



Republic of the Philippines
SULTAN KUDARAT STATE UNIVERSITY
College of Computer Studies
Isulan Campus
Isulan, Sultan Kudarat
A.Y. 2024-2025



UNIVERSITY VISION

A trailblazer in arts, science and technology in the region.

UNIVERSITY MISSION

The University shall primarily provide advance instruction and professional training in science and technology, agriculture, fisheries, education and other related field of study. It shall undertake research and extension services, and provide progressive leadership in its area of specialization.

UNIVERSITY GOAL

To produce graduates with excellence and dignity in arts, science and technology.

UNIVERSITY OBJECTIVES

- a. Enhance competency development, commitment, professionalism, unity and true spirit of service for public accountability, transparency and delivery of quality services;
- b. Provide relevant programs and professional trainings that will respond to the development needs of the region;
- c. Strengthen local and international collaborations and partnerships for borderless programs;
- d. Develop a research culture among faculty and students;
- e. Develop and promote environmentally-sound and market-driven knowledge and technologies at par with international standards;
- f. Promote research-based information and technologies for sustainable development;
- g. Enhance resource generation and mobilization to sustain financial viability of the university.

Program Objectives and its relationship to University Goals:

PROGRAM OBJECTIVES (PO)	OBJECTIVES						
	a	b	c	d	e	f	g
A graduate of BS in Information Technology can:							
a. Innovate technological concepts and ideas underpinning desired IT solutions;	/	/			/		/
b. Administer competently the computer networks, systems development, software applications, hardware and maintenance;	/	/	/	/	/	/	/
c. Design industry-based applications, infrastructures and technologies that will promote the advancement and development of the community;	/	/	/	/	/	/	/
d. Adopt to various national and international industries standards in the practice of the profession; and;	/	/	/	/	/	/	/
e. Demonstrate professionalism in the social, environmental and legal aspects of information technology.	/	/	/	/	/	/	/

- 1. Course Code : IS221**
2. Course Title : System Analysis and Design
3. Prerequisite : IS112
4. Credits : 3 UNITS

5. Course Description:

The course covers the principles, methodologies, and tools used in the development of modern information systems. The course focuses on the systematic analysis of business processes and the design of efficient, user-centered systems that support organizational goals. Topics include systems development life cycle (SDLC), requirements gathering, data flow modeling, use case analysis, process and data modeling, interface and database design, and system implementation strategies. Emphasis is placed on both technical and managerial aspects of system development, including project planning and documentation. Students will engage in hands-on activities such as case studies and project development using client-server, web-based, or mobile platforms. By the end of the course, students will be able to analyze, design, and propose a functional information system tailored to real-world organizational needs.

6. Course Learning Outcomes and Relationships to Program Educational Objectives

Course Learning Outcomes		Program Objectives				
At the end of the semester, the students can:		a	b	c	d	e
a. identify the phases of the systems development life cycle (SDLC).		/	/	/		/
b. solve problems associated with designing and implementing information systems;		/	/	/	/	/
c. demonstrate the roles of system analyst and the processes of systems design and development;		/	/	/	/	/
d. apply the techniques to generate information requirements;		/	/	/	/	/
e. employ processes to design user input, output, databases and user interfaces;		/	/	/	/	/
f. produce documents with all essential design elements;		/	/			/
g. discuss the importance of quality assurance.		/	/	/	/	

7. Course Content

Course Objectives, Topics, Time Allotment	Desired Student Learning Outcomes	Outcomes-Based Assessment (OBA) Activities	Evidence of Outcomes	Course Objectives	Program Outcomes	Values Integration
Topic: SKSU VMGO, Classroom Policies, Course Overview, Course Requirements, Grading System (2 hours)						
1. Discuss the VMGO of the university, classroom policies, scope of the course, course requirements and grading system	1.1 Student can be aware of and appreciate of the university's VMGO, classroom policies, course overview, requirements and grading system.	Individual participation in class discussion and group presentation	Group and individual discussions			Value of appreciation
CHAPTER I: THE WORLD OF THE INFORMATION SYSTEMS ANALYST (12 hours)						
2.1 Explain the key role of a systems analyst in business	2.1 The students can identify and understand the key role of a systems analyst in business	Students participation in question and answer activity facilitated by teacher Case Study	Rubrics score cards of class participation accomplished by professor.	a, b, e	a, b, c,	Unity and teamwork Value of participation

