



## Bachelor of Computer and Information Sciences in Applied Computer Science (COS)

### Study Plan and Curriculum Components

#### Curriculum Components

The following table describes the distribution of credit hours in the *Applied Computer Sciences (COS)* program:

Curriculum Components	Hours
Preparatory Year ( <i>Engineering and Scientific Track</i> )	28
University Requirements	8
Math and Statistics	18
Basic Science	12
Program Core Courses	43
Track Courses	12
Non-Computing courses	12
Internship	11
<b>Total</b>	<b>144</b>

a. Study Plan

Year	Course Code	Course Name	Credit Hours	Prerequisite	Co-requisite
1	<b>Level One</b>				
	ENGL 14x	English Language Skills (1)	8		
	MATH 140	Introduction to Mathematics	2		
	CT 140	Computer Skills	3		
	MC 140	Communication Skills	2		
		<b>Total</b>	<b>15</b>		
	<b>Level Two</b>				
	ENGL15x	English Language Skills (2)	8	ENGL 14x	
	MATH 150	Mathematics (2) Calculus	3	MATH 140	
	CI 140	Learning, Thinking & Research	3		
	ENT 101	Entrepreneurship	1		
CHS 140	Health and Fitness	1			
	<b>Total</b>	<b>16</b>			

2	<b>Level Three</b>				
	ISY 101	Computing Foundations and Ethics	3(2+2+1)	CT140	
	COS 101	Computer programming	4(3+2+1)	CT140	
	MATH 151	Discrete math	3(3+0+2)	MATH 150	
		One science course from <i>list4</i> : science courses	4		
	NGA 160	English proficiency	3(3+0+0)		
		<b>Total</b>	<b>17</b>		
	<b>Level Four</b>				
	COS 105	Data structures	3(3+0+1)	COS 101	
	COS 110	Introduction to Computer organization and Architecture	3(2+2+1)	ISY 101	
	COS 170	Introduction to Computer networks	3(2+2+1)		COS 110
	MGAT 101	Introduction to Business Administration	3		
	STAT324	Engineering Probability & Statistics	3 (3. 0. 2)		
		One KSU requirement from <i>list2</i>	2		
	<b>Total</b>	<b>17</b>			

Year	Course Code	Course Name	Credit Hours	Prerequisite	Co-requisite
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3	LevelFive				
	MATH 106	Integral Calculus	3(3+0+2)	MATH 150	
	MATH 107	Vectors and Matrices	3(3+0+2)	MATH 150	
	COS 217	Applied Operating Systems	3(2+2+1)	COS 105	
	ISY 202	Database Fundamentals	3(2+2+1)	COS 105	
		One science course from <i>list4</i> : science courses	4		
		One KSU requirement from <i>list2</i>	2		
		<b>Total</b>	<b>18</b>		
	LevelSix				
	MATH 244	Linear Algebra	3(3+0+2)	MATH 106	
	COS 212	Software engineering	3(2+2+1)	COS 105	
	COS 251	Web programming	3(2+2+1)	COS 170, ISY 202	
	COS 303	Algorithm and complexity	3(3+0+1)	MATH151, COS 105	
		One science course from <i>list4</i> : science courses	4		
	One KSU requirement from <i>list2</i>	2			
	<b>Total</b>	<b>18</b>			

4	LevelSeven				
	COS 305	Programming Languages and compilers	3(3+0+1)	COS 201	
	COS 324	Software Project Management	3(2+2+1)	COS 212	
		Track core from <i>List7a</i> or <i>List8a</i>	3		
		Track core from <i>List7a</i> or <i>List8a</i>	3		
	MGAT 412	Management Skills	3	MGAT 101	
		One KSU requirement from <i>list2</i>	2		
		<b>Total</b>	<b>17</b>		
	LevelEight				
	COS 495	Capstone 1	2(2+0+0)	COS 324	
	COS 489	Internship	10	COS 324, MGAT 412, Completion of 110cr	
		<b>Total</b>	<b>12</b>		

Year	Course Code	Course Name	Credit Hours	Prerequisite	Co-requisite
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Summer Session					
4	COS 490	Internship	1	COS 324, MGAT 412, Completion of 110cr	
		<b>Total</b>	<b>1</b>		

LevelNine					
5	COS 497	Capstone 2	4(4,0,0)	COS 495	
		Track Elective from <i>List7b</i> or <i>List8b</i>	3		
		Track Elective from <i>List7b</i> or <i>List8b</i>	3		
	MAGT 103	Advanced Studies in Entrepreneurship	3		
		<b>Total</b>	<b>13</b>		

<b>Program Total Credit Hours</b>			<b>144</b>		
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**b. Preparatory Year**

List1: Preparatory Year				
Code	Course Name	Credit Hours	Prerequisite	Co-requisite
ENGL 14x	English Language Skills (1)	8		
MATH 140	Introduction to Mathematics	2		
CT 140	Computer Skills	3		
MC 140	Communication Skills	2		
ENGL15x	English Language Skills (2)	8	ENGL 14x	
CI 140	Learning, Thinking & Research	3		
ENT 101	Entrepreneurship	1		
CHS 140	Health and Fitness	1		
	<b>Total</b>	<b>28</b>		

**c. University Requirements**

The student should select 8 credit hours from the following courses.

