**

Course Timeline

Saturday, 02-03-2024 9:30 AM to 10:30 AM	Sunday, 03-03-2024 9:30 AM to 11:30 AM	Saturday, 09-03-2024 9:30 AM to 10:30 AM	Sunday, 10-03-2024 9:30 AM to 11:30 AM
Saturday, 16-03-2024 9:30 AM to 10:30 AM	Sunday, 17-03-2024 9:30 AM to 11:30 AM	Saturday, 23-03-20241 9:30 AM to 10:30 AM	Sunday, 24-03-2024 9:30 AM to 11:30 AM
Saturday, 06-04-2024 9:30 AM to 10:30 AM	Sunday, 07-04-2024 9:30 AM to 11:30 AM	Saturday, 13-04-2024 9:30 AM to 10:30 AM	Sunday, 14-04-2024 9:30 AM to 11:30 AM
Saturday, 20-04-2024 9:30 AM to 10:30 AM	Sunday, 21-04-2024 9:30 AM to 11:30 AM	Saturday, 27-04-2024 9:30 AM to 10:30 AM	Sunday, 28-04-2024 9:30 AM to 11:30 AM
Saturday, 04-05-2024 9:30 AM to 10:30 AM	Sunday, 5-05-2024 9:30 AM to 11:30 AM	Saturday, 11-05-2024 9:30 AM to 10:30 AM	Sunday, 12-05-2024 9:30 AM to 11:30 AM
Saturday, 18-05-2024 9:30 AM to 10:30 AM	Sunday, 19-05-20241 9:30 AM to 10:30 AM		

Who can participate?

UG & PG Students/Research Scholars/Faculty Members / Industry Person

Registration Details:

Link for registration FEE: https://payment.reva.edu.in/
Fill the google form for registration: https://forms.gle/oT2zJum2ZiVvBF3G9

S. No	Registration Type	Registration Fee
1	Student (UG/PG) REVA University Bengaluru	₹ 1000
2	Student (UG/PG) from other Institutions	₹ 1500
3	Research Scholars from any Institutions	₹ 2500
4	Faculty/Academician	₹ 3000
5	Industry Person	₹ 4000

For any queries Contact to Dr Bansilal Bairwa
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