Institute of Business & Information Technology
University of the Punjab
Quaid-e-Azam Campus, Lahore

Spring Term

Basic Information:

Title:	Object Oriented Analysis & Design	**Code**	IT 365
Program:	BBIT (IT Major)	**Credit Hours:**	Three (03)
Sessions:	30 Classes + Mid Term + Final Term	**Pre-Requisite:**	IT 361

Course Description:

Object Oriented Approach, at present, is the method of choice for the industry to develop different software. It is a marked shift, in the way a software solution is conceived and implemented, from the structured or procedural design paradigm. Instead of viewing the problem domain as a sequence or set of procedures, the emphasis in OOAD is on entities that interact with one another while making a design closer to the problem domain and the way human beings think and understand the real world.

Learning Outcomes:

After the completion of this course, it is expected that students who will involve themselves in the knowledge base working of the course will be capable to

1. Learn to perform Analysis on a given domain and come up with an Object Oriented Design (OOD). Various techniques will be discussed and practiced which are commonly used in analysis and design phases in the software industry.
2. Unified Modeling Language (UML) will be used as a tool to demonstrate the analysis and design ideas and an object oriented programming language such as Java would be used to implement the design.
3. Have a sound understanding of the fundamental concepts of the OOAD paradigm
4. Gain a comfortable level of using UML notation to describe OOAD.
5. Understand and apply the different common practices used in software industry for the analysis, design and production of software.
6. Analyze, design and implement practical systems of up to average complexity with in a team.
7. Become familiar with different tools used by industry in the software development process.

Teaching Learning Methodology:

The formal teaching component of this course consists of active student participation in and contribution to all forms of teaching and learning i.e. lectures, discussions, research assignments and projects. Lectures will be twice a week of 90 min each.

Group Configurations:

Students will form a team of 4 to 6 members. They will choose a real world software problem (website, mobile app, desktop app, game, POS etc.) and the ultimate goal of the team will be to apply object oriented design skill. The final submission will include complete OO design and suggestions for the implementation of design patterns. All templates will be provided by the instructor well before start of project.

Weekly Term Plan

Wk	Lecture Topic	Activity
01	*Introduction to course and building blocks of OOAD*	
02	*The need for proper analysis, design. Understanding UP.*	
03	*Software Requirements*	Quiz 01
04	*Understanding the role of Use-cases in Software Development Process*	
05	*UML: Use case, Use case diagrams, Activity diagrams, Sequence Diagram*	A01
06	*Business and Domain Modeling*	
07	*Sequence Interaction and Class diagram*	**TPA**
08	*Mid Term Examination*	
09	*Fundamentals of Design, Responsibility Assignment*	
10	*UML: Sequence Diagrams, collaboration diagrams*	
11	*Use Case Realizations. Application of Design Patterns*	
12	*Visibility, Design Class Diagrams*	Quiz 2 & A02
13	*Translating Design to Implementation*	
14	*Upcoming Techniques & Technologies*	
15	*Revision & Practice*	
16	*Final Term Examination*	

Spring Term

Topics in Detail

No	Title
01	*Reason to study and Learn Object oriented design*
02	*The need for proper analysis, design.*
03	*Understanding UP.*
04	*Understanding requirements.*
05	*Understanding the role of Use cases in functional requirements,*
06	*Software Requirements & design, testing and project estimation*
07	*UML: Use case , Use case diagrams, Activity diagrams,*
08	*Sequence Diagram (System level)*
09	*Business and Domain Model*
10	*Operation Contracts, Interaction Diagrams*
11	*Fundamentals of Design,*
12	*Responsibility Assignment*
13	*UML: Sequence Diagrams, collaboration diagrams*
14	*Use Case Realizations.*
15	*Application of Design Patterns (GRASP)*
16	*Visibility, Design Class Diagrams*
17	*Translating Design to Implementation*
18	*Multi-tiered , Multi layered application architecture*

Text & Recommended Readings

1. Applying UML and Patterns (Third Edition By Craig Larman)
2. Object oriented Systems Analysis and Design Using UML (Second Edition) Simon Bennet, Steve McRobb 2002 – McGraw-Hill

Term Research Assignment Specification

1. C# Dot Net
2. Rational Rose
3. Microsoft Word for Documentation

Headings	Arial 11pt Bold
Normal Text	Times New Roman 10pt
Header Footer	Times New Roman 8pt
Paragraph	Single Line Spacing First Line Indent 1.0 cm
Page Margins	2 cm from each side

Spring Term

Grading Policy:

Final Grade for this course will be the cumulated result of the following term work with relevant participation according to the quoted percentage.

Sessional	**25%**		***Mid Term***	**35%**		***Final Term***	**40%**
Assignments	10 %		*Mid Term Exam*	25%		*Final Exam*	30%
Quizzes	10%		*Major Report/Work*	10%		*Case Study/ Project/ Term Paper*	10%
Presentations	05%						

Remember subdivision of Mid Term and Final Term Examination should be done only in extreme cases of very essential and major Grading Instruments.

Dishonest Practices & Plagiarism

Any student found responsible for dishonest practice/cheating (e.g. copying the work of others, use of unauthorized material in Grading Instruments) in relation to any piece of Grading Instrument will face penalties like deduction of marks, grade 'F' in the course, or in extreme cases, suspension and rustication from IBIT.

For details consult Plagiarism Policy of PU at http://pu.edu.pk/dpcc/downloads/Plagiarism-Policy.pdf

Grading System:

Letter Grade	Grade Point	Num Equivalence
A	4.00	85 – 100 %
A-	3.70	80 – 84 %
B+	3.30	75 – 79%
B	3.00	70 – 74 %
B-	2.70	65 – 69 %
C+	2.30	61 – 64 %
C	2.00	58 – 60 %
C-	1.70	55 – 57 %
D	1.00	50 – 54 %
F	0.00	Below 50 %
I	Incomplete	*
W	Withdraw	*

Norms to Course:

- ✓ *Submission Date and Time for the term instruments is always* **Un-Extendable**
- ✓ *5 Absentees in class will result in forced withdrawal.* ***(PU Policy)***
- ✓ *Re-sit in Mid and Final Term will cause you a loss of 2 and 3 grade marks respectively.* ***(PU Policy)***
- ✓ *This is your responsibility to keep track of your position in class evaluation units.*
- ✓ *After the submission date, NO excuse will be entertained.*
- ✓ ***Keep a copy of all submitted Grading Instruments.***
- ✓ *Assignment is acceptable only in its Entirety.*
- ✓ *No make up for any assignment and quiz.*
- ✓ *Copied & Shared work will score Zero.*
- ✓ *Assignments are Individual.*

Good Luck

For the Spring Term