COMSATS Institute of Information Technology
Registrar Office, Principal Seat, Islamabad
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No: CIIT-Reg/Notif-*654* /12/*978*   July 3, 2012

<div align="center">NOTIFICATION</div>

**Scheme of Studies of Bachelor of Science (BS) in Software Engineering
Dual Degree Program (DDP)**

It is hereby notified that the Academic Council in its 13th Meeting held on June 04, 2012 approved the following scheme of studies of Bachelor of Science (BS) in Software Engineering, Dual Degree Program (DDP) with effect from Fall 2012 at CIIT system:

		No. of Courses	Min. No. of Credit Hours
i.	Minimum Duration:	04 Years	
ii	Minimum No. of Semesters:	08	
iii.	Course Work		
i.	Core Courses (List attached)		
	a. Computer Science	11	
	b. Software Engineering	09	
	c. Supporting Science	05	
	d. Institutional	07	
	e. Software Engineering Project	02	
	Total Core Courses	**34**	
ii.	Elective Courses (List attached)		
	a. Computer Science & Software Engineering	03	
	b. Supporting Science	02	
	c. Institutional Elective	01	
	d. Domain Specific	02	
	Total Elective Courses	**08**	
	Total No. of Courses:	**42**	
	Total No. of Minimum Credit Hours:		**134**

Note:

i. The Regulations relating to Undergraduate Degree Programs approved by the Competent Authority and amended from time to time shall also be applicable to this program.

ii. Project* depicts partial registration and is shown as IP until the project is completed. However, the Final Year Project is evaluated upon completion of total 6(0, 6) credit hours.

iii. Courses having labs should be offered along with its Co-requisite. Theory and lab courses cannot be offered separately. Student failing either in theory 3(3, 0) or lab 1(0, 1) course; will be considered fail in complete course. For Examination purpose: Theory will evaluate from 75% and lab from 25% of total 100% of the course.

This issues with the approval of the Competent Authority.

Nadeem Uddin Qureshi
Additional Registrar

Encl: (pages 06 in total including this page)

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CC:
1. PS to Rector.
2. PA to Registrar.

List of Core Courses

Sr. No.	Course Code	Course Title	Credit Hours	Co-requisite	Prerequisite
Computer Science Core					
1.	CSC102	Discrete Structures	3(3, 0)		
2.	CSC105	Fundamentals of Computer Programming	3(3, 0)		
	CSC106	Fundamentals of Computer Programming-Lab	1(0, 1)	CSC105	
3.	CSC110	Professional Practices IT	3(3, 0)		
4.	CSC114	Data Structures and Algorithms	3(3, 0)		CSC105
	CSC115	Data Structures and Algorithms-Lab	1(0, 1)	CSC114	CSC105
5.	CSC222	Computer Organization and Assembly Language	3(3, 0)		CSC105
	CSC223	Computer Organization and Assembly Language-Lab	1(0, 1)	CSC222	CSC105
6.	CSC244	Object Oriented Concepts and Programming	3(3, 0)		CSC105
	CSC245	Object Oriented Concepts and Programming-Lab	1(0, 1)	CSC244	CSC105
7.	CSC272	Database Systems	3(3 ,0)		CSC114
	CSC273	Database Systems-Lab	1(0, 1)	CSC272	CSC114
8.	CSC322	Operating Systems Concepts	3(3, 0)		CSC114
9.	CSC352	Computer Communication and Networks	3(3, 0)		
	CSC353	Computer Communication and Networks-Lab	1(0,1)	CSC352	
10.	CSC456	Human Computer Interaction	3(3, 0)		
11.	EEE241	Digital Logic Design	4(3, 1)		CSC102
Software Engineering Core					
12.	CSC291	Software Engineering I	3(3, 0)		
13.	CSC494	Software Project Management	3(3, 0)		

14.	CSE305	Software Requirement Engineering	3(3, 0)		
15.	CSE300	Software Construction	2(2, 0)		CSC114
	CSE301	Software Construction-Lab	1(0, 1)	CSE300	CSC114
16.	CSE302	Software Quality Engineering	3(3, 0)		CSC305
17.	CSE303	Software Design and Architecture	3(3, 0)		CSC305
18.	CSE304	Formal Methods in Software Engineering	3(3, 0)		CSC291
19.	CSE354	Design Patterns	3(3, 0)		CSE303
20.	CSE362	Software Testing	2(2, 0)		CSE302
	CSE363	Software Testing-Lab	1(0, 1)	CSE362	CSE302
Supporting Science Core					
21.	EEE121	Electric Circuits Analysis I	4(3, 1)		
22.	EEE440	Computer Architecture	3(3, 0)		CSC221
23.	MTH104	Calculus and Analytical Geometry	3(3, 0)		
24.	MTH231	Linear Algebra	3(3, 0)		
25.	MTH262	Statistics and Probability Theory	3(3, 0)		
Institutional Core					
26.	MGT101	Introduction to Management	3(3, 0)		
27.	HUM100	English Comprehension and Composition	3(3, 0)		
28.	HUM102	Report Writing Skills	3(3, 0)		HUM100
29.	HUM103	Communication skills	3(3, 0)		
30.	HUM110	Islamic Studies	3(3, 0)		
31.	HUM111	Pakistan Studies	3(3, 0)		
32.	HUM320	Introduction to Sociology	3(3, 0)		
Software Engineering Project					
33.	CSE499	Project*	2(0, 2)		
34.	CSE499	Project	4(0, 4)		

