SYST 621 / ECE 674 System Architecture Design (3.0:3) Spring 2006
Prerequisites: SYST 619 or ECE 672 or SYST 520 or permission of instructor

Description: Architecture design and representation and the methodologies used to obtain them. Approaches based on systems engineering constructs such as structured analysis and software engineering constructs such as object orientation are used to develop architecture representations or views and to derive an executable model of the architecture views. The roles of the systems architect and the systems engineer are discussed. Examples from current practice are used.

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Course Call numbers: SYST 621 001 10671; ECE 674 001 12304; SYST 621 Dahlgren

Spring 2006: M 4:30 – 7:10 pm in Room IN 131 (Innovation Hall)

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

1/23/2006	Architectures, Systems and Approaches
1/30/2006	Structured Analysis: Use cases, Activity Modeling, Data Modeling
2/6/2006	Structured Analysis: Rule Modeling, Dynamics Modeling Integrated Dictionary, Model Concordance
2/13/2006	Data Flow Models and DODAF Compliant representation and design process
2/20/2006	Structured Analysis: case study
2/27/2006	Class Presentations – Part I of project
3/6/2006	Mid Term
3/20/2006	Entity-Relation Diagrams; Object Orientation: Basic Principles and UML
3/27/2006	Object Orientation: Basic Principles and UML
4/3/2006	Object Orientation: UML Diagrams and Views
4/10/2006	Object Orientation: OO Arch. Design DODAF Compliant representation,
4/17/2006	Executable Models of Architectures – Structured Analysis
4/24/2006	Executable Models of Architectures – Object Orientation
5/1/2006	Class Presentations: part II of project
5/15/2006	Final Exam

Course notes will be made available for downloading through WebCT. There are four papers that cover some of the material in the course and present an example.

1. H. Levis and L. W. Wagenhals, "C4ISR Architectures I: Developing a Process for C4ISR Architecture Design," Systems Engineering, Vol. 3, No. 4, Fall 2000
2. L. W. Wagenhals, I. Shin, D. Kim and A. H. Levis. "C4ISR Architectures II: A Structured Analysis Approach for Architecture Design," Systems Engineering, Vol. 3, No. 4, Fall 2000
3. M. P. Bienvenu, I. Shin, and A. H. Levis, "C4ISR Architectures III: An Object-Oriented Approach for Architecture Design," Systems Engineering, Vol. 3, No. 4, Fall 2000
4. Lee W. Wagenhals, Sajjad Haider, and A. H. Levis, "Synthesizing Executable Models of Object Oriented Architectures," Systems Engineering, Vol. 6, No. 4, 2003

Homework: There are weekly reading assignments and homework assignments. The class will be divided into teams of four persons each.
Grading: Homework sets will count for 40% of the final grade. There will be an in-class midterm examination (30%) and an in-class final examination (30%).