

Category of Course	Continuous Assessment	Mid – Semester Assessment	End Semester
Theory Integrated with Practical	15(T) + 25 (P)	20	40

CO - PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓	✓									✓
CO2	✓	✓	✓	✓	✓	✓					✓	✓
CO3	✓	✓	✓	✓	✓	✓	✓				✓	✓
CO4	✓	✓	✓	✓	✓	✓					✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓				✓	✓
CO6	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓

CS6110 OBJECT ORIENTED ANALYSIS AND DESIGN

Prerequisites for the course: None

OBJECTIVES:

- To capture the requirements specifications of an intended software system
- To design software with static and dynamic UML diagrams
- To map the design properly to code
- To improve the software design with design patterns
- To test the software against its requirements specifications

OBJECT ORIENTED ANALYSIS AND DESIGN	L	T	P	EL	CREDITS
	3	0	4	3	6
MODULE I :					
	L	T	P	EL	
	3	0	4	3	
Introduction to OOAD with OO Basics - Unified Process – UML diagrams					
SUGGESTED ACTIVITIES :					
<ul style="list-style-type: none"> • EL - Identifying a suitable case study to work on for a complete end-end implementation • EL – Document the Software Requirement Specifications(SRS) for the identified case study • Practical – Getting familiar with the case tool 					
SUGGESTED EVALUATION METHODS:					
<ul style="list-style-type: none"> • Assignment problems • Quizzes 					

MODULE II :	L	T	P	EL
	3	0	4	3
Use Cases –Case study – the Next Gen Point of Sale(POS) system, Inception Use case Modelling				
SUGGESTED ACTIVITIES : <ul style="list-style-type: none"> EL – Identify use cases for the chosen case study and develop the Use Case model. Practical – Presenting the SRS for the chosen case study and obtaining approval 				
SUGGESTED EVALUATION METHODS: <ul style="list-style-type: none"> Presentations Quizzes 				
MODULE III :	L	T	P	EL
	3	0	4	3
Use case modeling - Relating Use cases – include, extend and generalization - Class Diagram—Elaboration – Domain Model – Finding conceptual classes and description classes – Associations – Attributes				
SUGGESTED ACTIVITIES : <ol style="list-style-type: none"> EL - Identify the conceptual classes to develop a DomainModel and Class Diagram. Practical – Presenting the use case model (for the chosen case study) along with use case diagrams. 				

SUGGESTED EVALUATION METHODS: <ul style="list-style-type: none"> Presentations Quizzes 				
MODULE IV :	L	T	P	EL
	3	0	4	3
Domain Modeling using class diagrams - Domain model refinement – Finding conceptual class Hierarchies – Aggregation and Composition				
SUGGESTED ACTIVITIES : <ul style="list-style-type: none"> EL – Expand the domain model by identifying the hierarchies, association, aggregation and composition Practical – Present the refined use case model and the basic domain model 				
SUGGESTED EVALUATION METHODS: <ul style="list-style-type: none"> Presentations Quizzes 				
MODULE V :	L	T	P	EL
	3	0	4	3
Dynamic Diagrams - UML interaction diagrams - System sequence diagram – Collaboration diagram - Communication diagram				

SUGGESTED ACTIVITIES :				
<ul style="list-style-type: none"> EL – Develop sequence diagrams for the scenarios identified in the use case model Practical – Presenting the complete domain model(after refinement) and class diagrams for the chosen case study 				
SUGGESTED EVALUATION METHODS:				
<ul style="list-style-type: none"> Presentations Quizzes 				
MODULE VI:	L	T	P	EL
	3	0	4	3
State machine diagram and Modelling – State Diagram - Activity diagram				
SUGGESTED ACTIVITIES :				
<ul style="list-style-type: none"> EL - Develop state and activity diagrams for the chosen case study Practical – Presenting the dynamic model with sequence diagrams 				
SUGGESTED EVALUATION METHODS:				
<ul style="list-style-type: none"> Presentations Quizzes 				
MODULE VII:	L	T	P	EL
	3	0	4	3
Implementation Diagram - UML package diagram - Component and Deployment Diagrams				
SUGGESTED ACTIVITIES :				
<ul style="list-style-type: none"> EL –Finalize the environment and initiate implementation Practical – Presenting the complete dynamic model with state and activity diagrams and refined sequence diagrams 				
SUGGESTED EVALUATION METHODS:				
<ul style="list-style-type: none"> Presentations Quizzes 				
MODULE VIII:	L	T	P	EL
	3	0	4	3
Designing objects with responsibilities – Creator – Information expert – Low Coupling – High Cohesion – Controller. Design Patterns – Creational – Factory method – Structural – Bridge – Adapter – Behavioural– Strategy – Observer				
SUGGESTED ACTIVITIES :				
<ul style="list-style-type: none"> EL– Continue with the implementation Practical – Demonstrate partial implementation 				
SUGGESTED EVALUATION METHODS:				
<ul style="list-style-type: none"> Practical demonstration Quizzes 				
MODULE IX:	L	T	P	EL
	3	0	4	3
Applying Gang of Four design patterns – Mapping design to code				
SUGGESTED ACTIVITIES :				
<ul style="list-style-type: none"> EL – Identifying suitable design patterns to improve the design and documenting the rationale behind their selection. Proceed with the refined implementation by applying them, Practical – Demonstrate complete implementation without the design patterns 				

