

BACHELOR OF SOFTWARE ENGINEERING

Admission to Program

Admission to the program is explained in the HCT Admission Policy described in the Academic Policies section of this Catalog.

Program Mission

The Bachelor of Software Engineering prepares graduates to be successful Software Engineering professionals with a foundation in theory and practice, emphasizing technical proficiency, innovative problem solving, ethical leadership, collaboration, and a drive for discovery and lifelong learning in the field of Software Engineering.

Program Description

The Bachelor of Software Engineering program is a comprehensive and dynamic four-year degree that consists of 120 credits, including General Study requirements. The program aims to equip graduates with technical knowledge, skills, and competencies in software engineering principles, methodologies, and practices, ensuring alignment with current industry standards and best practices. The curriculum emphasizes the development of analytical capabilities to tackle complex problems, provide innovative solutions, and make informed decisions within software engineering contexts. It also focuses on ethical and professional responsibility, promoting integrity, accountability, and awareness of the societal implications of software development while encouraging diversity, inclusion, and environmental sustainability. After completing the program, graduates will possess advanced technical skills and a critical perspective, enabling them to navigate and contribute meaningfully to the software development field while upholding the highest ethical and professional standards.

Program Goals

1. Equip graduates with technical knowledge and skills in software engineering principles, methodologies, and practices, ensuring alignment with current industry standards and best practices.
2. Develop graduates' capability to analyze complex problems, provide innovative and original solutions, and make informed decisions within software engineering contexts.
3. Prepare graduates by instilling ethical and professional responsibility, with a focus on integrity, accountability, and awareness of the societal implications of software development, while promoting diversity, inclusion, and environmental sustainability in software engineering practices.
4. Prepare graduates for a successful career as effective decision makers with strong communication and collaboration skills for effective teamwork and interaction with diverse stakeholders, including global perspectives and multicultural awareness.
5. Equip graduates with a lifelong commitment to learning and adaptability, fostering professional growth to remain abreast of emerging technologies and shifts in industry trends, while also cultivating an entrepreneurial mindset.

Program Learning Outcomes

Bachelor of Software Engineering Degree:

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering and mathematics.
2. Apply engineering design to produce solutions that meet specified needs with consideration of global, cultural, social, environmental, and economic factors.
3. Communicate effectively with a range of audiences.
4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. Acquire and apply new knowledge as needed, using appropriate learning strategies.

Requirements

Completion Requirements

Students must successfully complete the required 120 credits as follows:

Code	Title	Credit Hours
CIS Core Courses		36
Program Core Courses		60
Program Elective Courses		6
General Studies		18
Total Credits		120

Note:

To qualify for a bachelor's degree in software engineering, a student is required to:

- Successfully complete the required 120 credit hours specific to the program with a minimum cumulative GPA of 2.0.
- Complete a total of 100 hours of volunteering work.
- Meet the residency requirement that a minimum of 50% of the program credit requirements have been completed at the HCT

Code	Title	Credit Hours
CIS Core Courses		
Required Credits : 36		
CIS 1203	Web Technologies	3
CIS 1213	Introduction to Information Security	3
CIS 1303	Database Systems	3
CIS 1313	Introduction to Computer Systems and Networks	3
CIS 1603	Programming I	3
CIS 1613	Programming II	3
CIS 1703	Introductory Statistics and Probability	3
CIS 2023	Applied Discrete Mathematics	3
CIS 2033	User Centered Design	3
CIS 2113	Introduction to Software Engineering	3
CIS 2213	Full-stack Web Application Development	3
CIS 3603	Project Management	3

