Republic of the Philippines
SULTAN KUDARAT STATE UNIVERSITY
College of Computer Studies
Isulan Campus, Isulan, Sultan Kudarat

1st Semester S.Y. 2024-2025

UNIVERSITY VISION

A trailblazer in arts, science and technology in the region

UNIVERSITY MISSION

The University shall primarily provide advanced instruction and professional training in science and technology, agriculture, fisheries, education and other relevant fields of study.

It shall also undertake research and extension services, and provide progressive leadership in its areas of specification.

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 Objectives

PROGRAM OBJECTIVES (PO)	UNIVERSITY OBJECTIVES						
	a	b	c	d	e	f	g
A graduate of BS Computer Science can:	√	√	√	√	√	√	√
a. Design and implement effectively the innovative computing researches	√	√	√	√	√	√	√
b. Apply proficiently the algorithmic theories and related computational system in conducting researches;	√	√	√	√	√	√	√
c. design industry-based applications, infrastructures and technologies that will promote the advancement and development of the community;	√	√	√	√	√	√	√
d. demonstrate the code of conduct as well as the social and legal aspects of information technology	√	√	√	√	√	√	√

1. Course Code   :   SE 314

2. Course Title   :   Software Engineering

3. Prerequisite   :

4. Credits   :   3 units

5. Course Description: Software engineering is an engineered discipline in which the aim is the production of software products, delivered on time and within a set budget, that satisfies the clients' needs. It covers all aspects of software production ranging from the early stage of product concept to design and implementation to post-delivery maintenance. This course introduces the major concepts and techniques of software engineering so that students can prepare for their future careers as software engineers. Moreover, through group projects, students can obtain hands-on experiences on entire phases and workflow of the software process.

6. Course Learning Outcomes and Relationships to Program Objectives

Course Learning Outcomes	Program Objectives						
At the end of semester the students can:	a	b	c	d	e	f	g
a. Identify software, software engineering, different software applications and its characteristics.	√	√	√	√	√	√	√
b. Explain the importance of process models, project management, project metrics of software development.	√	√	√	√	√	√	√
c. Know the key principles and common methods for software project management such as project planning, scheduling, tracking and risk analysis.	√	√	√	√	√	√	√
d. Apply the software development process which is appropriate for the development –maintenance of software products.	√	√	√	√	√	√	√
e. Appreciate the value and importance of processes of software engineering in developing software products.	√	√	√	√	√	√	√

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 small group discussion Synchronous / Asynchronous Lecture	Group and individual discussions	a	a, c, d	Value of appreciation

Topic 1: Software and Software Engineering: The Product and Process (10 hours)						
2.1 Define software and software engineering. 2.2 Discuss the evolving role of software, different software applications, software characteristics and legacy software, 2.3 understand the layered technology of software engineering, software process and process maturity levels. 2.4 Understand the essential attributes of software, its importance and application types.	2.1 The students can differentiate software and software engineering 2.2 They can understand how the software evolves, software applications and its characteristics. 2.3 They can understand the process, models and tools of software engineering and its processes. 2.4 They can understand the essential attributes, importance and application types of software engineering.	Students participation in question and answer activity facilitated by teacher Synchronous / Asynchronous Lecture	Discussion/Reporting Pair work/ diagramming Quizzes Assignments	**A**	**a, b, c, d, e**	Value of unity and teamwork Value of participation Value of Understanding
Topic 2 : Process Models (14 hours)						
3.1 Discuss the different process models such as Waterfall model, V-model, Incremental model, prototyping, spiral model, concurrent model, agile model and unified process model. 3.2 Understand the different process models that can be applied on a software development project. 3.3. Value the use of process models.	3.1 The students can describe the process models. 3.2 They can understand the use of the process model in developing software. 3.3 The students can value the use of process models in creating software projects.	Students participation in question and answer activity facilitated by teacher Synchronous / Asynchronous Lecture	Discussion /Reporting Dimensional Questions Approach Pair work/ diagramming Quizzes Assignments	**b, d, e**	**a, b, c, d, e**	Value of unity and teamwork Value of self-learning Value of Understanding

Topic 3: Project Management Concepts and Project Metrics (10 hours)						
4.1 Identify the people in the software projects. 4.2 Explain the role of each people in a project and its useful leadership traits. 4.3 Discuss the quantitative measures that enable software engineers to gain insight into the efficiency of the software process and projects. 4.4 Differentiate measure, metric and measurement.	4.1 The students can identify who are involved in software projects. 4.2 They can understand the role and traits of each people in developing software. 4.3 They can understand the quantitative measures of software process and project indicators. 4.4 They can differentiate and integrate measure, metric and measurement in software developers.	Students participation in question and answer activity facilitated by teacher Synchronous / Asynchronous Lecture	Discussion/Reporting Dimensional Questions Approach Pair work/ diagramming Quizzes Assignments	**a, b, c, d, e**	**a, b, c, d, e, f**	Value of unity and teamwork Value of participation Value of Understanding
Topic 4: Project Planning and Methods (15 hours)						
5.1 Discuss the project planning and software planning methods. 5.2 identify the tasks of individuals involved in Software projects. 5.3 discuss the project purpose of software, project scope, project planning process and maintenance plan.	5.1 The students can understand the project planning and software methods. 5.2 They can determine the tasks of senior management and project management team. 5.3 They can understand how important to know the scope and processes of the project.	Students participation in question and answer activity facilitated by teacher Synchronous / Asynchronous Lecture	Discussion/Reporting Dimensional Questions Approach Pair work activities Quizzes Assignments	**a, b, c, d, e**	**a, b, c, d, e**	Value of unity and teamwork Value of participation Value of Understanding
Topic 5: Project Risk Analysis and Management (8 hours)						
6.1 Discuss software risk management, classification, its importance, process and types.	6.1 The students can understand the importance, management process and strategies in	Students participation in question and answer activity facilitated by teacher Dimensional Questions Approach	Discussion/Reporting	**a, b, c, d, e**	**a, b, c, d, e, f**	Value of unity and teamwork