List2: University Requirements				
Code	Course Name	Credit Hours	Prerequisite	Co-requisite
IC100	Life of Prophet	2		
IC101	Introduction to Islamic Culture	2		
IC 107	Ethics	2		
IC 108	Current Issues	2		

**d. Math and Statistics Courses**

List3: Math Courses				
Code	Course Name	Credit Hours	Prerequisite	Co-requisite
MATH 150	Mathematics (2) Calculus	3(3+0+2)	MATH 140	
MATH 151	Discrete Mathematics	3(3+0+2)	MATH 150	
STAT 324	Engineering Probability & Statistics	3(3+0+2)		
MATH 106	Integral Calculus	3(3+0+2)	MATH 150	
MATH 107	Vectors and Matrices	3(3+0+2)	MATH 150	
MATH 244	Linear Algebra	3(3+0+2)	MATH 106	
	<b>Total</b>	<b>18</b>		

**e. Basic Sciences**

The student should select **12** credit hours from the following science courses.

List4: Science Courses				
Code	Course Name	Credit Hours	Prerequisite	Co-requisite
PHYS 104	General Physics	4(3,2,0)		
CHEM 101	General Chemistry	4(3,2,0)		
BCH101	General Biochemistry	4(3,2,0)		

**f. Program Core Courses**

List5: Program Core Courses					
Code	Course Name	Credit Hours	Prerequisite	Co-requisite	Level
ISY 101	Computing Foundations and Ethics	3(2+2+1)	CT 140		3
COS 101	Computer Programming	4(3+2+1)	CT 140		3
COS 105	Data structures	3(3+0+1)	COS 101		4
COS 110	Introduction to Computer Organization and Architecture	3(2+2+1)	ISY 101		4
COS 170	Introduction to Computer Networks	3(2+2+1)		COS 110	4
COS 217	Applied Operating Systems	3(2+2+1)	COS 105		5
ISY 202	Database Fundamentals	3(2+2+1)	COS 105		5
COS 212	Software engineering	3(2+2+1)	COS 105		6
COS 251	Web programming	3(2+2+1)	COS 170, ISY 202		6
COS 303	Algorithms and Complexity	3(3+0+1)	MATH 151, COS 105		6
COS 305	Programming Languages and compilers	3(3+0+1)	COS 201		7
COS 324	Software Project Management	3(2+2+1)	COS 212		7
COS 495	Capstone I	2(2+0+0)	COS 324		8
COS 497	Capstone II	4(4+0+0)	COS 495		9
<b>Total</b>		<b>43</b>			

List6: Internship					
Code	Course Name	Credit Hours	Prerequisite	Co-requisite	Level
COS 489	Internship	10	COS 324, MGAT 412, Completion of 110cr		8
COS 490	Internship	1	COS 324, MGAT 412, Completion of 110cr		S
<b>Total</b>		<b>11</b>			

## g. Track Courses

The student should select of the following two tracks:

### 1. Computer Networks Track Courses

List7a: Computer Networks Track Core Courses				
Code	Course Name	Credit Hours	Prerequisite	Co-requisite
COS 370	Network Protocols	3(3+0+1)	COS 170	
COS 372	Network Simulation	3(2+2+0)		COS 370
	<b>Total</b>	<b>6</b>		

In addition, the student should select **6** hours form the following list

List7b: Computer Networks Track Elective Courses				
Code	Course Name	Credit Hours	Prerequisite	Co-requisite
COS 470	Network Programming.	3(2+2+1)	COS 170	
COS 471	Network Security	3(2+2+1)	COS 370	
COS 472	Switching and Routing.	3(2+2+0)	COS 370	
COS 473	Mobile and Wireless Networks	3(2+2+0)	COS 370	
COS 474	Wireless Sensor Networks	3(2+2+0)	COS 370	
COS 475	Broadband Networks	3(3+0+1)	COS 370	
COS 476	Network Management	3(2+2+0)	COS 370	
COS 477	Network Troubleshooting	3(2+2+0)	COS 370	
COS 478	Distributed Systems	3(2+2+0)		COS 470
COS 479	Selected Topics in Networking	3(3+0+1)	COS 370	
COS 491	Selected Topics in CS	3(3+0+1)	COS 251	

### 2. Web Technology Track Courses

List8a: Web Technology Track Core Courses				
Code	Course Name	Credit Hours	Prerequisite	Co-requisite
COS 351	Web Programming Languages and Environments	3(2+2+1)	COS 251	
COS 352	XML Technology	3(3+0+1)	COS 251	
	<b>Total</b>	<b>6</b>		

In addition, the student should select **6** hours form the following list

List8b: Web Technology Track Elective Courses				
Code	Course Name	Credit Hours	Prerequisite	Co-requisite
COS 451	Web Applications Engineering	3(2+2+1)	COS 351	
COS 452	Artificial Intelligence	3(3+0+1)	COS 105	
COS 453	Web Databases	3(2+2+1)	ISY 202, COS 251	
COS 454	Web Services	3(2+2+1)	COS 352	
COS 456	Web Security	3(3+0+1)	COS 251	
COS 457	Cloud Computing	3(3+0+1)	COS 251	
COS 458	E-Transactions	3(2+2+1)	COS 251	
COS 459	Selected Topics in Web Tech.	3(3+0+1)	COS 251	
COS 491	Selected Topics in CS	3(3+0+1)	COS 251	

## h. Non-Computing courses

List9: Non-Computing courses				
Code	Course Name	Credit Hours	Prerequisite	Co-requisite
NGA 160	English proficiency	3(3+0+0)		
MGAT101	Introduction to Business Administration	3		
MGAT 412	Management Skills	3	MGAT 101	
MAGT 103	Advanced Studies in Entrepreneurship	3		
	<b>Total</b>	<b>12</b>		