



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



CC116

Application Development and Emerging Technologies

2nd Semester

School Year 2024 – 2025

Prepared by:

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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 specialization.

UNIVERSITY GOAL

To produce graduates with excellent and dignity in arts, science na 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 partnership 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, system 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. | / | / | / | / | / | / | / |

- 2. **Course Code** : CC116
- 3. **Course Title** : Application Development and Emerging Technologies
- 4. **Prerequisite** :
- 5. **Credits** : 3 UNITS

1. Course Descriptions

This course equips learners with practical skills in full-stack application development and the integration of emerging technologies. Topics include API integration, secure coding, cloud deployment, IoT, and prototype development using modern tools. Emphasis is placed on real-world application, innovation, and presentation of tech-drive solutions.

6. Course Learning Outcomes and Relationship to Program Educational Objectives

| COURSE LEARNING OUTCOMES | | | | | PROGRAM OBJECTIVES | | | | |
|--|--|--|--|--|--------------------|----------|----------|----------|----------|
| At the end of the semester, the students can: | | | | | | | | | |
| a. Develop full-stack applications that integrates APIs and follow secure coding and deployment practices | | | | | a | b | c | d | e |
| b. Build and deploy solutions using emerging technologies such as IoT, cloud services, and cross-platform frameworks | | | | | / | / | / | / | / |
| c. Design, test, and present technology-driven prototypes tailored to real-world industry needs. | | | | | / | / | / | / | / |

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, | Individual participation in class discussion and group presentation | Individual participation in class discussion and group presentation | | | Value of appreciation |

| | | | | | |
|--|---|-------------------|--|---------|---|
| | | | | | |
| 2.1 Progressive Web Apps (PWAs) | 2.1 Describe the concept and advantage of Progressive Web Apps (PWAs) and demonstrate how to build and deploy them | Discussion Review | Rubrics score cards of laboratory exercise output accomplished by the instructor | b, c, d | |
| 2.2 Cross-platform mobile frameworks (Flutter, React Native) | | | | | Unity and team work |
| 2.3 Native vs. hybrid development | | | | | Value of participation |
| 2.4 UI/UX design principles for mobile/web | 2.2 Develop cross-platform mobile application using frameworks such as Flutter and React Native. 2.3 Compare native and hybrid mobile development approaches in terms of performance, cost, and user experience. 2.4 Apply core UI/UX design principles | | | | Communication Challenge Achievement |

| | | | | | | |
|---|---|--------------------------|--|---------|--|--|
| 3.1 Cloud service models (IaaS, PaaS, SaaS) | 3.1 Describe and distinguish between cloud service models | Discussion Recitation | Recitation Quizzes Laboratory activity | b, c, d | | Unity and team work Value of participation Communication Challenge Achievement |
| 3.2 Deployment using platforms like AWS, Azure, or Google Cloud | 3.2 Deploy application using major cloud platforms | | | | | |
| 3.3 Cloud-native application development | 3.3 Develop and manage cloud-native applications | | | | | |
| 3.4 Serverless architecture | 3.4 Implement serverless architectures | | | | | |

4. Internet of Things (IOT) (lec:6hrs)

| | | | | | | |
|---|---|--------------------------|--|------------|--|--|
| 4.1 IoT architecture and components | 4.1 Describe the architecture and key components of IoT systems | Discussion Recitation | Recitation Quizzes Laboratory activity | b, c, d, e | | Unity and team work Value of participation Communication Challenge Achievement |
| 4.2 Development with microcontrollers (Arduino, Raspberry Pi) | 4.2 Develop IoT prototypes using microcontrollers | | | | | |
| 4.3 Sensor integration and data collection | 4.3 Integrate sensors and implement data collection mechanisms | | | | | |
| 4.4 IOT application in smart environments | | | | | | |

7. Course Evaluation

Course Requirement: Develop practical skills in full-stack development, secure coding, cloud and IoT integration, API use, UI/UX design, and prototyping with emerging technologies.

Grading System:

MIDTERM TERM

Exam 40%
Attendance 10%
Assignment/Quizzes 15%
Laboratory Exercise/Project 35%

FINAL TERM

Exam 40%
Attendance 10%
Assignment/Quizzes 15%
Laboratory Exercise/Project 35%

MTG+FTG/2=FG

Schedule of Examination

Midterm - March 25-28, 2025
Final Term - May 20-23, 2025

References:

TextBooks:

1. Choi, D., & Hoque, S. (2022). *Full-stack web development with React and Node: Build scalable and powerful web apps using modern full-stack technologies*. Packt Publishing.
2. Erl, T. (2013). *Cloud computing: Concepts, technology & architecture*. Prentice Hall.
3. Bahga, A., & Madisetti, V. (2014). *Internet of Things: A hands-on approach*. Universities Press.

4. Hoffman, A. (2020). *Web application security: Exploitation and countermeasures for JavaScript apps*. O'Reilly Media.
5. Eisenman, B. (2017). *Learning React Native: Building native mobile apps with JavaScript* (2nd ed.). O'Reilly Media.
6. Eisenman, B. (2017). *Learning React Native: Building native mobile apps with JavaScript* (2nd ed.). O'Reilly Media.

Supplemental:

1. <https://learn.unity.com> – Official Unity tutorials and learning pathways
2. <https://www.figma.com/education> – UI/UX design tool used with mobile prototyping
3. <https://reactnative.dev> – Official React Native documentation
4. <https://nodejs.org> – Official Node.js documentation
5. <https://aws.amazon.com/free> – AWS Free Tier and learning resources
6. <https://www.arduino.cc> – Arduino official website and tutorials
7. <https://www.raspberrypi.com> – Raspberry Pi official site
8. <https://developer.mozilla.org> – General web dev resources (HTML, CSS, JS)

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