



# Bachelor of Science in **Software Engineering**

USIU-Africa is accredited in Kenya by the Commission for University Education (CUE) & the United States of America by WASC Senior College and University Commission respectively.

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**United States  
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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.

## LEARNING OUTCOMES

Upon successful completion of the program, students will be able to:

1. Analyze real-world software problems using software engineering principles.
2. Develop software using modern methodologies and processes.
3. Collaborate effectively in software implementation.
4. Apply testing, quality assurance, security, and cost techniques.
5. Adhere to software engineering ethics and standards.
6. Conduct research in software engineering.
7. Prepare for advanced studies in the field.

# DEGREE REQUIREMENTS

# 150 UNITS

**GENERAL EDUCATION 39 UNITS**

**SIGNATURE COURSES 15 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 Senior Seminar

**FUNDAMENTALS OF INFORMATION LITERACY 3 UNITS**

FIL 1010 Fundamentals of Information Literacy

**LANGUAGE STUDIES 12 UNITS**

**ENGLISH LANGUAGE 6 UNITS**

ENG 1106 Composition I (WI)

ENG 2206 Composition II (WI)

**FOREIGN LANGUAGE 6 UNITS**

Students must have credit for a foreign language or must take a two-course foreign language sequence of one language.

USIU-Africa offers courses in Arabic (ARB1000), French (FRN1000), Japanese (JPN1000), Spanish (SPN1000), Swahili (SWA1000), Chinese (CHI1000) and Kenya Sign Language (KSL1000).

**DISCIPLINARY GENERAL EDUCATION ELECTIVES 6 UNITS**

IST 1020 Introduction to Information Systems

MTH 1109 College Algebra

**SCHOOL-BASED GENERAL EDUCATION ELECTIVES 6 UNITS**

Students are required to pick 2 electives:

NSC 2215 Introduction to Physical Mechanics (Mandatory) 3 Units

PHL 3310 Ethics and Value Theory 3 Units

SOC 1101 Introduction to Sociology 3 Units

MGT 3010 Overview of Management Practice 3 Units

MKT 3010 Principles of Marketing 3 Units

JRN 3015 Media Management 3 Units

**CORE COURSES****111 UNITS****COMPUTING CORE COURSE UNITS****48 UNITS**

IST 1025	Introduction to Programming	3 Units
APT 1040	Introduction to Web Design and Application	3 Units
MTH 1110	Calculus	3 Units
MTH 2010	Probability and Statistics	3 Units
APT 1050	Database Systems	3 Units
SWE 1020	Data Structure and Algorithm Analysis	3 Units
IST 2010	Computer Organization and Assembly Programming	3 Units
MTH 2215	Discrete Mathematics	3 Units
MTH 2030	Numerical Analysis and its Applications	3 Units
APT 2030	Digital Electronics	3 Units
IST 3020	Principles of Operating Systems	3 Units
APT 2050	Computer Networks and Telecommunications	3 Units
APT 3010	Introduction to Artificial Intelligence	3 Units
APT 3020	Knowledge-Based Systems	3 Units
APT 3040	Object Oriented Analysis, Design and Programming	3 Units
APT 3060	Mobile Programming	3 Units

**SOFTWARE ENGINEERING CORE COURSE UNITS****57 UNITS**

SWE 2040	Programming with Frameworks	3 Units
APT 2080	Introduction to Software Engineering	3 Units
APT 3080	Management Information Systems	3 Units
SWE 2030	Software Requirements Engineering	3 Units
APT 2010	System Analysis and Design	3 Units
SWE 2020	Machine Learning and Big Data	3 Units
SWE 3050	Software Verification, Validation and Testing	3 Units
SWE 3090	Software Engineering Project I	3 Units
SWE 3020	Software Quality Assurance and Security	3 Units
SWE 3030	Software Costing and Estimation	3 Units
SFE 4010	Human Computer Interaction	3 Units
SFE 4015	Software Configuration Management	3 Units
APP 4080	Collaborative (Team Work In) Software Development	3 Units
SWE 3010	Security and Business Continuity	3 Units
SWE 3040	Software Engineering Process	3 Units
SWE 4040	Software Construction and Development	3 Units
SWE 4060	Software Project Planning and Management	3 Units
SWE 4900	Software Engineering Capstone Project II (Mandatory)	3 Units
SWE 4910	Software Engineering Internship (Mandatory)	3 Units

**SOFTWARE ENGINEERING ELECTIVES (SELECT TWO)****6 UNITS**

APT 3095	Cloud Computing and Virtualization	3 Units
SWE 4070	Advanced Web-Based Systems Development	3 Units
SWE 4080	Computer and Network Security	3 Units
DST 4010	Distributed Systems	3 Units
SWE 4090	Enterprise Resource Planning Systems	3 Units



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1  def _update_profile_info:  
2  """Update profile info"""  
3  def _update_profile_info(profile_id):  
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# CAREER OPPORTUNITIES

A Bachelor of Science in Software Engineering opens up a wide range of career opportunities:

1. Application Software Developers
2. System Software Developers
3. Embedded Application Developers
4. Game Developers
5. Web Developers
6. Software Testers

# ADMISSION REQUIREMENT

Kenya Certificate of Secondary Education (KCSE) or its equivalent with a minimum aggregate of C+ (Plus).

# CONTACTS

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