Dire Dawa Institute of Technology Course Description Software engineering Program	
Course Code:	SEng2052
Course Title:	**Object Oriented System Analysis and Design**
Degree Program:	B.Sc. in Software Engineering
Module Coordinator:	Module 05, Software Engineering Basics
Academic Year:	II (2017)
Target Group:	Second year Software engineering student
Enrolment:	Regular
Semester:	II
ECTS Credit:	5 (3hr Lecture, 2hr Tut)
Course Weight:	3hr Lecture, 2hr Tut
Course Type:	Major
Prerequisite Course:	Advanced Programming

Instructor Information	
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Course Objective and Learning Outcomes:

After successfully completion of the course, students will be able to:

- ✓ Differentiate structured approach from object oriented approach
- ✓ Explain the need for object oriented systems analysis and design
- ✓ Compare and contrast conventional and object oriented software development methodologies
- ✓ Demonstrate the application of Unified Modeling Language(UML)
- ✓ Apply software development process principles, and practices and crate a high quality software
- ✓ Understand the object technology and modeling principles.
- ✓ Know the techniques of modeling aspects of systems
- ✓ Analyze user requirements using UML of OO techniques.
- ✓ Make a detailed design using UML of OO techniques.

Course Description

- ✓ Introduction to Object Technology; Principles of Modeling, Principles of Object Orientation; systems development using the object technology; Modeling; principles of modeling; requirements gathering and modeling using use case; techniques of modeling static and dynamic aspects of systems; finding classes and objCP; Interaction Diagrams – sequence and collaboration diagrams; Class Diagrams; object diagram; activity diagram; State chart diagrams; component diagram; deployment diagram. Individual and/or team project involving reports and walk-through in systems analysis and design is also a major component of this course using CASE tools.

Course Content and Schedule				
Week	**Contact hour**	Chapter, Topic and Sub Topic	Reading Materials & expected Assessment	Learning Outcome of each chapter
Week 1-2		**Chapter 1: Object Orientation the new software paradigm** 1.1.Structured paradigm Vs. object oriented paradigm 1.2.The potential benefits of object orientation 1.3.The potential drawbacks of object orientation 1.4.The object orientation software process		
Week 3		**Chapter 2:Understanding the Basics Object oriented** 1.1.OO concepts from structured point of view 2.2 Abstraction, Encapsulation and information hiding 2.3 Inheritance, Association and Aggregation 2.4 Collaboration 2.5 Persistence 2.6 Coupling and Cohesion 2.7 Polymorphism 2.8 Interfaces and Components 2.9 Patterns		
Week 4-5		**Chapter 3:Gathering user requirements**		

		3.1. Putting together requirements gathering team 3.2. Fundamental requirements gathering techniques 3.4. Essential User Interface Prototyping 3.3. Essential Use Case Modeling 3.5. Domain modeling with class responsibility collaborator (CRC) 3.6 Developing a supplementary Specification 3.7 Identifying Change Cases		
Week 6-7		**Chapter 4:Ensuring Your Requirements Are correct:** Requirement validation Techniques 4.1.Testing Early and Often 4.2.Use Case Scenario Testing		
Week 8-9		**Chapter 5:Determining What to Build: OO Analysis** 5.1.System Use Case Modeling 5.2.Sequence Diagrams: From Use Cases to Classes 5.3.Conceptual Modeling :Class diagrams 5.4.Activity diagramming 5.5.User interface prototyping 5.6.Evolving your supplementary specification 5.7.Applying Analysis patterns Effectively 5.8.User Documentation 5.9.Organizing your models with packages		
Week 10-11		**Chapter 6:Determining How to Build Your System: OO Design** 6.1.Layering your models :Class Type Architecture 6.2.Class Modeling		

		6.3.Applying Design Patterns effectively 6.4.State chart modeling 6.5.Collaboration Modeling 6.6.Component Modeling 6.7.Deployment Modeling 6.8.Relational Persistence Modeling 6.9.User Interface Design		
Week 12-13		**Chapter 7:Object Oriented Testing and Maintenance**		
Week 14		**Chapter 8:Software process**		

Continuous Assessment Method	**Weight**	**Week of Assessment**	**Date of Assessment**	**Assessment Feedback date (Tentative)**
Quizzes	Quiz-1: 5%			Week 1-2
Assignment	Assign-1: 10%			Week 3
Project	Project: 15%			After week 5
Test	Test-1: 15% Test-2			After week 6-7
Class Attendance	5%			
Final Examination	50%			Week 14

Text Book and Reference materials

1. Ambler, S. W. (2001).The Object primer: The Application Developer's Guide to Object Orientation and the UML Second edition .New York. Cambridge University Press

2. Ian Sommerville, Software Engineering (8thed), USA, Addison-Wesley, 2006.

3. PankajJalote, an Integrated Approach to Software engineering (3rd ed), Springer, 2005**4.** Catherine Courage and Kathy Baxter (2005). A Practical Guide to User Requirements Methods, Tools, and Techniques. Elsevier Inc.

5. Scott w. ambler. The Object Primer 3rd ed. University of Cambridge press.2004