

Level – 1					Level – 2					
#	Course Code	Course Name	Pre-requisite	Cr	#	Course Code	Course Name	Pre-requisite	Cr	
1	COMP 111	Introduction to Computing	None	3	1	COMP 112	Programming – 1	None	3	
2	MATH 105	Calculus	None	4	2	MATH 106	Matrix Algebra	None	3	
3	ENG 101	English - 1	None	6	3	MATH 107	Discrete Mathematics	MATH 105	3	
4	ARB 102	Arabic Writing	None	2	4	ENG 102	English - 2	ENG 101	6	
5	SLM 101	Islamic Culture – 1	None	2	Total Credit hours				15	
Total Credit hours					17	Level - 4				
#	Course Code	Course Name	Pre-requisite	Cr	#	Course Code	Course Name	Pre-requisite	Cr	
1	COMP 213	Programming – 2	COMP 112	3	1	COMP 214	Object Oriented Programming	COMP 213	3	
2	ITEC 211	Database Concepts and Design	None	3	2	COMP 231	Digital Design	None	3	
3	SLM 102	Islamic Culture - 2	None	2	3	ITEC 251	Data Communication and Computer Networks	None	3	
4	PHYS 204	Principles of Physics (1)	None	4	4	PHYS 205	Principles of Physics (2)	PHYS 204	3	
5	MATH 262	Statistics and Probability	None	3	5	ITEC 212	Database Management System	ITEC 211	3	
Total Credit hours					15	Total credit hours				15
Level – 5					Level – 6					
#	Course Code	Course Name	Pre-requisite	Cr	#	Course Code	Course Name	Pre-requisite	Cr	
1	COMP 321	Data Structures and Algorithms	COMP 213	3	1	COMP 316	Principles of Programming languages	None	3	
2	COMP 332	Computer Architecture	None	3	2	COMP 322	Design and Analysis of Algorithm	COMP 321	3	
3	COMP 315	Web Programming	None	3	3	COMP 323	Computer Security and Privacy	None	3	
4	ITEC 321	Human Computer Interaction	None	3	4	COMP 333	Operating Systems	None	3	
5	MATH 326	Linear Algebra	MATH 106	3	5	COMP 371	Software Engineering	None	3	
					6	COMP 324	Graph Theory and Applications	None	3	
Total Credit hours					15	Total Credit hours				18
Level – 7					Level – 8					
#	Course Code	Course Name	Pre-requisite	Cr	#	Course Code	Course Name	Pre-requisite	Cr	
1	COMP 441	Artificial Intelligence	None	3	1	COMP 4**	Elective – 1	None	3	
2	COMP 434	Parallel and Distributed Computing	COMP 332	3	2	COMP 461	Computer Graphics	None	3	
3	COMP 452	Cloud Computing	None	3	3	COMP 472	Software Project Management	COMP 371	3	
4	COMP 417	Enterprise Application Development	None	3	4	COMP 451	Data Modeling and Simulation	None	3	
5	COMP 453	Data Science	None	3	5	COMP 454	Data Mining	None	3	
Total Credit hours					15	Total Credit hours				15
1	COMP 481	SUMMER TERM: COOPERATIVE TRAINING						None	3	
Level – 9					Level – 10					
#	Course Code	Course Name	Pre-requisite	Cr	#	Course Code	Course Name	Pre-requisite	Cr	
1	COMP 582	Graduation Project Phase - 1	COMP 472	3	1	COMP 583	Graduation Project Phase - 2	COMP 582	3	
2	COMP 5**	Elective – 2	None	3	2	COMP 5**	Elective – 3	None	3	
3	COMP 555	Mobile Computing	None	3	3	COMP591	Computer and Professional Ethics	None	2	
4	COMP 525	Cryptography	COMP323	3	4	COMP 5**	Selected Topics in Computer Science	None	3	
5	COMP 593	Seminar	None	1	5	COMP 592	Entrepreneurship and Innovation	None	2	
6	COMP 535	Theory of Computation	None	3	6	COMP 556	Internet of Things (IoT)	None	3	
Total Credit hours					16	Total Credit hours				16
TOTAL CREDIT HOURS = 160										



BS (COMPUTER SCIENCE)
ELECTIVE COURSES
DEPARTMENT OF COMPUTER SCIENCE
COLLEGE OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY
ELECTIVE KNOWLEDGE DOMAINS

APPLICATION DEVELOPMENT											
Elective – 1 (Level – 8)				Elective – 2 (Level – 9)				Elective – 3 (Level – 10)			
#	Course	Code	L	#	Course	Code	L	#	Course	Code	L
1	Concurrent Programming	COMP 418	8	2	Game Programming	COMP 519	9	3	Mobile Application Development	COMP 510	10

ARTIFICIAL INTELLIGENCE											
Elective – 1 (Level – 8)				Elective – 2 (Level – 9)				Elective – 3 (Level – 10)			
#	Course	Code	L	#	Course	Code	L	#	Course	Code	L
1	Machine Learning	COMP 442	8	2	Artificial Neural Network	COMP 543	9	3	Computer Vision	COMP 562	10

