

CEN 6075 – Software Specification (Fall 2009)
(11:00 - 12:15 pm, T & Th, ECS136)

Dr. Xudong He
School of Computing and Information Sciences, ECS 212(B)
Office Hours: 1:15– 3:15 pm (T & Th) or by appointment
Tel. 348-1831, Email: hex@cis.fiu.edu

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

Prerequisites:

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

Text: Specifying Systems by L. Lamport, Pearson Education Inc., 2003.

Material:

This course uses materials from many books on software engineering and theoretical computer sciences, especially papers from many software engineering related journals and conference proceedings. Some useful reference books include:

- *Z Reference Manual* by Spivy, Springer-Verlag, 1992.
- *Petri Nets – An Introduction* by W. Reisig, Springer-Verlag, 1985.
- *The Temporal Logic of Reactive and Concurrent Systems* by A. Pnueli and Z. Manna, Springer-Verlag, 1992.

Website: <http://www.afm.sbu.ac.uk/>

Requirements:

There will be 5 homework assignments. Homework will be assigned every 2 weeks. Each homework assignment should be turned in at the end of class on the due date. Late homework turned in before the next lecture will receive partial credit. Homework assignments need to be typed.

Exams: There will be two exams on Oct. 8, and Dec. 3, respectively.

Grading: Assignments (50%) + Exams (50%) = 100%

Tentative Schedule:

Week 1: Fundamental Concepts of Software Correctness and Formal Specification Methods
Weeks 2 – 3: Specification Method for Sequential Systems – Z
Weeks 4 – 7: Model-oriented Formal Specification Method for Concurrent Systems – Petri Nets
Weeks 8 – 15: Property-oriented Formal Specification method for Concurrent Systems – Temporal Logic