<p>2.2 Describe the various types of systems an analyst might work on</p> <p>2.3 Explain the importance of technical, people, and business skills for an analyst</p> <p>2.4 Explain why ethical behavior is crucial for a systems analyst's career</p> <p>2.5 Describe various job titles in the field and places of employment where analysis and design work are done</p> <p>2.6 Discuss the analyst's role in strategic planning for an organization</p> <p>2.7 Describe the analyst's role in a system development project</p>	<p>2.2. They can also identify the various types of systems analyst.</p> <p>2.3 They can identify and understand the importance of technical, people and business skills for an analyst.</p> <p>2.4 The students can learn and understand the ethical behavior for a systems analyst's career.</p> <p>2.5 The students can identify the various job titles of system's analysts</p> <p>2.6 The students can learn and understand the analyst's role in strategic planning for an organization and in a system development project.</p>	<p>Dimensional Questions Approach Group Dynamics Reporting</p> <p>Pair work/diagramming Reporting</p> <p>Interactive Learning Brainstorming Peer Teaching Cooperative Learning Group Performance Problem Analysis</p>	<p>Quizzes, Assignments, Exams</p> <p>Presentation of outputs</p>		<p>Communication Challenge Achievement Understanding Opportunity</p>
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CHAPTER II: APPROACHES TO SYSTEM DEVELOPMENT (12 hours)

<p>3.1 Explain the purpose and various phases of the systems development life cycle (SDLC)</p> <p>3.2 Explain when to use an adaptive approach to the SDLC in place of a more predictive traditional SDLC</p> <p>3.3 Explain the differences between a model, a tool, a technique, and a methodology</p> <p>3.4 Describe the two overall approaches used to develop information systems: the traditional method and the object-oriented method</p> <p>3.5 Describe the key features of current trends in systems development: The Unified Process (UP), Extreme Programming (XP), and Scrum</p> <p>3.6 Explain how automated tools are used in system development</p>	<p>3.1. The students can understand the various phases of a system life cycle.</p> <p>3.2. They can understand and differentiate predictive and adaptive approach in SDLC</p> <p>3.3 The students can understand and contrast between model, tool, techniques and a methodology</p> <p>3.4 The students can identify and understand between traditional method and the object-oriented method.</p> <p>3.5 The students can identify, learn and understand the current trends in system development and used of automated tools.</p>	<p>Students participation in question and answer activity facilitated by teacher</p> <p>Case Study</p> <p>Dimensional Questions Approach</p> <p>Group Dynamics</p> <p>Reporting</p> <p>Pair work/diagramming</p> <p>Reporting</p> <p>Interactive Learning</p> <p>Brainstorming</p> <p>Peer Teaching</p> <p>Cooperative Learning</p> <p>Group Performance</p> <p>Problem Analysis</p>	<p>Rubrics score cards of class participation accomplished by professor.</p> <p>Quizzes, Assignments, Exams</p> <p>Presentation of outputs</p>	<p>a, b, d, e</p>	<p>a, b, c, d</p>	<p>Unity and teamwork</p> <p>Value of participation</p> <p>Communication</p> <p>Challenge</p> <p>Achievement</p> <p>Understanding</p> <p>Opportunity</p>
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CHAPTER III: THE ANALYST AS A PROJECT MANAGER (12 hours)

<p>4.1 Explain the elements of project management and the knowledge on how</p>	<p>4.1. The students can understand and apply the knowledge on how</p>	<p>Students participation in question and answer activity facilitated by teacher</p>	<p>Rubrics score cards of class participation</p>	<p>a, e, f, g,</p>	<p>a, b, c,</p>	<p>Unity and teamwork</p>
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responsibilities of a project manager	to manage information system project	Case Study Dimensional Questions Approach Group Dynamics Reporting Pair work/diagramming Reporting Interactive Learning Brainstorming Peer Teaching Cooperative Learning Group Performance Problem Analysis	accomplished by professor. Quizzes, Assignments, Exams Presentation of outputs			Value of participation Communication Challenge Achievement Understanding Opportunity
4.2 Explain project initiation and the activities in the project planning phase of the SDLC	4.2 They can also identify different activities in SDLC Phases:					
4.3 Describe how the scope of the new system is determined and develop a project schedule using Gantt charts	4.3 The students can differentiate, understand and demonstrate how to develop and use GANTT Charts/PERT Charts					
4.4 Develop a cost/benefit analysis and assess the feasibility of a proposed project	4.4 The student can understand and learn how to develop cost/benefit analysis and assess the feasibility of a proposed project.					
4.5 Discuss how to staff and launch a project	4.5 The student can understand and discuss how to staff and launch a project.					