6.2 identify risks in project, product and business. 6.3 Know the importance and strategies to help manage risk in any projects.	managing risks in project, product and business.	Synchronous / Asynchronous Lecture	Pair work activities Quizzes Assignments			Value of participation Value of Understanding
Topic 6. Project Scheduling and Tracking (15 hours)						
7.1 Know the action that distributes estimated effort in the project planned duration. 7.2 discuss the basic principles and tasks set for the software project and tracking. 7.3 Know how to use PERT and CPM in the project.	7.1 The students can understand software project scheduling and tracking. 7.2 They can understand basic principles and tasks set for the project. 7.3 They can able to use the PERT and CPM to track software project effectively.	Students participation in question and answer activity facilitated by teacher Synchronous / Asynchronous Lecture	Discussion/Reporting Dimensional Questions Approach Pair work/ diagramming Quizzes Assignments	**a, b, c, d, e**	**a, b, c, d, e, f**	Value of unity and teamwork Value of participation Value of Understanding
Topic 8. Software Configuration Management (8 hours)						
8.1 Know the development and application standards and procedure for managing an evolving system and its importance. 8.2 Discuss the procedures, process and identification of software configuration management.	8.1 The students can understand the software configuration management, its importance, procedures and process. 8.2 They can check the software programs in terms of its formal technical review of the process and product.	Students participation in question and answer activity facilitated by teacher Synchronous / Asynchronous Lecture	Discussion/Reporting Dimensional Questions Approach Group activities Quizzes Assignments	**a, b, c, d, e**	**a, b, c, d, e**	Value of unity and teamwork Value of participation Value of Understanding

Topic 9. Software Quality Assurance (8 hours)						
9.1 Know the process that ensured the developed software meets and complies the standard quality specifications of developed software. 9.2 Discuss the importance of software standards and objectives of SQA activities. 9.3 Discuss the ten essential elements to guarantee enhanced software quality.	9.1 The students know how to routinely checks the developed software to ensure it meets the desired quality measures. 9.2 They can understand the importance of standards and objectives of SQA activities. 9.3 They can integrate the ten essential elements in the developed software to guarantee the quality of software.	Students participation in question and answer activity facilitated by teacher Synchronous / Asynchronous Lecture	Discussion/Reporting Dimensional Questions Approach Group activities Quizzes Assignments	a, b, c, d, e	a, b, c, d, e	Value of unity and teamwork Value of participation Value of Understanding
TOTAL: 94 hours Lecture and Laboratory: 90 hours Examination (Midterm and Final): 4 hours						

8. Course Evaluation

Course Requirements: Group Project (Students are required to propose a system with documentation in any of the following software platform: Client-Web- Based, Mobile- Based, for their chosen end users). **NOTE:** Documents only following the project format given by the instructor to the students.

Grading System

MIDTERM		FINAL TERM	
Exam	50%	Exam	50%
Laboratory/Course Requirement	20%	Laboratory/Course Requirements	20%
Assignment/Attendance/ Participation	10%	Assignment/Attendance/ Participation	10%
Quizzes	20%	Quizzes/Assignment	20%
Total	**100%**	**Total**	**100%**

(Midterm Grade + Final Term Grade) / 2 = Final Grade

Schedule of Examination

Midterm	-
Final Term	-
Classes End	-

9. References

Textbooks:

1. Ian Sommerville, Software Engineering, 10th Edition, 2015
2. Rod Stephens, Beginning of Software Engineering, 8th Edition, Kindle Edition, 2015
3. Roger S. Pressman, Software Engineering: A Practitioners Approach, 2013
4. Ian Sommerville, Software Engineering, 9th Edition, 2010
5. Len Bass, Software Architecture in Practice, 3rd Edition (SEI Series in Software Engineering), 2012
6. Eric J. Braude and Michael E. Bernstein, Software Engineering: Modern Approaches, 2nd Edition, 2016
7. Karl Weigers and Joy Beatty, Software Requirements, 3rd Edition (Developer Best Practices), 2013
8. IAN SOMMERVILLE, Software Engineering, 10th Edition, and PowerPoint Slides Chapter 1 to 26, 2015
9. Pressman, Roger (2010) Software Engineering: A Practitioner's Approach, McGraw Hill , New York, NY
10. Sommerville, Ian (2011) Software Engineering, Addison-Wesley , Boston, MA.
11. Stephens, Rod (2015) Beginning Software Engineering, Wrox.
12. Tsui, Frank , Orlando Karam and Barbara Bernal (2013) Essentials of Software Engineering, Jones & Bartlett Learning , Sudbury, MA.
13. Pfleeger, Shari (2001) Sofwtare Engineering: Theory and Practice, Prentice Hall , Upper Saddle River, NJ.

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