COURSE DESCRIPTION - SE-220

Course Code	SE-220
Course Title	Software Design & Architecture
Credit Hours	3+1
Textbook (or **Laboratory Manual** for Laboratory Courses)	1) UML 2 Toolkit by Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, 1st Edition, 2004. 2) Software Modeling and Design: UML, Use Cases, Patterns, and Software Architectures, Hassan Gomaa, Cambridge University Press, 1st Edition, 2011. 3) UML and the Unified Process, Practical object-oriented analysis and design by Jim Arlow, Ila Neustadt, 1st Edition, 2002.
Reference Material	1) Applying UML and Patterns 3rd Edition by Craig Larman, 2004. 2) The Unified Modeling Language Reference Manual, 2nd edition by James Rumbaugh, Ivar Jacobson and Grady Booch, 2005. 3) UML Distilled, 3rd Edition by Martin Flower, 2004.

Topics Covered in the Course, with Number of Lectures on Each Topic (assume 15-week instruction and one-hour lectures)

1. Topics to be covered:

Weeks	List of Topics	No. of Weeks	Contact Hours
1	Introduction to SDA(OOAD), SDLC, Software Environments, The Rational Unified Process.	1	3
2	Agile software engineering, Architectural design issues & MDD	1	3
3	Use case Diagrams	1	3
4	Class Diagrams	1	3
5	Entity, Control and Boundary classes	1	3
6	Mid Term 1		
7	Activity Diagrams,	1	3
8	Model, Views and Diagrams, 4+1 view, Design Principles, Architectural Structures & Styles	1	3
9	Interaction Diagrams, Sequence and Collaboration Diagrams	1	3
10	Timing Diagrams, Architectural Patterns	1	2
11	Homogenization of Classes, Implementation, Component and Deployment Diagrams	1	1 2
12	Mid Term 2		
13	State Chart Diagrams, Architectural & Design Qualities	1	2 1
14	MVC, Facade, Singleton Pattern	1	3
15	Factory and Adapter Pattern	1	3
16	Review	0.5	1.5
17	Project Submission & Presentation	1.5	4.5
	Total	**15**	**45**

Laboratory Projects/Experiments Done in the Course

Week	Topic	hours
1	Lab 1: Intro to Eclipse IDE & Papyrus (OOP Revision)	3
2	Lab 2: Domain Model	3
3	Lab 3: Use Case Diagram	3
4	Lab 4: Class Diagrams	3
5	Lab 5: Analysis classes	3
6	Lab 6: Midterm (from Lab 1 to Lab 5)	3
7	Lab 7: Activity Diagrams	3
8	Lab 8: Interaction Diagrams (Sequence Diagram, System Sequence Diagram and Collaboration Diagram)	3
9	Lab 9:-Timing Diagrams	3
10	Lab 10 : Component & Deployment Diagrams	3
11	Lab 11: Communication & State chart diagrams	3
12	Lab 12: Design patterns (Façade / Singleton Pattern)	3
13	Lab 13: Design patterns (Adapter / Factory Patterns)	3
14	Lab 14: Lab Final Exam	3