



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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United States
International
University-Africa

Education to take you places

PROGRAM DESCRIPTION

The Bachelor of Science in Software Engineering program prepares students for successful careers as software engineers by providing them with an experiential learning opportunity that enables them to apply knowledge that can solve real-world problems. The program strives to impart students with knowledge and skills that enable them to design, code, test and manage quality-measured software systems. Graduates should be able to design and develop solutions that are dependable, secure, reliable, and that adhere to the user requirements.



PROGRAM LEARNING OUTCOMES

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

1. Apply Software Engineering concepts and principles to analyze real-world software problems;
2. Develop software programmes using modern software methodologies and processes;
3. Demonstrate team work through collaborative implementation of software using modern software engineering principles and techniques;
4. Apply software testing, quality assurance, security, and costing techniques to software development;
5. Develop software products in line with software engineering ethics and standards;
6. 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 3 UNITS

SUS 1010: Strategies for University Success

RESEARCH METHODS 3 UNITS

GRM 2000: Introduction to Research Methods

COMMUNITY SERVICE OR COMMUNITY PROJECT 3 UNITS

CMS 3700: Community Service

THE SENIOR EXPERIENCE 3 UNITS

SEN 4800: Integrated Seminar

WRITTEN, ANALYTICAL, CRITICAL THINKING SKILLS 12 UNITS

ENGLISH LANGUAGE 6 UNITS

ENG 1106: Composition I (WI)

ENG 2206: Composition II (WI)

FOREIGN LANGUAGE 6 UNITS

Student must have a credit transfer for a foreign language or must take up to two- course foreign language sequence of one language. USIU-Africa offers courses in Arabic, French, Japanese, Spanish, Swahili and Chinese.

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 3.0 Units

MKT 3010: Principles of Marketing 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 Application	4.5 Units
MTH1025: Calculus I	3.0 Units
STA1020: Probability and Statistics I for Data Science	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 Programming	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 Testing	4.5 Units
SWE 3090: Software Engineering Project I	4.5 Units
SWE 3020: Software Quality Assurance and Security	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 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 (Mandatory)	4.5Units
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 Development	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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