SUGGESTED EVALUATION METHODS:				
<ul style="list-style-type: none"> • Practical demonstration • Quizzes 				
MODULE X:	L	T	P	EL
	3	0	4	3
Object Oriented Methodologies – Software Quality Assurance – Impact of object orientation on Testing – Develop Test Cases and Test Plans				
SUGGESTED ACTIVITIES :				
<ul style="list-style-type: none"> • EL – Developing a Test plan with all test cases • Practical – Present the modified design with appropriate design patterns. Demonstrate the implementation after incorporating the implementation of suitable design patterns 				
SUGGESTED EVALUATION METHODS:				
<ul style="list-style-type: none"> • Presentations • Quizzes 				
MODULE XI	L	T	P	EL
	2	0	4	0
Revisiting and consolidating all salient points and key insights based on the team projects				
Suggested Activities:				
<ul style="list-style-type: none"> • Practical – Demonstrating the test plan and the various test cases 				
Suggested Evaluation:				
<ul style="list-style-type: none"> • Presentations 				

OUTCOMES:

Upon completion of the course, the students will be able to:

- Identify and map basic software system requirements in UML
- Express software design with UML diagrams
- Design and implement software systems using OO methodology
- Improve software design using design patterns
- Test the software system developed against the intended requirements

TEXT BOOK:

1. Craig Larman, “Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development”, 3rd. Edition, Pearson Education, 2005.

REFERENCES:

1. Martin Fowler, “UML Distilled: A Brief Guide to the Standard Object Modeling Language”, Third Edition, Addison Wesley, 2003.
2. Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, “Design Patterns: Elements of Reusable Object-Oriented Software”, Pearson, 2015.

EVALUATION METHOD TO BE USED:

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CO3	✓	✓	✓	✓	✓	✓			✓	✓		
CO4	✓	✓	✓	✓	✓				✓			✓
CO5	✓	✓	✓	✓	✓							✓

CS 6111

COMPUTER NETWORKS

CS 6111	COMPUTER NETWORKS				L	T	P	EL	CREDITS
					3	0	4	3	6
OBJECTIVES									
<ul style="list-style-type: none"> To understand the division of network functionality into layers To familiarize the functions and protocols of each layer of the TCP/IP protocol suite To visualize the end-to-end flow of information To understand the components required to build different types of networks To learn concepts related to network addressing and routing 									
MODULE I :					L	T	P	EL	
					3	0	8	3	
Building a network - Network edge and core – Layered Architecture – ISO/OSI Model – Internet Architecture (TCP/IP) - Performance Metrics – Introduction to Sockets.									
SUGGESTED ACTIVITIES :									
<ul style="list-style-type: none"> Performance Metrics – In class EL - Socket Programming Practical – Socket Programming 									
SUGGESTED EVALUATION METHODS:									
<ul style="list-style-type: none"> Problems on Performance Metrics 									
MODULE II :					L	T	P	EL	
					4	0	8	3	
Application Layer protocols – HTTP- FTP – Email – DNS									
SUGGESTED ACTIVITIES :									
<ul style="list-style-type: none"> EL - HTTP/DNS format using Wireshark Practical – Implementation of HTTP, Web Caching, FTP using socket programming 									
SUGGESTED EVALUATION METHODS:									
<ul style="list-style-type: none"> Assignment problems Quiz on Wireshark 									