SYLLABUS

Date/ Revision	April 2017
Faculty	Engineering
Approval	Head of Program Study

SUBJECT : SOFTWARE ENGINEERING

1. Identification of Subject:

Name of Subject	: SOFTWARE ENGINEERING
Code of Subject	:
SKS / ECTS	:
Semester	:
Study Program	: CSE
Lecturer	:

2. Competency

After having the course, students are expected to:

a) provide a good understanding of the role and importance of software architecture within software development teams using agile approaches.
b) describe and illustrate a few practices for supporting agile architecting in large-scale industrial software development.

3. Description of Subject:

This course will covers Fundamentals of Agile Architecting, which will explores several of the most basic issues surrounding the task of agile software delivery and the role of architectural design and decision-making. Managing Software Architecture in Agile Projects considers how core architectural ideas impact other areas of software delivery, such as knowledge management and continuous system delivery. Agile Architecting in Specific Domains offers deeper insight into how agile software architecture issues affect specific solution domains. Industrial Viewpoints on Agile Architecting takes a practical delivery perspective on agile software delivery to provide insights from software engineers and the lessons learned from the systems they have been responsible for delivering.

4. Learning Approach

Approach	: Problem based learning
Method	: Discussion, question answer, group work
Student Task	: Practices and homework
Media	: Power Point Presentation, Video, Modulo

5. Evaluation

a)	Absence maximum	: 25%
b)	Participation in discussion	: 5 points
c)	Homework, Classwork	: 10 points
d)	Presentation, Simulation	: 10 points

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e) Daily Quiz : 15 points
f) Final Examination : 60 points
Total : 100 points

Contents/ Topics of Lecturing:

Week	Topics	Content	Remark
1	Making Software Architecture and Agile	Software Architecture , Agile Software Development and Architecture , Making Architectural and Agile Approaches Work	
2	The DCI Paradigm: Taking Object Orientation into the Architecture World	The Vision: What Is Architecture? , Form and Function in Architectural History , What Is Object Orientation? Achieving the Vision , Shortcomings of the Models , DCI as a New Paradigm , DCI and Architecture	
3	Refactoring Software Architectures	Shallow and Deep Refactoring , Dealing with Design Flaws , Evolution and Styles of Refactoring—Code Refactoring , Evolution and Styles of Refactoring—Refactoring to Patterns , The Motivation for Software Architecture Refactoring , Architectural Smells , A Real-World Example , Quality Improvement , The Process of Continuous Architecture Improvement	
4	Driving Architectural Design and Preservation from a Persona Perspective in Agile Projects	Personas in the Design Space , Discovering ASRs , Personas for Driving Architectural Design , Personas and Architectural Preservation , ASPs in Other Project Domains	
5	Architecture Decisions: Who, How, and When?	Research Methodology , The Agile Architecture Axes Framework , Industrial Cases , Analysis , Reflection , Related and Future Work	
6	Supporting Variability Through Agility to Achieve Adaptable Architectures	Background , Related Work , Challenges When Combining Variability and Agility , Arguments for Combining Variability and Agility , Agile-Inspired Variability Handling	
7	Continuous Software Architecture Analysis	Software Architecture Analysis , Approaches to Software Architecture Analysis , Continuous Software Architecture Analysis , CSAA in Existing Approaches , CSAA and Analysis Goals , Experiences with an Approach to CSAA , Findings and Research Challenges	
8	MID TERM BREAK		
9	Lightweight Architecture Knowledge Management for Agile Software Development	Challenges of Agile Architecture Documentation , Supporting Techniques for AKM in Agile Software Development , Architecture Practices in Agile Projects , Architectural Information Flow in Industry , AKM in Scrum , Related Work	
10	Bridging User Stories and Software Architecture: A Tailored Scrum for Agile Architecting	Agile Architecting , Case Study: Metering Management System in Electrical Power Networks , Agile Architecting Mechanisms , A Tailored Scrum for Agile Architecting , Agile Architecting in Practice , Findings About Agile Architecting	

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11	Architecture-Centric Testing for Security: An Agile Perspective	Research Motivation , Overview of Limitations in Current Post-Implementation Methods , Approach , The Agility of the Approach , Identity Management Case Study , Agile Development, Architecture, and Security Testing	
12	Supporting Agile Software Development and Deployment in the Cloud: A Multitenant, Multitarget Architecture	Cloud Computing , Multitenancy Architectures , Agility and Multitenancy Architectures , Multitenancy Monotarget: Agility Challenges , Supporting Agility: Multitenancy Multitarget , Globalgest: A Real MT2 System	
13	Agile Architecting: Enabling the Delivery of Complex Agile Systems Development Projects Building a Platform for Innovation: Architecture and Agile as Key Enablers	Agile and Complex Systems Development Approaches Need to Merge , Identifying the Right Amount of Architecture , Cost Reduction Through Architecture , Minimize Rework Through Architecture , Accelerate Delivery Through Architecture - An Architecture Heritage , Iterative Development , Along Came Agile , Agile with Discipline , Beyond Architecture and Agile	
14	Opportunities, Threats, and Limitations of Emergent Architecture	Purpose, Activities, and Objectives of Architecture , Analysis of Emergent Architecture , Challenges to Agile Adoption at Aviva UK , The Key Role of Architecture in Driving Agile Success , Incremental Agile and Architecture Transformation	
15	FINAL EXAMINATION		

6. Book Reference:

Agile Software Architectur, Aligning Agile Processes and Software Architectures, Muhammad Ali Babar et al. Morgan Kaufmann, 2014, ISBN 978-0-12-407772-0

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