ROSE-HULMAN INSTITUTE OF TECHNOLOGY outreach

Rose-Hulman Engagement and Academic Collaboration (REACH) combines offerings to the business world through technical and professional development short courses—on and off campus—, solutions to real-world problems through Rose-Hulman Ventures, and an engineering management masters' degree program.

Our "reach" into the business world and community provides you services with talent and resources from one of the nation's leading engineering, mathematics and science colleges. The result is immediate impact solutions, strengthened companies, and technically and professionally developed individuals.

For over 134 years, Rose-Hulman has earned the reputation for excellence and is poised to assist you within our 16 majors. The programs of study are: applied biology, biochemistry, biomedical engineering, chemical engineering, chemistry, civil engineering, computer engineering, computer science, economics, electrical engineering, engineering physics, mathematics, mechanical engineering, optical engineering, physics, and software engineering.

Outreach Programs

- Master's Degree
- Professional Development
- Technical Short Courses
- Workshops
- Rose-Hulman Ventures
- Homework Hotline
- PRISM

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ROSE-HULMAN INSTITUTE OF TECHNOLOGY

Model-Based System Design Short Course: Modeling, Real-Time Testing, Realization

Instructors: Marc Herniter, Ph.D., Professor of Electrical and Computer Engineering and Zachariah Chambers, Ph.D., Associate Professor of Mechanical Engineering

OVERVIEW

Applies the philosophy of Model-Based-System Design to the analysis and design of a motor-generator system. The entire design process is covered where participants take a design from modeling a concept to deploying a controller on a real-time target and controlling the physical plant. Participants will be introduced to several levels of modeling and development including Software in the Loop (SIL), real-time simulations, deploying control algorithms on a real-time target, and testing a controller on a physical system. CAN networking and real-time tuning of control algorithms is covered.

COURSE OBJECTIVES

By the end of the short course, participants will be able to:

- Apply the philosophy of Model-Based-System Design to the design of a physical system.
- Build mathematical models for components in a system.
- Connect component models together to model a larger more complex system.
- Setup and run Software-in-the-Loop Simulations (SIL).
- Setup and run real-time simulations for a physical system.
- Apply basic control algorithms to a real physical system.
- Test control methods using SIL and real-time simulations.
- Deploy a control algorithm on a real-time target.
- Test the target with the physical plant.
- Understand the basics of CAN networks.

OUTCOMES

Participants will be able to apply the philosophy of Model-Based-System Design to the entire design cycle of a product: modeling of the physical system to estimate performance and design a controller, testing of the controller in SIL and real-time environments, deployment of the controller on a target, and testing the target with the physical system. Participants will be able to immediately apply model-based design approaches to their own design tasks and be prepared to acquire and implement additional software tools to enhance the quality and productivity of their engineering efforts.

Contact the Office of Outreach for details

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