Program Core Courses

Required Credits: 60		
CSE 2123	Software Architecture and Design	3
CSE 2133	Software Construction	3
CSE 2623	Algorithms and Data Structures	3
CIS 2903	Operating Systems	3
CSE 3013	Calculus	3
CSE 3143	Agile Software Development	3
CSE 3153	Software Testing and Quality Assurance	3
CSE 3163	DevOps Engineering	3
CSE 3403	Mobile Application Development	3
CSE 3413	Cloud-based Microservices for Web Applications	3
CSE 3603	Cloud Computing Fundamentals	3
CSE 3613	Artificial Intelligence Applications	3
CSE 4173	Secure and Resilient Software Development	3
CSE 4183	Software Evolution and Maintenance	3
CSE 4903	Capstone Project I	3
CSE 4906	Apprenticeship I	6
CSE 4913	Capstone Project II	3
CSE 4916	Apprenticeship II	6

Elective Courses

Required Credits: 6 Credits		
CSE 3423	IoT Systems Development	3
CSE 3623	Advanced Cloud Computing Technologies	3
CSE 4433	Mobile Game Development	3
CSE 4443	Advanced Web Application Development	3
CSE 4613	Blockchain Technologies and Applications	3
CIA 3313	Database Administration	3

General Studies Courses

Required Credits: 18 Credits		
AES 1003	Emirati Studies	3
LSM 1013	Mathematics for Computing	3
LSC 1103	Professional Written Communication	3
LSS 1133	Critical Thinking and Research Skills	3
CIS 2603	Artificial Intelligence Foundations	3
CSE 4143	Tech Entrepreneurship for Software Engineers	3

Description	Data
Total Required Credits	120
Maximum Duration of Study	6 years
Minimum Duration of Study	4 years
Cost Recovery Program	No
Program Code	BASWE
Major Code	SWE

Ideal Study Plan**Recommended Sequence of Study**

Year 1		Credit Hours
Semester 1		
CIS 1203	Web Technologies	3
CIS 1313	Introduction to Computer Systems and Networks	3
CIS 1603	Programming I	3

LSC 1103	Professional Written Communication	3
LSM 1013	Mathematics for Computing	3
Credit Hours		15

Semester 2

CIS 1213	Introduction to Information Security	3
CIS 1303	Database Systems	3
CIS 1613	Programming II	3
CIS 1703	Introductory Statistics and Probability	3
LSS 1133	Critical Thinking and Research Skills	3
Credit Hours		15

Year 2**Semester 3**

CIS 2023	Applied Discrete Mathematics	3
CIS 2033	User Centered Design	3
CIS 2113	Introduction to Software Engineering	3
CIS 2213	Full-stack Web Application Development	3
CIS 2603	Artificial Intelligence Foundations	3
Credit Hours		15

Semester 4

CSE 2123	Software Architecture and Design	3
CSE 2133	Software Construction	3
CSE 2623	Algorithms and Data Structures	3
CIS 2903	Operating Systems	3
AES 1003	Emirati Studies	3
Credit Hours		15

Year 3**Semester 5**

CSE 3013	Calculus	3
CSE 3143	Agile Software Development	3
CSE 3153	Software Testing and Quality Assurance	3
CSE 3603	Cloud Computing Fundamentals	3
CSE 3613	Artificial Intelligence Applications	3
Credit Hours		15

Semester 6

CIS 3603	Project Management	3
CSE 3163	DevOps Engineering	3
CSE 3403	Mobile Application Development	3
CSE 3413	Cloud-based Microservices for Web Applications	3
3000 Level Elective		3
Credit Hours		15

Year 4**Semester 7**

CSE 4903	Capstone Project I	3
CSE 4906	Apprenticeship I	6
CSE 4143	Tech Entrepreneurship for Software Engineers	3
CSE 4173	Secure and Resilient Software Development	3
Credit Hours		15

Semester 8

CSE 4913	Capstone Project II	3
CSE 4916	Apprenticeship II	6
CSE 4183	Software Evolution and Maintenance	3
4000 Level Elective		3
Credit Hours		15
Total Credit Hours		120

Faculty and Academic Staff

Please add

Name, highest degree(specialization), University, Country