

Advanced Topics in Software Engineering: Software Architecture

CS6704 Course Syllabus

Spring 2004: Monday, 7-10 p.m. Virginia Tech Northern Virginia Center Room 111

Instructor: Shawn Bohner – bohner@nvc.cs.vt.edu
Office Hours: Monday's, 5:00-7:00pm, NVC Room 312a
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Prerequisites: CS5704 or CS5714; must be able to read and write English well; some software development and/or maintenance experience will make course more meaningful.

Description: *Advanced Topics in Software Engineering: Software Architecture*

Prior to the mid-1980s, software engineering could be described as “programming-in-the-small” –consisting of relatively small and simple programs crafted by individuals or small teams serving a technologically unsophisticated customer-base. Since then, the industry evolved towards “software-engineering-in-the-large” where large, complex software systems are developed on heterogeneous platforms by process-aware or even mature software organizations that manage portfolios of software products. Software architecture emerged as more than an extension to software design – it became the framework for integrating technologies across the enterprise. This practicum-style course examines the theory and practice surrounding software architecture in the context of the enterprises they serve. The participant will learn about software architecture from the design and use perspective, and will be exposed to emergent software architecture principles.

Course Objectives:

Through basic texts and a series of directed readings, students will be exposed to a blend of classic techniques, latest research, and case studies to grasp a thorough understanding of key software architecture principles. As this is an advanced topics course, the students will be expected to participate and present material in class. Upon completing this course, a student will have been exposed to:

- Software Architectures from the Enterprise Architecture perspective,
- Design Principles for Software Architectures,
- Architecture Design Patterns,
- Software Product Lines,
- Common Software Architecture Frameworks, and
- Evaluation of Software Architectures.

Advanced Topics in Software Engineering: Software Architecture

Course Materials:

Required Textbook: Documenting Software Architectures: Views and Beyond by Paul Clements, et al. Publisher: Addison Wesley Professional; ISBN: 0201703726; 1st edition (September 26, 2002)

Other on-line material will be assigned.

Course Section Website:

Some course materials are on the web at <http://www.learn.vt.edu> (Adv Topics S/W Spring-04). Students are responsible for regularly checking your Virginia Tech email and this website.

Homework: Homework is a necessary instrument for tracking progress of the students. When assigned, it will be collected but may not be returned every time. The average student will work approximately 9 hours outside of class each week on this course. Everyone must have access to email, the World Wide Web (WWW), and Microsoft Word or an HTML editor.

Team Project(s): Everyone is expected to be a productive team member. Poor performance can result in a student receiving a grade lower on their project than their team's grade. Students may choose to work alone, but the same level of performance is expected of teams and individuals.

Handouts: Normally placed on course website but when not available there, will have paper version available at class meeting.

Honor Code: Graduate Honor Code at <http://fbox.vt.edu/studentinfo/gradhonor/> governs class and performance. Joint study is allowed (even encouraged) on "Study" and "Read" items; however, each student must produce his or her solutions individually. Students must not collaborate on the tests. Please recognize that copyrighted sites/pages/contents on the Internet cannot be saved or printed without explicit permission.

Examinations : Mid-Term, Final, occasional quiz

Grading: Homework/Projects/Reports (50%), Mid-term (25%), Final (25%).