

# BSc. Software Engineering

Accredited in Kenya & the United States of America by the Commission for University Education (CUE) and WASC Senior College and University Commission respectively

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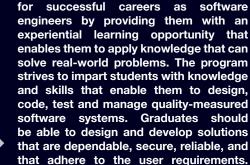


#### PROGRAM DESCRIPTION

Engineering program prepares students

**Software** 

The Bachelor of Science in





# PROGRAM LEARNING OUTCOMES

Upon completion of the BSc. in Software Engineering program, students will be expected to:

- Apply Software Engineering concepts and principles to analyze real-world software problems;
- Develop software programmes using modern software methodologies and processes;
- Demonstrate team work through collaborative implementation of software using modern software engineering principles and techniques;
- Apply software testing, quality assurance, security, and costing techniques to software development;
- Develop software products in line with software engineering ethics and standards:
- Conduct research in the field of software engineering;
- 7. Be well prepared for further studies in the area of software engineering.



# DEGREE REQUIREMENTS: 208.5 UNITS

GENERAL EDUCATION	39 UNITS
SIGNATURE COURSES	12 UNITS
STRATEGIES FOR UNIVERSITY SUCCESS SUS 1010: Strategies for University Success	3 UNITS
RESEARCH METHODS GRM 2000: Introduction to Research Methods	3 UNITS
COMMUNITY SERVICE OR COMMUNITY PROJECT CMS 3700: Community Service	3 UNITS
THE SENOIR EXPERIENCE SEN 4800: Integrated Seminar	3 UNITS
WRITTEN, ANALYTICAL, CRITICAL THINKING SKILLS	12 UNITS
ENG 1106: Composition I (WI) ENG 2206: Composition II (WI)	6 UNITS
FOREIGN LANGUAGE	6 UNITS
Student must have a credit transfer for a foreign or must take up to two-course foreign language of one language. USIU-Africa offers courses French, Japanese, Spanish, Swahili and	e sequence in Arabic,
QUANTITATIVE AND TECHNOLOGICAL SKILLS	6 UNITS
IST 1010: Introduction to Information Systems MTH 1109: College Algebra	
GENERAL EDUCATION ELECTIVES	9 UNITS
Choose three courses	
NSC2215: Introduction to Physical Mechanics (Mandatory	) 3.0 Units
PHL3310: Ethics and Value Theory	3.0 Units
SOC 2201: Introduction to Sociology	3.0 Units
MGT 3010: Overview of Management Practice MKT 3010: Principles of Marketing	3.0 Units 3.0 Units
JRN3015: Media Management	3.0 Units

Program Core Courses	169.5 Units
Computing Core Course Units	66 Units
IST1025: Introduction to Programming	4.5 Units
APT1040: Introduction to Web Design and Applica	tion 4.5 Units
MTH1025: Calculus I	3.0 Units
STA1020: Probability and Statistics I for Data Scien	nce 3.0 Units
APT1050: Database Systems	4.5 Units
SWE 1020: Data structure analysis and algorithms	4.5 Units
IST 2010: Computer Organization and Assembly Programming 4.5 Units	
MTH2215: Discrete Mathematics	3.0 Units
MTH2025: Calculus II	3.0 Units
APT 2030: Digital Electronics	4.5 Units
IST 3020: Principles of Operating Systems	4.5 Units
APT 2050: Computer Networks and Telecommunications 4.5 Units	
APT 3010: Introduction to Artificial Intelligence	4.5 Units
APT 3020: Knowledge-Based Systems	4.5 Units
APT3040: Object Oriented Design and Programmi	ng 4.5 Units
APT 3060: Mobile Programming	4.5 Units
Software Engineering Core Course Units	81 Units
SWE 2040: Programming with Frameworks	4.5 Units
APT 2080: Introduction to Software Engineering	3.0 Units
APT 3080: Management Information Systems	3.0 Units
SWE 2030: Software Requirements Engineering	4.5 Units
APT 2010: System Analysis and Design	4.5 Units
SWE 2020: Machine Learning and Big Data	4.5 Units
SWE 3050: Software Verification, Validation and Te	esting 4.5 Units
SWE 3090: Software Engineering Project I	4.5 Units
SWE 3020: Software Quality Assurance and Sec	curity 4.5 Units
SWE 3030: Software Costing and Estimation	4.5 Units
SFE 4010: Human Computer Interaction	4.5 Units
SFE 4015: Software Configuration Management	4.5 Units
IST 4080: Backend Databases and Structured C	Query 4.5 Units
SWE 3010: Security and Business Continuity	4.5 Units

SWE 3040: Software Engineering Process	4.5 Units
SWE 4040: Software Construction and Development	4.5 Units
SWE 4060: Software Project Planning and Management	4.5Units
SWE 4900: Software Engineering Capstone Project II (Mandato	ory) 4.5 Units
SWE 4910: Software Engineering Internship (Mandatory)	3.0 Units

# Software Engineering Electives

# Select two 9 units

APT 3095: Cloud Computing and Virtualization	4.5 Units
SWE4070: Advanced Web-Based Systems Developmer	nt 4.5 Units
SWE4080: Computer and Network Security	4.5 Units
DST 4010: Distributed Systems	4.5 Units
SWE 4090: Enterprise Resource Planning Systems	4.5 Units

### **ADMISSION REQUIREMENTS**

The minimum University entrance qualifications are:

- C+ for Kenya Secondary Certificate of Secondary Education (KCSE) holders or
- At least two principal passes in KACE or EACE or
- Five (5) upper level passes at IGCSE/IB
- Five (5) credits in any 5 subjects at 'O' Level or 'A' Level passes of C at GCE
- KNEC diploma or equivalent.

## **CAREER OPTIONS**

- **Application Software Developers**
- System Software Developers
- **Embedded Application Developers**
- Game Developers
- Web Developers
- Software Testers

### **CONTACTS**

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