COMPUTER ENGINEERING, BACHELOR OF SCIENCE

The aim of HBKU's Bachelor of Science in Computer Engineering program is to produce globally competitive computer engineering professionals for Qatar, the region, and the wider world.

The program is built on HBKU's unique model of developing interdisciplinary programs that draw on the expert knowledge of its partner institutions alongside its own faculty. This means that students are able to take courses provided by Texas A&M University at Qatar and Carnegie Mellon University in Qatar in addition to the comprehensive range of course offerings from HBKU.

For more information, click here (https://www.hbku.edu.qa/en/cse/bs-computer-engineering/).

Requirements

Minimum hours required to complete program 129 CH

Code	Title	Hours
Core Courses		
CPEG 110	Principles of computing	3
CPEG 111	Introduction to Computer Engineering	3
CPEG 127	Concepts of Mathematics	3
CPEG 151	Fundamentals of Programming and Computer Science	4
CPEG 152	Principles of Imperative Computing	3
CPEG 213	Introduction to Computer Systems	4
CPEG 214	Electrical Circuit Theory	4
CPEG 217	Probability Theory and Random Processes	3
CPEG 300	Embedded System Design	3
CPEG 330	Data Structures	3
CPEG 344	Digital Signal Processing	4
CPEG 410	Final Year Project I	4
CPEG 411	Final Year Project II	4
CPEG 464	Introduction to Machine Learning	3
ECEN 248	Introduction to Digital Systems Design [1]	4
ECEN 314	Signals and Systems [1]	3
ECEN 325	Electronics [1]	4
ECEN 350	Computer Architecture and Design [1]	4
ENGL 104	Composition and Rhetoric [1]	3
ENGL 210	Scientific & Technical Writing [1]	3
ENGR 216	Experimental Physics and Engineering Lab II - Mechanics [1]	2
ENGR 217	Experimental Physics and Engineering Lab III - Electricity and Magnetism [1]	2
ENGR 482	Ethics & Engineering [1]	3
MATH 151	Engineering Mathematics I [1]	4
MATH 152	Engineering Mathematics II [1]	4
MATH 251	Engineering Mathematics III [1]	3
MATH 308	Differential Equations [1]	3
MATH 311	Topics in Applied Mathematics [1]	3
PHYS 206	Newtonian Mechanics for Engineering and Science [1]	3
PHYS 207	Electricity and Magnetism for Engineering and Science [1]	3
Subtotal		99

Code	Title	Hours
UCC Electives		
Select six of the following:		18
Creative Arts		
CRAF 491	Topics: Jewelry [1]	
ENGL 212	Introduction to Drama [1]	
ENGL 219	Literature and the Other Arts [1]	
ENGL 388	Professional, Scientific and Technical Writing [1]	
GDES 491	Rapid Prototyping [1]	
LANG 216	Literature of Arabic Speaking [1]	
MUSC 201	Music and the Human Experience [1]	
Humanities, Social and Political Science		
ANTH 201	Introduction to Anthropology [1]	
ARTF 115	Art History Survey [1]	
COMM 335	Intercultural Communication [1]	
COMM 365	International Communication [1]	
HIST 105	History of the U.S. [1]	
HIST 106	History of the U.S. [1]	
HIST 115	History & Theory of Architecture - Islamic/Arab Civilizations	
HIST 225	Revolutionary America [1]	
HIST 230	American Military History [1]	
HIST 301	Blacks in the US Since 1877 [1]	
HIST 367	Disastrous Encounters [1]	
HUSI 491	College Topics [1]	
INST 222	Foundations of Education in a Multicultural Society [1]	
INTE 242	Introduction to Science and Technology Studies [1]	
POLS 206	American National Government [1]	
POLS 207	State and Local Government [1]	
POLS 242	Islamism and Politics in Middle East [1]	
PSYC 211	Cognitive Psychology [1]	
PSYC 241	Social Psychology [1]	
Business		
BUS 110	Business Computing [1]	
BUS 122	Introduction to Accounting [1]	
BUS 381	Marketing I [1]	
BUS 482	Pricing Strategy [1]	
ECON 242	Principles of Economics [1]	
FIN 101	Ethical Finance	
Subtotal		18
Engineering Electives		
Select five of the following:		15
CPEG 418	Introduction to Scientific Visualization	
CPEG 460	Computer Networks	
CPEG 462	Cybersecurity Fundamentals	
CS 440	Distributed Systems	
CS 487	Introduction to Computer Security [1]	
ECEN 420	Linear Control Systems [1]	
ECEN 429	Machine Learning for Signal Processing [1]	
ECEN 449	Microprocessor Systems Design [1]	
ECEN 455	Digital Communications [1]	
ECEN 489	Special Topics [1]	
MATH 414	Fourier Series and Wavelets [1]	
CPEG 453	Information and Communication Technology Accessibility	
RO 311	Introduction to Robotics [1]	

CS 282	Artificial Intelligence for Medicine [1]	
ECEN 446	Information Theory, Inference and Learning Algorithms [1]	
ECEN 438	Power Electronics [1]	
Subtotal		15
Total Hours		**132**

[1] Courses offered by a partner university.
For course descriptions see respective institution's catalog.

