BSc in Computer Engineering – Curriculum Chart

GROUP (A)

Term 1

Courses	Credits	Code	Prerequisites (Corequisites)	Type
Fundamentals of Computer and Programming	۳		(Fundamentals of Computer and Programming Workshop)	C
Fundamentals of Computer and Programming Workshop	۱		(Fundamentals of Computer and Programming)	C
General Mathematics 1	۳			B
Physics 1	۳			B
Persian Language	۳			G
English Language	۳			G
Islamic Thought 1	۲			G
Student Life Skills	۲			G
Total Credits	۲۰			

Term 2

Courses	Credits	Code	Prerequisites (Corequisites)	Type
Logic Circuits	۳		(Discrete Mathematics)	C
General Mathematics 2	۳		General Mathematics 1	B
Physics 2	۳		General Mathematics 1	B
Differential Equations	۳		General Mathematics 1	B
Discrete Mathematics	۳		General Mathematics 1 - (Fundamentals of Computer and Programming)	C
General Computer Workshop	۱		-	B
Physical Education 1	۱		-	G
a General course	۲		-	G
Total Credits	۱۹			

Term 3

Courses	Credits	Code	Prerequisites (Corequisites)	Type
Advanced Programming	۳		Fundamentals of Computer and Programming - (Advanced Programming Workshop)	C
Advanced Programming Workshop	۱		(Advanced Programming)	C
Electrical and Electronic Circuits	۳		Differential Equations - Physics 2	C
Applied Linear Algebra	۳		General Mathematics 2	C
Computer Architecture	۳		Logic Circuits	C
Logic Circuits Lab	۱		Logic Circuits	C
Physics 2 Lab	۱		Physics 2	B
English for Students of Computer Engineering	۲		English Language	C
Physical Education 2	۱			G
Total Credits	۱۸			

Term 4

Courses	Credits	Code	Prerequisites	Type
Data Structures	۳		(Discrete Mathematics) - Advanced Programming	C
Software Engineering 1	۳		Advanced Programming	C
Statistics and Probability	۳		General Mathematics 2	B
Operating Systems	۳		Computer Architecture	C
Digital Systems Computer Design	۳		Computer Architecture	R
Electrical and Electronic Circuits Lab	۱		Electrical Circuits	C
Computer Architecture Lab	۱		Computer Architecture - Logic Circuits Lab	C
a General course	2		-	G
Total Credits	19			

Term 5

Courses	Credits	Code	Prerequisites	Type
Theory of Languages and Machines	۳		Data Structures	C
a course from Software table 1	۳		*according to the table of Required courses*	E
Research and Presentation Methods	۲		English for Students of Computer Engineering	C
Microprocessors and Assembly Language	۳		Computer Architecture	C
Computer Networks	۳		(Operating Systems) - Computer Architecture - Engineering Statistics and Probability	C
Operating Systems Lab	۱		Operating Systems	-
a General course	۲			G
Total Credits	۱۷			

Term 6

Courses	Credits	Code	Prerequisites	Type
a course from Software table 2	۳		*according to the table of Required courses*	-
Digital Electronics (or other Required courses of Hardware)	۳		Electrical and Electronic Circuits	R
Signals and Systems (or other Required courses of Hardware)	۳		Differential Equations	R
Microprocessors Lab	۱		Microprocessors and Assembly Language - Logic Circuits Lab	C
Computer Networks Lab	۱		Computer Networks	C
an Elective course (1)	۳		-	E
a General course	۲		-	G
Computer Engineering Skills Training	۰		-	-
Summer: Internship	۱		Research and Presentation Methods - Computer Engineering Skills Training	-
Total Credits	۱۷			

Term 7

Courses	Credits	Code	Prerequisites	Type
Fundamentals of Cloud Computing (or another Required course of Hardware)	۳		Computer Networks - Operating Systems	R
Concurrent Software and Hardware Development (or another Required course of Hardware)	۳		Computer Architecture - Digital Systems Computer Design*	R
a course from Software table 3	۳		*according to the table of Required courses*	R
an Elective course (2)	۳		-	E
an Elective course (3)	۳		-	E
a General course	۲		-	G
Total Credits	۱۷			

*This prerequisite has been recommended by the department, not the Ministry of Science.

