Computer Science Program

Suggested Four-Year Study Plan

Table 8: Suggested Four Year Study Plan

First Year					
Courses				**CRN**	**Hours**
▪ Language and Thinking				9100100	1 CR
Total: 1					
Fall			**Spring**		
Courses	**CRN**	**Hours**	**Courses**	**CRN**	**Hours**
▪ FYSEM I ▪ English Composition I ▪ Intro to CS I ▪ Distribution Course	9100101 9100105 9112101 ----------	4 CR 4 CR 4PR 4 DR **Total: 16**	▪ FYSEM II ▪ English Composition II ▪ CS II ▪ Distribution Course	9100102 9100106 9112102 ----------	4 CR 4 CR 4 PR 4 DR **Total: 16**
Second Year					
Fall			**Spring**		
Courses	**CRN**	**Hours**	**Courses**	**CRN**	**Hours**
▪ SYSEM I ▪ Arabic Composition I ▪ Data Structure and Algorithms ▪ Distribution Course	9100201 9100109 9112201 ----------	4 CR 4 CR 4 PR 4DR **Total: 16**	▪ SYSEM II ▪ Arabic Composition II ▪ 200-level System and Hardware Req. ▪ Distribution Course	9100202 9100110 91122xx ----------	4 CR 4 CR 4PR 4 DR **Total: 16**
Third Year					
Fall			**Spring**		
Courses	**CRN**	**Hours**	**Courses**	**CRN**	**Hours**
▪ Theory Requirement ▪ Application Req. ▪ Program Elective ▪ Distribution Course ▪ SP Proposal Workshop	9114----- 9112----- 9112----- ---------- 9100301	4PR 4PR 4 PE 4 DR 1 CR **Total: 17**	▪ 300-level System and Hardware Req. ▪ Program Elective ▪ Program Elective ▪ Distribution Course	91123xx 9112----- 9112----- ----------	4 PR 4PE 4PE 4 DR **Total: 16**

Senior Year					
Fall			**Spring**		
Courses	**CRN**	**Hours**	**Courses**	**CRN**	**Hours**
▪ Senior project I ▪ Program Elective ▪ Free Course* ▪ Free Course*	9112401 9112------ ---------- ----------	4 PR 4 PE 4FC 4 FC **Total: 16**	▪ Senior project II ▪ Program Elective ▪ Free Course* ▪ Free Course*	9112402 9112----- ---------- ----------	4 PR 4 PE 4FC 4 FC **Total: 16**
PROGRAM TOTAL CREDITS				**130/130**	

CR = College Requirement; DR = Distribution Requirement; PR = Program Requirement; PE = Program Elective; FC = Free Courses from any program including Computer Science Program

Section One: Bachelor's degree Requirements (130 credits)

1) University Requirements (UR): 5 obligatory courses (20 credits) + Language & Thinking (1 credit):

Table 9: University Requirements

#	Course name	Crs #	Cds	Prerequisite
1	Language and Thinking	9100100	1	-
2	First Year Seminar (FYSEM) I: World Civilizations	9100101	4	-
3	First Year Seminar (FYSEM) II: Islamic Thought	9100102	4	
4	Arabic Culture; Jerusalem and the Palestinian Environment	9100110	4	9100109 preferred, not required
	OR Intermediate Arabic: Jerusalem and the Palestinian Environment	9100108		9100107 preferred, not required
5	English Composition 1	9100105	4	
6	English Composition II	9100106	4	9100105 preferred, not required
	TOTAL CREDITS	**21 Credits (6 Courses)**		

2) College Requirements (CR): 4 obligatory courses (12 credits) + SP Proposal Workshop (1 credit).

