

SYST 621 / ECE 674 System Architecture Design (3.0:3)

Spring 2011

Prerequisites: SYST 520 and SYST 620/ECE 673 or permission of instructor

Description: Architecture design and representation and the methodologies used to obtain them. Approaches based on software engineering constructs such as object orientation and service oriented architectures as well as systems engineering constructs such as structured analysis are used to design architectures and architecture frameworks are used to describe them. Executable models of the architecture are derived to be used for architecture evaluation. The roles of the systems architect and the systems engineer are discussed. Examples from current practice are used.

Instructor: Prof. Alexander H. Levis ENG Room 3245 Tel 703 993 1619 alevis@gmu.edu

Spring 2011: M 4:30 – 7:10 pm Classroom: S&T I: 126

COURSE OUTLINE (subject to change as this is a revised course)

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| 1/24/2011 | 1. | Systems Engineering and Architecture Design |
| 1/31/2011 | 2. | UML Review |
| 2/7/2011 | 3. | DoDAF and related Architecture Frameworks; Architecture Design |
| 2/14/2011 | 4. | Operational Concepts and Use Cases; Capabilities and Project Viewpoints |
| 2/21/2011 | 5. | Loosely Coupled Systems and Service Oriented Architectures |
| 2/28/2011 | 6. | Object Oriented Architecture Design; Rule and Dynamics modeling |
| 3/7/2011 | 7. | Operational and Data Viewpoints |
| 3/14/2011 | | Spring Break |
| 3/21/2011 | 8. | Services Viewpoints |
| 3/28/2011 | 9. | Systems Viewpoint |
| 4/4/2011 | 10. | Executable Models of Architectures; Review of CPN |
| 4/11/2011 | 11. | Issues in Architecture Evaluation |
| 4/18/2011 | 12. | Structural methods |
| 4/25/2011 | 13. | State Space methods |
| 5/2/2011 | 14. | Evaluating Systems of Systems and Federated SOAs |
| 5/16/2011 | | Final Exam |

Course notes and collateral readings will be made available for downloading through Blackboard. There are also five papers that cover some of the material in the course and present two examples.

No textbook is required; however, it will be a good idea to have a textbook on UML and Object Oriented design

Homework: There are weekly reading assignments and homework assignments.

Grading: Homework sets will count for 50% of the final grade. The midterm presentation will count for 10% of the grade and the in-class final examination for 40%.