



Bachelor of Science in **Artificial Intelligence (AI) & Robotics**

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
International
University-Africa**

Education to take you places

PROGRAM DESCRIPTION

The philosophy of the Bachelor of Science in Artificial Intelligence (AI) and Robotics is to equip students with advanced knowledge and skills in AI within an intellectually stimulating, culturally diverse, and growth-oriented environment. The program prepares graduates to design and operate a wide range of intelligent systems, including computer vision applications, speech and audio recognition, optical character recognition, computer-aided manufacturing, computer-assisted surgery, autonomous vehicles and drones, intelligent commerce, transport and logistics systems and smart energy solutions. It also offers a global perspective through an optional exchange program as an alternative to the local internship.

LEARNING OUTCOMES

Upon completion of the BSc. in Artificial Intelligence and Robotics program, students will be expected to:

1. Apply the principles and mechanisms underlying various kinds of intelligent processes, Artificial Intelligence and Robotics systems.
2. Design systems that simulate natural intelligence using Artificial Intelligence and Robotics tools and techniques to solve problems in the society.
3. Develop systems that incorporate Artificial intelligence and Robotics techniques both individually and as a team to solve problems in the society.
4. Managing an AI/robotics project aligned with professional standards.
5. Conduct research on emerging AI/robotics trends, with clear methodology, analysis and conclusions.

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

NSC 2215 Introduction to Physical Mechanics

3 Units

PHL 3310 Ethics and Value Theory

3 Units

CORE COURSES**111 UNITS****Foundational Engineering & Mathematics courses****30 Units**

MTH 1025	Calculus I	3 Units
STA 1020	Probability and Statistics I	3 Units
MTH 1040	Linear Algebra	3 Units
AIR 1050	Principles of Electrical & Electronic Engineering	3 Units
MTH 2025	Calculus II	3 Units
MTH 2215	Discrete Mathematics For Data Science	3 Units
APT 2030	Digital Electronics	3 Units
AIR 2030	Digital Signal Processing	3 Units
STA 3040	Mathematical Modelling and Simulation	3 Units
STA 4030	Bayesian Inference and Decision Theory	3 Units

Core Computer Science courses**27 Units**

IST 1025	Introduction to Programming	3 Units
APT 1040	Introduction to Web design and Applications	3 Units
APT 1050	Database Systems	3 Units
SWE 1020	Data Structure analysis and algorithms	3 Units
IST 2010	Computer Organization and Assembly Programming	3 Units
APT 2040	Operating Systems	3 Units
APT 2050	Computer Networks and Telecommunication	3 Units
APT 3040	Object Oriented Analysis Design and Programming	3 Units
IST 3050	Introduction to Security Systems	3 Units

Artificial Intelligence & Robotics Courses**54 Units**

AIR 2010	Introduction to Robotics	3 Units
AIR 2040	Real-Time Software Engineering	3 Units
AIR 3010	Design of Real-Time Systems	3 Units
AIR 3060	Robotics Applications Programming	3 Units
AIR 3080	Artificial Intelligence and Robotics Practicum	3 Units
APT 3010	Introduction to Artificial Intelligence	3 Units
APT 3025	Applied Machine Learning	3 Units
DST 4020	Mobile Computing	3 Units
AIR 4010	Deep Learning and Computer Vision	3 Units
AIR 4020	Human-Robot Interaction	3 Units
AIR 4040	Reinforcement learning for robotics	3 Units
AIR 4050	Intelligent Multi-Agent Systems	3 Units
AIR 4060	Engineering and Informatics Ethics and Law	3 Units
AIR 4070	Robotics Design	3 Units
AIR 4080	Industrial Automation and Robotics	3 Units
AIR 4090	Speech and Natural Language Processing	3 Units
AIR 4900	AI & Robotics Design Science Research Project	3 Units
AIR 4910	Artificial Intelligence and Robotics Internship	3 Units

CAREER OPPORTUNITIES

A Bachelor of Science in Artificial Intelligence (AI) & Robotics opens up a wide range of career opportunities:

1. Industrial Automation Engineer
2. Robot Developers
3. Intelligent Systems Engineer
4. Smart Infrastructure & IoT Engineers
5. Trainer and Researcher in AI and Robotics

ADMISSION REQUIREMENTS

Kenya Certificate of Secondary Education (KCSE) or its equivalent with a minimum aggregate of C+ (Plus) and a minimum grade of C+ in Mathematics, and Physical Science or Physics.

CONTACTS

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