Table 10: College Requirements

#	Course name	Crs #	Cds	Prerequisite
1	Arabic Composition; or	9100109	4	-
	Beginning Arabic	9100107		
2	Second Year Seminar (SYSEM) I	9100201	4	-
3	Second Year Seminar (SYSEM) II	9100202	4	9100201 preferred, not required
4	SP Proposal Workshop	9100301	1	Passing Moderation
	TOTAL CREDITS	**13 Credits (4 Courses)**		

3) Program Requirements (PR): 56 credits

1. Program Requirements Obligatory Courses: 10 courses (40 credits), distributed as follows:

a) Obligatory Program Core Courses: 7 courses (28 credits):
Students **MUST** complete the 7 courses listed in the table below (28 credits) to major in the Computer Science Program.

Table 11: Obligatory Program Core Courses

#	Course name	Crs #	Cds	Prerequisite
1	Introduction to Computer Science I	9112101	4 (3+ 1) 3 Theoretical 1 Laboratory	-
2	Computer Science II	9112102	4 (3+ 1) 3 Theoretical 1 Laboratory	9112101
3	Data Structures and Algorithms I	9112201	4 (3+ 1) 3 Theoretical 1 Laboratory	-
4	Database Systems I	9112351	4 (3+ 1) 3 Theoretical 1 Laboratory	9112201
5	Linear Algebra	9112205	4	9102110

6	Senior Project I: Computer Science	9112401	4	SP proposal workshop Department Approval
7	Senior Seminar II: Computer Science	9112402	4	9112401
	TOTAL CREDITS	**28 Credits (7 Courses)**		

b) Systems and Hardware - Core courses: 1 course required (4 credits)
(Prerequisites preferable not mandatory)
Primary Focal Skills: Develop students' breadth of knowledge across the subject areas of computer sciences, including their ability to apply the defining processes of computer science theory, abstraction, design, and implementation to solve problems in the discipline.

Table 12: Computer Science Systems and Hardware Core Courses

#	Course name	Crs #	Cds	Prerequisite
1	Computer Organization & Architecture	9112232	4 (3+ 1) 3 Theoretical 1 Laboratory	9112102
2	Computer Operating Systems	9112371	4 (3+ 1) 3 Theoretical 1 Laboratory	9112232 9112301
3	Computer Networks	9112473	4 (3+ 1) 3 Theoretical 1 Laboratory	9112232
4	Web Design and Programming	9112481	4 (3+ 1) 3 Theoretical 1 Laboratory	-

c) Theory - Core courses: 1 course required (4 credits)
(Prerequisites preferable not mandatory)
Primary Focal Skills: Defining a relationship between research, analysis, critical thinking, and computational in computer science.

Table 13: Computer Science Theory Core Courses

#	Course name	Crs #	Cds	Prerequisite
1	Discrete Mathematics	9112221	4	9112102

2	Simulation Tools	9112321	4	9112201
3	Scientific Computing Research	9112322	4	9112102
4	Programming Languages Paradigms	9112464	4 (3+ 1) 3 Theoretical 1 Laboratory	9112201
5	Data Science For All	9112332	4 (3+ 1) 3 Theoretical 1 Laboratory	Approval

d) Application - Core courses: 1 course required (4 credits)
(Prerequisites preferable not mandatory)
Primary Focal Skills: Critically explore interdisciplinary, advanced problems and topics in Computer Science.

Table 14: Computer Science Application Core Courses

#	Course name	Crs #	Cds	Prerequisite	Cross-listing
1	Human-Computer Interaction	9112204	4	-	-
2	Creative Design	9112211	4	-	DC
3	Introduction to Machine Learning	9112360	4 (3+ 1) 3 Theoretical 1 Laboratory	9112131 9112201	-
4	Thinking about Video Games	9114307	4 (3+ 1) 3 Theoretical 1 Laboratory	-	DC
5	Multimedia Computing	9112333	4 (3+ 1) 3 Theoretical 1 Laboratory	9112204	DC
6	Artificial Intelligence	9112358	4 (3+ 1) 3 Theoretical 1 Laboratory	9112131 9112201	-
7	Geographic Information Systems	9110209	4 (3+ 1) 3 Theoretical 1 Laboratory	-	HR, DC, US

4) Program Electives (PE): 16 credits.