Term 8

Courses	Credits	Code	Prerequisites	Type
Embedded and Real-time Operating Systems (or another Required course of Hardware)	۳		Operating Systems - Microprocessors and Assembly Language - Digital Systems Computer Design*	R
a course form Software table (4)	۳		*according to the tables of Required courses*	R
an Elective course (4)	۳		-	E
an Elective course (5)	۳		-	E
BSc Project	۳		Research and Presentation Methods	-
Total Credits	۱۵			

*This prerequisite has been recommended by the department, not the Ministry of Science.

GROUP (B)

Term 1

Courses	Credits	Code	Prerequisites (Corequisites)	Type
Fundamentals of Computer and Programming	۳		(Fundamentals of Computer and Programming Workshop)	C
Fundamentals of Computer and Programming Workshop	۱		(Fundamentals of Computer and Programming)	C
General Mathematics 1	۳			B
Physics 1	۳			B
Persian Language	۳			G
English Language	۳			G
Islamic Thought 1	۲			G
Student Life Skills	۲			G
Total Credits	۲۰			

Term 2

Courses	Credits	Code	Prerequisites (Corequisites)	Type
Advanced Programming	۳		Fundamentals of Computer and Programming - (Advanced Programming Workshop)	C
Advanced Programming Workshop	۱		(Advanced Programming)	C
General Mathematics 2	۳		General Mathematics 1	B
Physics 2	۳		General Mathematics 1	B
Differential Equations	۳		General Mathematics 1	B
a General course	۲		-	G
Physical Education 1	۱		-	G
Total Credits	۱۶			

Term 3

Courses	Credits	Code	Prerequisites (Corequisites)	Type
Data Structures	۳		Advanced Programming - (Discrete Mathematics)	C
Logic Circuits	۳		Discrete Mathematics	C
Discrete Mathematics	۳		Mathematics 1 - (Fundamentals of Computer and Programming)	C
Engineering Statistics and Probability	۳		General Mathematics 2	B
Physics 2 Lab	۱		Physics 2	B
General Computer Workshop	۱		-	B
Physical Education 2	۱		-	G
a General course	۲		-	G
Total Credits	۱۷			

Term 4

Courses	Credits	Code	Prerequisites (Corequisites)	Type
Applied Linear Algebra	۳		General Mathematics 2	C
Electrical and Electronic Circuits	۳		Differential Equations - Physics 2	C
Theory of Languages and Machines	۳		Data Structures	C
Computer Architecture	۳		Logic Circuits	C
Algorithm Design	۳		Data Structures - Discrete Mathematics	R
Logic Circuits Lab	۱		Logic Circuits	C
English for Students of Computer Engineering	۲		English Language	C
Total Credits	۱۸			

Term 5

Courses	Credits	Code	Prerequisites (Corequisites)	Type
Operating Systems	۳		Computer Architecture	C
Software Engineering 1	۳		Advanced Programming	C
Data Recovery	۳		Data Structures - Engineering Statistics and Probability	R
Digital Systems Computer Design (*Required Hardware (1)*)	۳		Computer Architecture	R
Principles of Database Design	۳		Data Structures	R
Electrical and Electronic Circuits Lab	۱		Electrical and Electronic Circuits	C
Computer Architecture Lab	۱		Computer Architecture - Logic Circuits Lab	C
a General course	۲		-	G
Total Credits	۱۹			

Term 6

Courses	Credits	Code	Prerequisites (Corequisites)	Type
Microprocessors and Assembly Language	۳		Computer Architecture	C
Software Engineering 2	۳		Software Engineering 1	R
a Required Hardware course (2)	۳		*according to the table of Required courses*	R
Computer Networks	۳		(Operating Systems) - Computer Architecture - Engineering Statistics and Probability	C
an Elective course (1)	۳		-	E
Methods of Research and Presentation	۲		English for Students of Computer Engineering	C
Operating Systems Lab	۱		Operating Systems	C
a General course	۲		-	G
Computer Engineering Skills Training	۰		-	-
Summer: Internship	۱		Methods of Research and Presentation - Computer Engineering Skills Training	-
Total Credits	21			

