IS5411: SYSTEMS ANALYSIS AND DESIGN

Effective Term
Semester B 2024/25

Part I Course Overview

Course Title
Systems Analysis and Design

Subject Code
IS - Information Systems
Course Number
5411

Academic Unit
Information Systems (IS)

College/School
College of Business (CB)

Course Duration
One Semester

Credit Units
3

Level
P5, P6 - Postgraduate Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract
This course focuses on systems analysis and design with an emphasis on the development of information systems. Methods of system documentation are examined through the use of object-oriented and structured analysis tools and techniques

for describing processes, use cases, data structures, system objects, file designs, input and output designs, and program specifications.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Explain the need for modelling in IS analysis and design.	20			
2	Identify the necessary interactions between users, customers and managers involved in a real world system development project.	20	x	x	
3	Identify, and apply the different analysis and design methods for business applications.	20	x	x	x
4	Critically analyze the suitability of a modelling formalism in the context of a specific task, and a specific application domain.	20			
5	Operate effectively within a team environment demonstrating team building and project management skills in information systems analysis and design.	10			
6	Apply information effectively in presentations with oral, written and electronic formats using media formats widely adopted for information systems development in business and government.	10			

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Students will learn the concepts of traditional structured systems analysis and design methods and object-oriented systems analysis and design methods, associated modelling techniques using activities designed to enable students to differentiate between structured and object-oriented methods, to apply different modelling techniques, and to select appropriate requirements gathering techniques.	1, 2, 3, 4	
2	Laboratory	Students will spend time to reinforce and practice various modelling techniques learnt in lectures through the following activities during the laboratory sessions: - Exercises: Hands-on activities using a CASE tool (e.g., Microsoft Visio) as part of systems modelling exercises such as requirement gathering using interviews, use case models, functional models, structural models and behavioral models. - Discussion: Discussion on implications of various concepts learnt in lectures, and how they can be applied to a typical information system analysis and design project. - Presentations: Members of project team will make presentation of their project work, and the rest of the tutorial group and the instructor will comment and offer suggestions for improvements.	1, 2, 3, 4, 5, 6	

3	Project	Students will complete a group project to perform systems analysis and design activities aimed at capturing requirements of an information system in business sector and finding suitable solutions. The group project work will be submitted at different phases for review and comments by the instructor/tutors.	1, 2, 3, 4, 5, 6	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Continuous Assessment Participation in class and lab sessions in activities such as: - formative assessment and feedback sessions - application of systems analysis techniques (including information-gathering techniques) - modelling exercises completed and submitted - presentation and discussion of partial solutions - critical analysis & suggestions to requirements models presented	1, 2, 3, 4	15	
2	Project Presentation Each project team makes one presentation (about 20 mins duration) of their draft project work and the rest of tutorial group members will participate in discussion and offer improvements.	5, 6	10	

3	Project (25%) This is a team-based activity with typically 4 students per team aimed at gathering requirements of an information system, and modelling those requirements using appropriate techniques. A generic pattern for the Project work includes: - Description of detailed business environment and system requirements (functional and non-functional) along with necessary source documents - Actors and their goals (use case diagram) - Use case descriptions - Activity diagram, system sequence diagram - Class diagram and database design - User interface design.	1, 2, 3, 4, 5, 6	25	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

Final Examination
This closed-book examination will assess both the conceptual understanding and the modeling skills using one or more small case studies.

Note: Students must pass BOTH coursework and examination in order to get an overall pass in this course.

Assessment Rubrics (AR)

Assessment Task

AT1: Continuous Assessment (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to explain the need for modelling in IS analysis and design.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT1: Continuous Assessment (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT1: Continuous Assessment (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to identify, and apply the different analysis and design methods for business applications.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task

AT1: Continuous Assessment (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Capability to critically analyze the suitability of a modelling formalism in the context of a specific task, and a specific application domain.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

AT2: Project Presentation (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Capability to operate effectively within a team environment demonstrating team building and project management skills in information systems analysis and design.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

AT2: Project Presentation (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to communicate information effectively in presentations with oral, written and electronic formats using media formats widely adopted for information systems development in business and government.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT3: Project (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to explain the need for modelling in IS analysis and design.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT3: Project (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

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(F) Not even reaching marginal levels

Assessment Task
AT3: Project (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to identify, and apply the different analysis and design methods for business applications.

