CEN 6075 – Software Specification

Catalog Descriptions
Study of formal specification in the software development process; specification methods; specification of sequential and concurrent systems. (3 credits).

Type
Can be used as an elective for MSCS, MSIT, and Ph.D.

Prerequisites
Undergraduate level mathematics: discrete mathematics (set theory, logic, algebra) and graduate level software engineering (CEN5011).

Course Objectives
Students, after taking this course, are expected to know the benefits of formal specification in the software development process, and to understand a variety of formal specification methods and their applicability. Furthermore, students are expected to learn several well developed formal methods for both sequential and concurrent software systems and be able to apply them to specify small benchmark systems.

Topics

Fundamental Concepts of Software Correctness and Formal Specification Methods
Specification Method for Sequential Systems – Z
Model-oriented Formal Specification Method for Concurrent Systems – Petri Nets
Property-oriented Formal Specification method for Concurrent Systems – Temporal Logic

Textbook
Leslie Lamport, *Specifying Systems*, (Pearson Education Inc., 2003).

References
Mike Spivy, *Z Reference Manual*, (Springer-Verlag, 1992)
Wolfgan Reisig*, Petri Nets – An Introduction* (Springer-Verlag, 1985).
Amir Pmueli and Zohar Manna, *The Temporal Logic of Reactive and Concurrent Systems* (Springer-Verlag, 1992).

Last Update
Xudong He 8/31/2012