Course Name	*Advanced Object-oriented Design and Development*			
Course Information	**Course Code**	**Course No.**	**Credit Hour**	**Prerequisite(s)**
	0912613	IS 613	3 (3-0-6)	
Course Track	☒Program Core ☐Electives			

Course Description

This course introduces software as complex products and adopts proper engineering approach with appropriate modelling and methodology to develop them. The focus is on object-oriented modelling and methodology. Hence Unified Modelling Language (UML) is introduced as a robust modelling tool. Advanced topics such as Component Reuse, Model-Driven Architecture (MDA) and Design Patterns etc. are also covered in this course. Case studies and recent research papers along with textbooks are used in delivering the course. For the course project, students will use Unified Modeling Language (UML) based development tools (such as, IBM Rational Rose or UMLet) to design a software with average complexity. Although students are not required to develop the complete software, they will be required to demonstrate both Forward Engineering and Reverse Engineering with the help of structural codes generated automatically by such tools. In general, students will experience the complete Software Development Life-Cycle using OO methodology as defined by the Unified Software Development Process (UP).

Course Outcomes

After the completion of this course, the student will be able to:

1. Familiarize with the state-of-the-art software engineering techniques using object-oriented modelling methodology
2. Develop an insight to the capabilities and pitfalls of object-oriented approach and other Software Engineering approach
3. Integrate advanced OO features (reusable component, design patterns, etc.) in the design and development of object-oriented software
4. Develop Model-Driven Architecture and Model Driven Software Engineering for safety-critical systems
5. Analyze, design and develop practical systems of average complexity from a software architect's point of view using the Unified Process
6. Demonstrate Model-Driven Architecture and Model Driven Software Engineering for safety-critical systems

Assessment Policy	**Assignments**	-	**Quiz**	15%	**Project**	25%
	Midterm	20%	**Final**	40%	**Others**	-
Textbook	Bernd Bruegge and Allen H. Dutoit, "Object-Oriented Software Engineering Using UML, Patterns, and Java", 3rd Edition, Prentice Hall, 2009, ISBN-13: 978-0136061250					

	Erich Gamma, Richard Helm, Ralph Johnson and John M. Vlissides, "Design Patterns: Elements of Reusable Object-Oriented Software", Addison-Wesley Professional, 2007, ISBN: 0201633612
References	1. Matt Weisfeld, "The Object-Oriented Thought Process", 3rd Edition, Addison-Wesley, 2009, ISBN-13: 978-0672330162