List of Elective Courses

Sr.#	Code	Course Title	Credit Hours	Prerequisite
CS Electives				
1.	CSC444	Visual Programming	3(3, 0)	CSC105
2.	CSC421	Systems Programming	2(2, 0)	CSC105
3.	CSC422	Systems Programming-Lab	1(0, 1)	CSC105
4.	CSC446	Advanced Object Oriented Programming	3(3, 0)	CSC244
5.	CSC328	Distributed Computing	3(3, 0)	
6.	CSC454	Computer Animation	3(3, 0)	CSC253
7.	CSC455	Computer Vision	3(3, 0)	
8.	CSC304	Multimedia Entertainment and Gaming	3(3, 0)	
9.	CSC302	Multimedia Authoring	3(3, 0)	

10.	CSC308	Advanced Website Authoring	3(3, 0)	
11.	CSC337	Web Technologies	2(2, 0)	CSC105
12.	CSC338	Web Technologies-Lab	1(0, 1)	CSC105
13.	CSC472	Geographical Information Systems	3(3, 0)	
14.	CSC496	Business Process Reengineering	3(3, 0)	CSC291
15.	CSC201	Design and Analysis of Algorithm	3(3, 0)	CSC105

SE Electives

16.	CSE348	Data Security and Encryption	3(3, 0)	
17.	CSE349	Introduction to Soft Computing	3(3, 0)	
18.	CSE350	Software Metrics	3(3, 0)	
19.	CSE351	Software Engineering Economics	3(3, 0)	
20.	CSE352	Information System Audit	3(3, 0)	
21.	CSE353	Business Process Automation	3(3, 0)	
22.	CSE357	Software Process and Process Improvement	3(3, 0)	
23.	CSE364	Reverse Engineering of Source Code	2(2, 0)	
	CSE365	Reverse Engineering of Source Code-Lab	1(0, 1)	

Supporting Science Elective

Sr. #	Code	Course Title	Credit Hours	Prerequisite
1.	MTH101	Calculus I	3(3, 0)	-
2.	MTH102	Calculus II	3(3, 0)	MTH101
3.	MTH462	Advanced Numerical Analysis	3(3, 0)	-
4.	MTH211	Discrete Mathematics	3(3, 0)	-
5.	PHY100	Physics I (Mechanics and Thermodynamics)	4(3,1)	-
6.	BIO424	Bioinformatics Software Development	3(2, 1)	-
7.	BIO130	Cell Biology	4(3, 1)	-
8.	BSC208	Essentials of Genetics	3(3,0)	-
9.	BIO132	Principles of Biochemistry I	4(3, 1)	-
10.	BIO135	General Chemistry	4(3, 1)	-
11.	EEE231	Electronics I	4(3, 1)	EEE121

	Code	Course Title	Credit hours	Pre-Requisite
12.	ECO300	Engineering Economics	3(3, 0)	MGT131
13.	MTH465	Topics in Scientific Computing	3(3, 0)	--
14.	MTH467	Operation Research	3(3, 0)	--
15.	MTH105	Multivariate Calculus	3(3, 0)	MTH104
16.	MTH242	Differential Equations	3(3, 0)	MTH105
17.	MTH375	Numerical Computing	3(3, 0)	MTH231

Institutional Elective

Sr. #	Code	Course Title	Credit hours	Pre-Requisite
1.	MGT350	Human Resource Management	3(3, 0)	MGT101
2.	MGT403	Entrepreneurship	3(3, 0)	MGT101
3.	MGT463	Productivity and Quality Management	3(3, 0)	MGT101
4.	MGT300	Organizational Behavior	3(3, 0)	MGT101
5.	MGT362	Production and Operation Management	3(3, 0)	
6.	MGT522	Marketing of IT and Telecom Products	3(3, 0)	
7.	MGT513	New Product Development	3(3, 0)	
8.	MGT131	Financial Accounting	3(3, 0)	
9.	HUM220	Introduction to Psychology	3(3, 0)	
10.	HUM430	French	3(3, 0)	
11.	HUM431	German	3(3, 0)	
12.	HUM432	Arabic	3(3, 0)	
13.	HUM433	Persian	3(3, 0)	

Domain Specific Elective

In-depth treatment of one of the following SE Application Domains should be offered in the form of set of two to three courses of 3 credits each in the selected domain.					
#	Code	Domain	Course Title	Credit Hours	Semester
1.	CSE360	Safety Critical Systems	Software Safety Critical Systems	3(3, 0)	6,7
2.	CSE361		Software Fault Tolerance	3(3, 0)	6,7
3.	CSC448	Scientific Systems	Data Visualization	3(3, 0)	6,7
4.	CSC253		Computer Graphics	3(3, 0)	6,7
5.	CSC478	Information Systems and Data Processing	Data Warehousing	3(3, 0)	6,7
6.	CSC479		Data Mining	3(3, 0)	6,7