A minimum of 16 credits across the four years are required from any of the lists above (Systems & Hardware, Theory, and Application) and/or the elective courses listed in the table (16) of this plan.

5) Distribution Requirements: 24 credits

To obtain their distribution requirements, students MUST choose a minimum of two courses from each division in the college. A cross-listed course could be used to fulfill a program that requires a distribution requirement

The other divisions to fulfill are the practicing Art Division (Digital Communications, Media and the Arts), Social Sciences (Urban Studies, Human Rights, Political Science, and Economics), and Humanities (Literature & Society).

Section Two: Requirements Summary

The student must pass at least 130 credit hours to get a B.A. Degree in Computer Science as follows:

University Requirements (CR): 21 Credits
Obligatory Courses: 21 credits

College Requirements (CR): 13 Credits
Obligatory Courses: 13 credits

Program Requirements: 56 credits
a. Program Core Requirements (PR): 40 credits. Divided as follows:

- Obligatory Core Courses: **28 credits**. (Including Senior Projects).
- Systems and Hardware: **4 credits**
- Theory: **4 credits**
- Application: **4 credits**

b. Program Elective Courses (PE): 16 credits.

Distribution Requirement (DR): 24 credits

Free Courses (FC): 4 courses (16 credits) from any program including computer science to fulfill 130 credits requirement

Section Three: A Minor in Computer Science Program

Students who major in a different AQB program may choose to minor in computer science. A minor in computer science requires **28 credit hours to be distributed as follows**:

Note: Only students who finished the scientific stream Tawjihi and enrolled in any division at AQB college can minor in the computer science program.

1. **The following 5 core requirements (20 credits):**

Table 15: Minor in Computer Science Required Courses

#	Course name	Crs #	Cds	Prerequisite
1	Introduction to Computer Science I	9112101	4 (3+ 1) 3 Theoretical 1 Laboratory	-
2	Computer Science II	9112102	4 (3+ 1) 3 Theoretical 1 Laboratory	9112101
3	Data Structures and Algorithms I	9112201	4 (3+ 1) 3 Theoretical 1 Laboratory	9112102
4	Discrete Mathematics	9112221	4	9112102
5	Database Systems I	9112351	4 (3+ 1) 3 Theoretical 1 Laboratory	9112201

2. Plus 2 Computer Science Program Elective Courses (8 credits).

Students are encouraged to take cross-listed courses with other programs to fulfill both the Minor and Distribution requirements

Section Four: To Do A Minor in Another Program from A Different Division:

Students who are majoring in computer science and who wish to minor in another program must check the corresponding program requirements and adapt free courses accordingly. Students must pass at least 130 credit hours to get a B.A. Degree in computer science with a minor in another program as follows:

University Requirements (CR): 21 Credits

Obligatory Courses: 21 credits

College Requirements (CR): 13 Credits

Obligatory Courses: 13 credits

Program Requirements: 56 credits

a. Program Core Requirements (PR): 40 credits. Divided as follows:

- Obligatory Core Courses: **28 credits**. (Including Senior Projects).
- Systems and Hardware: **4 credits**
- Theory: **4 credits**
- Application: **4 credits**

b. Program Elective Courses (PE): 12 credits*.

Program Minor (PM): 28 credits as listed by the minor program.

Distribution Requirement (DR): 16 credits should be taken from two divisions excluding the major and the minor divisions.

Free Courses (FC): No Free courses are required.

*Note: Students who complete a minor in another field in another division are required to take only 12 credits of Program Electives instead of 16 credits (if they do not have a minor)

Section Five: To Do A Minor in Another Program in the Same Division:

Students who major in computer science and who wish to minor in another program in the same division must pass at least 138 credit hours to get a B.A. Degree with a minor in another program in the same division as follows:

University Requirements (CR): 21 Credits

Obligatory Courses: 21 credits

College Requirements (CR): 13 Credits

Obligatory Courses: 13 credits

Program Requirements: 56 credits

a. Program Core Requirements (PR): 40 credits. Divided as follows:

- Obligatory Core Courses: **28 credits**. (Including Senior Projects).
- Systems and Hardware: **4 credits**
- Theory: **4 credits**
- Application: **4 credits**

b. Program Elective Courses (PE): 12 credits*.