CLOUD COMPUTING											
Elective – 1 (Level – 8)				Elective – 2 (Level – 9)				Elective – 3 (Level – 10)			
#	Course	Code	L	#	Course	Code	L	#	Course	Code	L
1	Big Data	COMP 457	8	2	Cloud Architecture and Design	COMP 558	9	3	Cloud Management	COMP 559	10

SOFTWARE ENGINEERING											
Elective – 1 (Level – 8)				Elective – 2 (Level – 9)				Elective – 3 (Level – 10)			
#	Course	Code	L	#	Course	Code	L	#	Course	Code	L
1	Software Requirements Engineering	COMP 473	8	2	Software Architecture & Design	COMP 574	9	3	Software Testing and Quality Assurance	COMP 575	10

LIST OF COURSES UNDER SELECTED TOPICS (Level – 10)									
#	Course	Code	#	Course	Code	#	Course	Code	
1	Virtual Reality	COMP 563	4	Digital Forensics	COMP 526	7	Extreme Computing	COMP 550	
2	Cyber Law & Security Policy	COMP 594	5	Natural Language Processing	COMP 545	8	Soft Computing	COMP 556	
3	Computational Intelligence	COMP 544	6	Green Computing	COMP 595	9	Biomedical Computing	COMP 596	
10	Ethical Hacking	COMP 527							



BS (COMPUTER SCIENCE)

LIST OF COURSES BASED ON KNOWLEDGE DOMAINS

PROGRAMMING TRACK – 1				ALGORITHM & SECURITY TRACK – 2				SYSTEM TRACK – 3			
#	Course	Code	L	#	Course	Code	L	#	Course	Code	L
1	Introduction to Computing	COMP 111	1	1	Data Structures and Algorithms	COMP 321	5	1	Digital Design	COMP 231	4
2	Programming - 1	COMP 112	2	2	Design and Analysis of Algorithm	COMP 322	6	2	Computer Architecture	COMP 332	5
3	Programming - 2	COMP 213	3	3	Computer Security and Privacy	COMP 323	6	3	Operating Systems	COMP 333	6
4	Object Oriented Programming	COMP 214	4	4	Graph Theory and Applications	COMP 324	6	4	Parallel and Distributed Computing	COMP 434	7
5	Web Programing	COMP 315	5	5	Cryptography	COMP 525	9	5	Theory of Computation	COMP 535	9
6	Principles of Programming Languages	COMP 316	6	6	Digital Forensic	COMP 526	10				
7	Enterprise Application Development	COMP 417	7	7	Ethical Hacking	COMP 527	10				
8	Concurrent Programming	COMP 418	8								
9	Game Programming	COMP 519	9								
10	Mobile Application Development	COMP 510	10								

INTELLIGENT SYSTEMS TRACK – 4				COMPUTATIONAL SCIENCE TRACK – 5				GRAPHICS TRACK – 6			
#	Course	Code	L	#	Course	Code	L	#	Course	Code	L
1	Artificial Intelligence	COMP 441	7	1	Data Modeling and Simulation	COMP 451	8	1	Computer Graphics	COMP 461	8
2	Machine Learning	COMP 442	8	2	Cloud Computing	COMP 452	7	2	Computer Vision	COMP 562	10
3	Artificial Neural Network	COMP 543	9	3	Data Science	COMP 453	7	3	Virtual Reality	COMP 563	10
4	Computational Intelligence	COMP 544	10	4	Data Mining	COMP 454	8				
5	Natural Language Processing	COMP 545	10	5	Mobile Computing	COMP 555	9				
6	Soft Computing	COMP 556	10	6	Internet of Things (IoT)	COMP 556	10				
				7	Big Data	COMP 457	8				
				8	Cloud Architecture and Design	COMP 558	9				
				9	Cloud Management	COMP 559	10				
				10	Extreme Computing	COMP 550	10				

SOFTWARE ENGINEERING TRACK – 7				PROJECT TRACK - 8			
#	Course	Code	L	#	Course	Code	L
1	Software Engineering	COMP 371	6	1	Cooperative Training	COMP 481	8
2	Software Project Management	COMP 472	8	2	Project Phase-1	COMP 582	9
3	Software Requirements Engineering	COMP 473	8	3	Project Phase-2	COMP 583	9
4	Software Architecture Design	COMP 574	9	4			
5	Software Testing and Quality Assurance	COMP 575	10				

GENERAL TRACK – 9			
#	Course	Code	L
1	Computer and Professional Ethics	COMP 591	10
2	Entrepreneurship and Innovation	COMP 592	10
3	Seminar	COMP 593	10
4	Cyber Law & Security Policy	COMP 594	10
5	Green Computing	COMP 595	10
6	Biomedical Computing	COMP 596	10