Texas A&M University Qatar [*]

Code	Title	Hours
ECEN 248	Introduction to Digital Systems Design	4
ECEN 314	Signals and Systems	3
ECEN 325	Electronics	4
ECEN 350	Computer Architecture and Design	4
ENGL 104	Composition and Rhetoric	3
ENGL 210	Scientific & Technical Writing	3
ENGR 216	Experimental Physics and Engineering Lab II - Mechanics	2
ENGR 217	Experimental Physics and Engineering Lab III - Electricity and Magnetism	2
ENGR 482	Ethics & Engineering	3
MATH 151	Engineering Mathematics I	4
MATH 152	Engineering Mathematics II	4
MATH 251	Engineering Mathematics III	3
MATH 308	Differential Equations	3
MATH 311	Topics in Applied Mathematics	3
PHYS 206	Newtonian Mechanics for Engineering and Science	3
PHYS 207	Electricity and Magnetism for Engineering and Science	3
ENGL 219	Literature & the Other Arts	3
MUSC 201	Music and the Human Experience	3
ANTH 201	Introduction to Anthropology	3
COMM 335	Intercultural Communication	3
COMM 365	International Communication	3
HIST 105	History of the U.S.	3
HIST 106	History of the U.S.	3
HIST 230	American Military History	3
INST 222	Foundations of Education in a Multicultural Society	3
POLS 206	American National Government	3
POLS 207	State and Local Government	3
ECEN 420	Linear Control Systems	3
ECEN 449	Microprocessor Systems Design	3
ECEN 455	Digital Communications	4
ECEN 489	Special Topics	3
MATH 414	Fourier Series and Wavelets	3

Virginia Commonwealth University Qatar [*]

Code	Title	Hours
CRAF 491	Topics: Jewelry	3
GDES 491	Rapid Prototyping	3
ARTF 115	Art History Survey	3
HUSI 491	College Topics	3

Northwestern University Qatar [*]

Code	Title	Hours
ENGL 212	Introduction to Drama	4
INTE 242	Introduction to Science and Technology Studies	4

Carnegie Mellon University Qatar [*]

Code	Title	Hours
LANG 216	Literature of Arabic Speaking	3
HIST 367	Disastrous Encounters	3
PSYC 211	Cognitive Psychology	3
PSYC 241	Social Psychology	3
BUS 110	Business Computing	3
BUS 122	Introduction to Accounting	3
BUS 381	Marketing I	3
BUS 482	Pricing Strategy	3
CS 487	Introduction to Computer Security	4

* For course descriptions see respective institution's catalog.

Study Plan

Course	Title	Hours
First Year		
First Semester		
CPEG 110	Principles of computing	3
MATH 151	Engineering Mathematics I [1]	4
CPEG 111	Introduction to Computer Engineering	3
ENGL 104	Composition and Rhetoric [1]	3
UCC	Univ. Core Elective	3
	Semester Hours	**16**
Second Semester		
CPEG 127	Concepts of Mathematics	3
MATH 152	Engineering Mathematics II [1]	4
ENGR 216	Experimental Physics and Engineering Lab II - Mechanics [1]	2
PHYS 206	Newtonian Mechanics for Engineering and Science [1]	3
UCC	Univ. Core Elective	3
	Semester Hours	**15**
Second Year		
First Semester		
CPEG 151	Fundamentals of Programming and Computer Science	4
MATH 251	Engineering Mathematics III [1]	3
ECEN 248	Introduction to Digital Systems Design [1]	4
PHYS 207	Electricity and Magnetism for Engineering and Science [1]	3
ENGR 217	Experimental Physics and Engineering Lab III - Electricity and Magnetism [1]	2
	Semester Hours	**16**
Second Semester		
CPEG 152	Principles of Imperative Computing	3
MATH 311	Topics in Applied Mathematics [1]	3
MATH 308	Differential Equations [1]	3
CPEG 214	Electrical Circuit Theory	4
UCC	Univ. Core Elective	3
	Semester Hours	**16**
Third Year		
First Semester		
CPEG 213	Introduction to Computer Systems	4
CPEG 217	Probability Theory and Random Processes	3
ECEN 325	Electronics [1]	4
ECEN 314	Signals and Systems [1]	3

ENGL 210	Scientific & Technical Writing (Communication Elective) [1]	3
	Semester Hours	**17**
Second Semester		
CPEG 300	Embedded System Design	3
CPEG 344	Digital Signal Processing	4
ECEN 350	Computer Architecture and Design [1]	4
CPEG 330	Data Structures	3
UCC	Univ. Core Elective	3
	Semester Hours	**17**
Fourth Year		
First Semester		
CPEG 410	Final Year Project I	4
ENGR 482	Ethics & Engineering [1]	3
Area Elective		3
Area Elective		3
Area Elective		3
	Semester Hours	**16**
Second Semester		
CPEG 411	Final Year Project II	4
Area Elective		3
Area Elective		3
UCC	Univ. Core Elective	3
UCC	Univ. Core Elective	3
	Semester Hours	**16**
	Total Hours	**129**

[1] TAMUQ Course