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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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	1025	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

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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