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| **Ambo University, Woliso Campus****School of Technology and Informatics** **Department of Information Technology** |
| **Program** | Information Systems  |
| **Course Code** | INSY2053 |
| **Course Title:**  | Object-oriented System Analysis and Design |
| **Degree Program** | Information Systems |
| **Module Name** | Information Systems Development |
| **Module Code** | **INSY-M2051** |
| **ECTS Credits (CP)** | 5 |
| **Contact Hours**  | **Lecture** | **Tutorial** | **Lab/Practical** | **Home Study** | **Total** |
| 48 | 16 | 0 | 71 | 135 |
| **Target Group:**  | 2nd Year Information Systems Students |
| **Year /Semester** | Year: II, Semester: II  |
| **Pre-requisites**  | INSY2052 |
| **Status of the Course** | Compulsory  |
| **Course Description** | This course will explore the 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 objects; 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 Objectives** | At the end of the course students will be able to:* 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.
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| Content  | Period  | Reference book  |
| Brief Introduction about the course  | Week 1 | Course guide book  |
| Chapter 1: Understanding the Basics :Object oriented concepts * 1. OO concepts from structured point of view
	+ Abstraction, Encapsulation and information hiding
	+ inheritance
	+ Association
	+ Aggregation
	+ Collaboration
	+ Persistence
	+ Coupling
	+ Cohesion
	+ polymorphism
	+ Interfaces
	+ components
	+ Patterns
 | Week 2Week 3Week 4 | Object Primer Scott Ambler 2nd Edition Pp 133-180 |
| Chapter 2: Object Orientation the new software paradigm* 1. The potential benefits of object orientation
	2. The potential drawbacks of object orientation
	3. Object standards
	4. The object orientation software process
 | Week 5Week 6 | Object Primer Scott Ambler 2nd Edition pp 9-30 |
| Chapter 3: Gathering user requirements * 1. Putting together requirements gathering team
	2. Fundamental requirements gathering techniques
	3. Essential Use Case Modeling
	4. Essential User Interface Prototyping
	5. Domain modeling with class responsibility collaborator (CRC) cards
	6. Developing a supplementary Specification
	7. Identifying Change Cases
 | Week 7Week 9 | Object Primer Scott Ambler 2nd Edition pp 31-108 |
| Chapter 4:Ensuring Your Requirements Are correct: Requirement validation Techniques * 1. Testing Early and Often
	2. Use Case Scenario Testing
 | Week 10 | Object Primer Scott Ambler 2nd Edition Pp109 -132 |
| Chapter 5: Determining What to Build: OO Analysis* 1. System Use Case Modeling
	2. Sequence Diagrams: From Use Cases to Classes
	3. Conceptual Modeling :Class diagrams
	4. Activity diagramming
	5. User interface prototyping Evolving your supplementary specification
	6. Applying Analysis patterns Effectively
	7. User Documentation
	8. Organizing your models with packages
 | Week 11Week 12 | Object Primer Scott Ambler 2nd Edition Pp 181-248 |
| Chapter 6 : Determining How to Build Your System: OO Design * 1. Layering your models :Class Type Architecture
	2. Class Modeling
	3. Applying Design Patterns Effectively
	4. State chart modeling
	5. Collaboration Modeling
	6. Component Modeling
	7. Deployment Modeling
	8. Rational Persistence Modeling
	9. User Interface Design
 | Week 13 | Object Primer Scott Ambler 2nd Edition Pp 249-346 |
| Chapter 7: Object Oriented Testing  | Week 14 | Object Primer Scott Ambler 2nd Edition Pp 403-426 |
| Chapter 8 : Software process  | Week 15 | Object Primer Scott Ambler 2nd Edition Pp 427-437 |
| **Project Presentation**  | Week 16 |  |
| **Methodology** The course will be delivered in lectures (with a participatory approach) - students are encouraged to ask questions and also they are encouraged to answer whenever questions are raised), present their assignments in the class and actively participate in the tutorial program. **Assessment Method:**Assignments 10%Test 30%Project work 20%Final 40%**Text book*** 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

**References*** **Booch G., (2000).**Object oriented analysis and design with applications, Second Edition, Pearson Education,Inc.
* **Hoffer J.,George J. ,Valacich J. . (2008).** Modern Systems Analalysis and Design. 5th Edition. Pearson Education.
* **Subburaj R. (2003).**Object Oriented with C++ ANSI/ISO Standard.Vikas Publishing House PVT LTD.
* **Priestley M**. (2003).Practical Object oriented Design with UML. second Edition McGraw-Hill Education.
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