Modelling and Simulation of Dynamic Systems

ABOUT THE COURSE

The term modeling refers to the development of a mathematical representation of a physical system while the term simulation refers to the procedure of solving the equations that resulted from model development. The quality or usefulness in a model is measured by its ability to capture the governing physical features of the problem. Here, the expertise of the modeler is useful. The model is amenable to manipulation which would be impossible, too expensive, or too impractical to perform on the system which it portrays. This feature makes it a very useful tool to study system behavior.

COURSE LAYOUT

Week 1: Introduction to Modelling and Simulation

Week 2: Bond Graph Modelling of Dynamic Systems

Week 3: Basic System Models

Week 4: System Models of Combined Systems

Week 5: Dynamic Response and System Transfer Function

Week 6: Block diagram/Signal flow diagram/State Space formulation and Frequency response.

Week 7: Simulation and Simulation application

Week 8: Parameter Estimation, System Identification and Optimization