Advanced Topics on

Dependable and Secure Cyber Physical Systems (CPS) and Internet of Things (IoT)

CS 5090 | TR | 2:05-3:20 pm | Spring 2020

A course on the theoretical and practical aspects of developing dependable and secure Cyber Physical Systems (CPS) and the Internet of Things (IoT), especially the controlling software of CPS and IoT (CPS-IoT).

Students will gain a a deep knowledge of the literature on modeling, designing and verifying dependable Cyber Physical Systems, as well as the programming of IoT. They will improve their knowledge and skills in (1) rigorous modeling of CPS-IoT; (2) design, verification and validation of CPS-IoT; (3) programming paradigms for CPS-IoT, and (4) methods for the design of fault-tolerant and secure CPS-IoT.

Prerequisities | Discrete Math, Formal Models of Computation, Skills in a common programming language. Students from disciplines other than Computer Science (e.g., ECE) should contact Dr. Ebnenasir for approval before enrolling in this course.

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Course Modules

- Background on (distributed) CPS-IoT

- Background on dependability aspects, especially fault tolerance and security as well as their interplay.

- Design methodologies for CPS-IoT

- Programming models for CPS-IoT.

- Distributed computing primitives for resource constraint systems.

CRN 12738 | Max class size: 30 students

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