CHAPTER IV: INVESTIGATING SYSTEM REQUIREMENTS (12 hours)						
5.1 Describe the activities of systems analysis	5.1. The students can explain different steps in project planning, describe feasibility factors	Students participation in question and answer activity facilitated by teacher Case Study	Rubrics score cards of class participation accomplished by professor. Quizzes, Assignments, Exams	b, d, e, f, g	a, c,	Unity and teamwork Value of participation
5.2 Explain the difference between functional and	5.2. They can also understand and differentiate	Dimensional Questions Approach				Communication

<p>nonfunctional system requirements</p> <p>5.3 Describe three types of models and reasons for creating models</p> <p>5.4 Identify and understand the different types of users who will be involved in investigating system requirements</p> <p>5.5 Describe the kind of information that is required to develop system requirements</p> <p>5.6 Determine system requirements through review of documentation, interviews, observation, prototypes, questionnaires, joint application design sessions, and vendor research</p> <p>5.7 Discuss the need for validation of system requirements to ensure accuracy and completeness and the use of a structured walkthrough</p>	<p>between functional and nonfunctional system requirements</p> <p>5.3 The students can identify and understand the types of model, types of users in system requirements</p> <p>5.4 The students can describe, determine and demonstrate requirements for system development</p>	<p>Group Dynamics Reporting Pair work/diagramming Reporting Interactive Learning Brainstorming Peer Teaching Cooperative Learning Group Performance Problem Analysis</p>	<p>Presentation of outputs</p>			<p>Challenge Achievement Understanding Opportunity</p>
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CHAPTER V: MODELING SYSTEM REQUIREMENTS (12 hours)						
6.1 Explain why identifying use cases is the key to defining functional requirements	6.1. The students can discuss requirement determination, understand the different methods in gathering requirements	Students participation in question and answer activity facilitated by teacher	Rubrics score cards of class participation accomplished by professor.	b, c, e, g	a, b, c	Unity and teamwork Value of participation
6.2 Use three techniques for identifying use cases	6.2 The student can identify the three techniques for USE CASES	Case Study Dimensional Questions Approach Group Dynamics Reporting	Quizzes, Assignments, Exams			Communication Challenge
6.3 Write brief, intermediate, and fully developed use case descriptions	6.3 The student can demonstrate use cases, analyze data entities, and domain classes,	Pair work/diagramming Reporting Interactive Learning	Presentation of outputs			Achievement Understanding
6.4 Explain how the concept of things in the problem domain also defines requirements	6.4 They can also understand and illustrate the entity-relationship diagram and interpret domain model class diagram	Brainstorming Peer Teaching Cooperative Learning Group Performance Problem Analysis				Opportunity
6.5 Identify and analyze data entities and domain classes needed in the system						
6.6 Read, interpret, and create an entity-relationship diagram						
6.7 Read, interpret, and create a domain model class diagram						

CHAPTER VI: THE TRADITIONAL APPROACH TO REQUIREMENTS (10 hours)						
7.1 Explain how the traditional approach and the object-oriented approach differ when modeling the details of a use case	7.1 The students can identify, understand and illustrate the traditional approach and object-oriented approach model	Students participation in question and answer activity facilitated by teacher Case Study Dimensional Questions Approach	Rubrics score cards of class participation accomplished by professor. Presentation of outputs	a, c, d, e, f, g	a, b, c, d	Unity and teamwork Value of participation
7.2 List the components of a traditional system and the symbols representing them on a data flow diagram	7.2 They can also identify and illustrate the different traditional system and symbols used in creating Context Diagrams and Data Flow Diagrams	Group Dynamics Reporting Pair work/diagramming Reporting Interactive Learning	Quizzes, Assignments, Exams			Communication Challenge Achievement
7.3 Describe how data flow diagrams can show the system at various levels of abstraction	7.3 The students can demonstrate how data flow diagrams show the system at various levels of abstraction	Brainstorming Peer Teaching Cooperative Learning				Understanding Opportunity
7.4 Develop data flow diagrams, data element definitions, data store definitions, and process descriptions	7.4 The students can understand and illustrate data flow diagrams, data elements, data store and distribution of process across system location.	Group Performance Problem Analysis				
7.5 Develop tables to show the distribution of processing and data access across system locations						