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(A+, A, A-) High

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Failure

(F) Not even reaching marginal levels

Assessment Task

AT4: Final Examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to explain the need for modelling in IS analysis and design.

Excellent

(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT4: Final Examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT4: Final Examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to identify, and apply the different analysis and design methods for business applications.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT4: Final Examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Capability to critically analyze the suitability of a modelling formalism in the context of a specific task, and a specific application domain.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT1: Continuous Assessment (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to explain the need for modelling in IS analysis and design.

Excellent
(A+, A, A-) High

Good
(B+, B) Significant

Marginal
(B-, C+, C) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT1: Continuous Assessment (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.

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AT2: Project Presentation (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Capability to operate effectively within a team environment demonstrating team building and project management skills in information systems analysis and design.

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(B-, C+, C) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT4: Final Examination (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to explain the need for modelling in IS analysis and design.

Excellent
(A+, A, A-) High

Good
(B+, B) Significant

Marginal
(B-, C+, C) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT4: Final Examination (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to identify the necessary interactions between users, customers and managers involved in a real world system development project.

Excellent
(A+, A, A-) High

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(B+, B) Significant

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(B-, C+, C) Basic

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AT4: Final Examination (for students admitted from Semester A 2022/23 to Summer Term 2024)

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Ability to identify, and apply the different analysis and design methods for business applications.

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Part III Other Information

Keyword Syllabus

Organizational context for information systems. The need to describe IS. Modelling. Systems development life cycle. Different approaches to information and business system creation. Different approaches to information and business systems analysis and design. Structured approach. Object-oriented approach.

Details:
- Organisational context for information systems.
- The need to describe IS - analysis of existing systems for evolutionary maintenance; design of new systems; communication between users, developers and project managers.
- Modelling - the purpose of a model; abstraction; key concepts; criteria for assessing modelling formalisms.
- Systems development life cycle - overview of business systems planning and business area analysis; detailed focus on systems analysis (requirements specification).
- Different approaches to information and business system creation, application and deployment - application service providers (ASP), buy, make, various partnerships.
- Different approaches to information and business systems analysis and design - structured approach and object-oriented approach.
- Structured approach - process modeling and data modeling.
- Object-oriented approach - use-case modeling and class modeling.

Reading List

Compulsory Readings

	Title
1	Satzinger, Jackson, Burd, Introduction to Systems Analysis and Design: An Agile, Iterative Approach, International Edition, ISBN-13: 978-1111972264, Joe Sabatino (March 1, 2012)

Additional Readings

	Title
1	Dennis, A., Wixom, B.H. and Roth, R.M., Systems Analysis and Design, John Wiley, 3rd edition, 2006.
2	Whitten, J.L. and Bentley, L.D., Systems Analysis and Design Methods, 7th edition, Irwin/McGraw Hill, 2005.

3	George, J.F., Batra, D., Valacich J. and Hoffer, J.A., Object-Oriented System Analysis and Design, 1st edition, Prentice Hall, 2004.
4	Kendall, K.E. and Kendall, J.E., Systems Analysis and Design, 6th edition, Prentice Hall, 2004.
5	Bennett, S., McRobb, S. and Farmer, R., Object-Oriented Systems Analysis and Design Using UML, 2nd edition, McGraw Hill, 2002.
6	George, J.F., Batra, D., Valacich, J.S. and Hoffer, J.A., Object-oriented Systems Analysis and Design, Prentice Hall, 2004. ISBN: 0131133268.
7	Larman C., Applying UML and Patterns, 2nd edition, Prentice Hall PTR, 2002. ISBN: 0130479500.
8	Online Resources:
9	UML Resources - http://www.uml.org/
10	Agile modelling - http://www.agilemodeling.com/