BACHELOR OF TECHNOLOGY IN COMPUTER TECHNOLOGY / COMMUNICATION AND COMPUTER NETWORKS

Code & Name	**ECCI 3105/ ECSI 3105: OBJECT ORIENTED ANALYSIS AND DESIGN**
Prerequisite	System Analysis and Design, System Design and Implementation
Class	SCCI/2019 & SCCJ/2019
Lecturer	Elizabeth
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Purpose of the Course

Object-Oriented Analysis and Design has over the years, become a vast field encompassing such diverse topics as design process and principles, documentation tools, refactoring, and design and architecture patterns. Object-Oriented Analysis and Design can offer an approach that facilitates logical, rapid and thorough methods for creating new systems responsive to a changing business language. Object-Oriented techniques work well in situations in which complicated information systems are undergoing continuous maintenance, adaptation and redesign. The course comprehensively explores Object-Oriented Analysis and Design with a reflection to Object-Oriented Programming approach.

Expected Learning Outcomes

At the end of this course the students should be able to: -

1. Describe how object oriented design can facilitate the process of software development,
2. Identify the objects in a system and assign responsibilities to system components,
3. Analyze problems and develop conceptual models, generate designs from the models, and write program code that implements the designs,
4. Create the OO design of a system from the requirements model in terms of a high-level architecture description, and low-level models of structural organization and dynamic behavior using UML class, object, and sequence diagrams,
5. Evaluate a design for applicability, reasonableness, and relation to other design criteria given OO design patterns or published guidance,
6. Apply the concepts of object, class, message, method, inheritance, and polymorphism in object-oriented programming languages.

Course Content

This course focuses on Object Oriented Paradigm: definitions, The Object Model: - Objects and Classes; Encapsulation and data hiding; Inheritance; Polymorphism; Generalization and Specialization; Links and Association; Aggregation and Composition. Comparison with structured design methods: reusability, extensibility and robustness, object oriented analysis: classes, objects, object oriented design: notation processes, object oriented languages/tools, software project development using an object oriented programming language, object oriented databases. Object

oriented analysis techniques: - Object modelling, Dynamic Modelling, Functional Modelling. UML: development, symbols, notation and tools. Unified modeling language (UML): Notations and Meta models, Inception, elaboration, construction, refactoring, Patterns, Transition, Iterative development, User goals and System instructions, Use case diagrams; Class diagrams; Sequence diagrams, Collaboration Diagrams, State diagrams, Current State Diagrams, Activity diagrams for use Case Seamlessly, Decomposing activity; deployment diagrams. Object Oriented Design and Implementation: - Object oriented decomposition; Object design; Design Optimization; Object Oriented Implementation; Object mapping to Database Management Systems

Mode of delivery

1. Activities will involve lectures, research assignments, discussions, reflections and presentations.
2. They will also be involved in facilitating discussions.
3. Group presentations are emphasized to enhance team work where each group is expected to present to class its work.

Instructional Material and/or Equipment

Audi visual equipment, chalkboard, computer simulation software

Course

Assignments, tutorials, Assignments, CATs, practical exercises and written examinations.

Assessment

Type	Weighting (%)
Examination	70
Continuous Assessment	30
Total	100

Course Text books

1. Kendall, K. E. and Kendall, J. E., Systems Analysis and Design, 8th Edition, Pearson, 2011, Chapter 10
2. Ramnath, S., and Dathan B., Object-Oriented Analysis and Design, Springer: 2011.

Resources for further reading

3. Kendall, K. E and Kendall, J. E., Systems Analysis and Design, 6th Edition, Chapter 18.
4. Booch, G., Object-Oriented Analysis and Design with Applications, 2nd Edition, Addison-Wesley, Santa Clara, California: 1994.
5. Any other relevant materials

Online Resources

1. http://www.sqa.org.uk/e-learning/SDM01CD/index.htm
2. Any relevant online resources on Object-Oriented Analysis and Design

Course Journals

1. International Journal of Software Engineering (IJSE)
2. Software – practice and Experience
3. International Journal of Advanced Software Engineering (IJASE)