Term 7

Courses	Credits	Code	Prerequisites (Corequisites)	Type
Programming Languages	۳		Theory of Languages and Machines	R
a Required Hardware course (3)	۳		*according to the table of Required courses*	R
an Elective course (2)	۳		-	E
an Elective course (3)	۳		-	E
Microprocessors Lab	۱		Microprocessors and Assembly Language - Logic Circuits Lab	C
Computer Networks Lab	۱		Computer Networks	C
a General course	۲		-	G
Total Credits	۱۶			

Term 8

Courses	Credits	Code	Prerequisites (Corequisites)	Type
a Required Hardware course (4)	۳		according to the table of Required courses	R
User Interface Design	۳		Software Engineering 1	R
an Elective course (4)	۳		-	E
an Elective course (5)	۳		-	E
BSc Project	۳		Methods of Research and Presentation	-
Total Credits	۱۵			

Table of Computer Systems Required Courses (Hardware)*		
Courses	Credits	Prerequisites (Corequisites)
Signals and Systems	۳	Differential Equations
Digital Systems Computer Design (CAD)	۳	Computer Architecture
Digital Electronics	۳	Electrical and Electronic Circuits
Embedded and Real-time Operating Systems	۳	Operating Systems - Microprocessors and Assembly Language - Digital Systems Computer Design
Fundamentals of Cloud Computing	۳	Computer Networks - Operating Systems
Concurrent Software and Hardware Design	۳	Computer Architecture - Digital Systems Computer Design
Interfacing Circuits Design	۳	Microprocessors and Assembly Language
Multicore Programming	۳	Operating Systems

Table of Required Courses of Software Development and Design*		
Courses	Credits	Prerequisites (Corequisites)
Algorithm Design	۳	Data Structures - Discrete Mathematics
Principles of Database Design	۳	Data Structures
Programming Languages	۳	Theory of Languages and Machines
Software Engineering 2	۳	Software Engineering 1
User Interface Design	۳	Software Engineering 1
Data Recovery	۳	Data Structures - Engineering Statistics and Probability

Table of Elective Courses *		
Courses	Credits	Prerequisites (Corequisites)
#other unselected Required courses	۳	*according to the table of Required courses* - (Applied Linear Algebra)
#Fundamentals and Applications of Artificial Intelligence	۳	Computer Networks
#Fundamentals of Data Security	۳	Microprocessors and Assembly Language - Computer Networks
#Fundamentals of Internet of Things	۳	Computer Networks
Web Development	۳	Advanced Programming
Programming Mobile Devices	۳	Computer Networks - Signals and Systems
Data Transfer	3	Advanced Programming
Computer Graphics	3	Algorithm Design
Fundamentals of Computational Intelligence	3	Engineering Statistics and Probability - Signals and Systems
Multimedia Systems	3	Fundamentals of Computational Intelligence
Data Mining	3	Signals and Systems
Principles of Robotics Science	3	Fundamentals of Computational Systems
Introduction to Bioinformatics	3	Engineering Economics - Computer Networks
E-Commerce	3	Software Engineering 1
Human and Computer Interaction	3	Operating Systems - Engineering Statistics and Probability
Computer Simulation	3	according to the table of Required courses - (Applied Linear Algebra)
Computer Games Design	3	Advanced Programming
Theory of Computation		Theory of Languages and Machines
Fundamentals of Computer Animation	3	Computer Graphics
Information Technology Project Management	3	-
Start-up Business Development	3	Software Engineering 1
Industrial Automation Systems	3	Microprocessors and Assembly Language
Special Topics 1	3	-
Special Topics 2	3	-
Linear Control	3	Signals and Systems
Engineering Economics	3	-
Project Control	3	-
Maximum of two courses from Computer Engineering Master's Program	3	*consent of the department required*
Maximum of two BSc courses of other fields with the consent and permission of the department (Engineering Mathematics, Linear Optimization, Mathematical Software)	3	*consent of the department required*

*15 credits must be taken from Elective Courses.

*There Elective courses have priority in each term.