CHAPTER VII: THE OBJECT-ORIENTED APPROACH TO REQUIREMENTS (10 hours)						
8.1 Develop use case diagrams	8.1 The students can illustrate USE CASE diagrams	Students participation in question and answer activity facilitated by teacher Case Study	Rubrics score cards of class participation accomplished by professor. Quizzes, Assignments, Exams	b, c, e, f	a, b, c, d	Unity and teamwork Value of participation
8.2 Write use case and scenario descriptions	8.2 The students can understand, differentiate and illustrate activity diagrams and system sequence diagrams	Dimensional Questions Approach Group Dynamics Reporting				Communication Challenge
8.3 Develop activity diagrams and system sequence diagrams	8.3 They can also understand how UML diagrams work together to define functional requirements for the object-oriented approach	Pair work/diagramming Reporting Interactive Learning Brainstorming Peer Teaching Cooperative Learning Group Performance Problem Analysis	Presentation of outputs			Achievement Understanding Opportunity
8.4 Develop state machine diagrams to model object behavior						
8.5 Explain how UML diagrams work together to define functional requirements for the object-oriented approach						
CHAPTER VIII: EVALUATING ALTERNATIVES FOR REQUIREMENTS, ENVIRONMENT AND IMPLEMENTATION (8 hours)						
9.1 Prioritize the system requirements based on the desired scope and level of automation for the new system	9.1. The students can understand system requirements based on systems scope and automation	Students participation in question and answer activity facilitated by teacher Case Study	Rubrics score cards of class participation accomplished by professor.	b, c, d, e, f, g	a, b, c, d	Unity and teamwork Value of participation

<p>9.2 Describe the strategic decisions that integrate the application deployment environment and the design approach for the new system</p> <p>9.3 Determine alternative approaches for system implementation</p> <p>9.4 Evaluate and select an implementation approach based on the needs and resources of the organization</p> <p>9.5 Describe key elements of a request for proposal (RFP) and evaluate vendors' proposals for outsourced alternatives</p>	<p>9.2 They can also understand and apply strategic decisions for system deployment environment and design approach for the new system.</p> <p>9.3 The students can understand and apply alternative approaches for system implementation, evaluate and select implementation approach based on the needs and resources of the organization</p> <p>9.4 They can also identify and understand the key elements of request proposal and evaluate vendors' proposal for outsourced alternatives.</p> <p>9.5 The students can also demonstrate the professional presentation of findings to management.</p>	<p>Dimensional Questions Approach Group Dynamics Reporting Pair work/diagramming Reporting Interactive Learning Brainstorming Peer Teaching Cooperative Learning Group Performance Problem Analysis</p>	<p>Quizzes, Assignments, Exams Presentation of outputs</p>		<p>Communication Challenge Achievement Understanding Opportunity</p>
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9.6 Develop a professional presentation of findings to management						
Examination (4 hours) Lectures (36 hours) Laboratory (54 hours) Total no. of Hours: 94 hours						

8. Course Evaluation

Course Requirements: Group Project (Students are required to propose and develop a system, including complete documentation, utilizing one of the following software platforms: Client-Server, Web-Based, or Mobile-Based, tailored to the needs of their chosen end users. The project must include a fully functional prototype with at least 80% of its core features operational upon submission).

Grading System:

MIDTERM	
Major Exam	-40%
Project/Course Requirement	-25%
Attendance	-20%
<u>Quizzes/Class Activities</u>	<u>-15%</u>
	100%

FINAL TERM	
Major Exam	-40%
Project/Course Requirements	-25%
Attendance	-20%
<u>Quizzes/Class Activities</u>	<u>-15%</u>
	100%

MTG+FTG/2=FG

Schedule of Examination:

Midterm	-
Final Term	-
Classes End	-

References:

/S221 – System Analysis and Design

Textbooks:

1. Kenneth E. Kendall, Julie E. Kendall: *System Analysis and Design*, 10th Edition, 2019
2. Jeffrey A. Hoffer, Joey George: *Modern Systems Analysis and Design*, 7th Edition, 2017
3. Alan Dennis, Barbara Haley Wixom: *An Object-Oriented Approach with UML*, 2015
4. Jeffrey L. Whitten, Lonnie D. Bentley, Kevin C. Dittman, *Systems Analysis and Design 8th Edition International Edition* 2013

eBooks:

6. Alan Dennis and Barbara Haley Wixom, *System Analysis and design: An Object-Oriented Approach with UML*, 2020
7. Joseph Valacich and Joey George: *Modern System Analysis and Design*, 8th Edition, 2016
8. John Satzinger, Robert Jackson, Stephen Burd: *System Analysis and Design in Changing World*, 5th Edition
9. Alan Dennis, Barbara Haley Wixom and Roberta M. Roth: *System Analysis and Design*, 6th Edition, 2019

Supplemental:

10. Roslina Binti Abd Hamid, *System Analysis and Design, Slides, Chapters 1 to 9*, UMP OpenCourseware, University of Malaysia Pahang, 2015

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