Program Minor (PM): 28 credits as listed by the minor program.

Distribution Requirement (DR): 24 credits should be taken from all divisions

Free Courses (FC): No Free courses are required.

*Note: Students who complete a minor in another program in the same division are required to take only 12 credits of Program Electives instead of 20 credits (if they do not have a minor)

Section 6: Elective Courses List (16 credits):

Table 16: Computer Science Program Elective Courses List

#	Course name	Crs #	Cds	Prerequisite	Cross-listing
1	Principles of Computing	9112100	4	-	-
2	Principles and Practice of Management	9117218	4	-	STEP
3	Statistics & Experimental Methods	9112131	4	-	-
4	Emerging Technologies and Social Sciences	9112140	4	-	HR
5	Managing Information Technology Resources	9112202	4	-	-
6	C and UNIX Systems Administration	9112271	4 (3+ 1) 3 Theoretical 1 Laboratory	9112102	-
7	Introduction to Robotics	9112275	4 (3+ 1) 3 Theoretical 1 Laboratory	-	-
8	Data Structures and Algorithms II	9112301	4 (3+ 1) 3 Theoretical 1 Laboratory	9112201	-
9	Information Ethics	9112340	4	-	-
10	Management Information Systems	9112348	4	9112103	-
11	Database Systems II	9112352	4 (3+ 1) 3 Theoretical 1 Laboratory	9112351	-
12	Enterprise Information Architecture	9112355	4	9112351	-
13	Systems Implementation and Testing Research	9112365	4	9112201	-
14	Software Quality Control	9112366	4	9112201	-
15	Cryptography	9112370	4	9112201	-
16	Mobile Computing	9112374	4 (3+ 1) 3 Theoretical 1 Laboratory	9112373	-

17	Advanced Research on Software Engineering	9112454	4	9112351	-
18	Translators and Programming Languages	9112462	4	9112201	-
19	Computer Security	9112474	4 (3+ 1) 3 Theoretical 1 Laboratory	9112371	-
20	Distributed Systems	9112476	4	9112232	-
21	Computer and Network Forensics	9112482	4 (3+ 1) 3 Theoretical 1 Laboratory	9112473 9112474	-
22	Virtualization	9112483	4	9112371 9112473	-
23	Parallel Programming	9112485	4 (3+ 1) 3 Theoretical 1 Laboratory	9112301 9112232	-
24	Knowledge Base Systems	9112486	4	9112358	-
25	Bioinformatics for CS	9112334	4 (3+ 1) 3 Theoretical 1 Laboratory	9112332	BIO
26	Embedded Systems	9112331	4 (3+ 1) 3 Theoretical 1 Laboratory	9112232	
27	Data Science for All	9112332	4 (3+ 1) 3 Theoretical 1 Laboratory	9112131 9112201	-
28	Technology, Innovation, and Entrepreneurship	9112105	4	-	-
29	Introduction to Computer Vision	9112412	4 (3+ 1) 3 Theoretical 1 Laboratory	911221 9112201	-
30	Virtual and Augmented Reality	9112363	4 (3+ 1) 3 Theoretical 1 Laboratory	-	DC
31	Deep Learning	9112414	4 (3+ 1) 3 Theoretical	9112360	-

			1 Laboratory		
32	The Art of Animations	9112391	4 (3+ 1) 3 Theoretical 1 Laboratory	-	DC
33	Special Topics in Computer Science I	9112290	2	Approval	-
34	Special Topics in Computer Science II	9112291	3	Approval	-
35	Internship	9112490	4	Approval	-
36	Special Topics in Computer Science	9112494	4	Approval	-
37	Multimedia Applications in Education	9112217	4 (3+ 1) 3 Theoretical 1 Laboratory	Approval	-
38	Policy and Digital Innovation	9117216	4	Approval	STEP