COMSATS Institute of Information Technology
Registrar Office, Principal Seat, Islamabad

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No: CIIT-Reg/Notif- 733 /12/1059 July 04, 2012

NOTIFICATION

Scheme of Studies of Bachelor of Science (BS) in Telecommunication Engineering, BS(TE), (General Version)

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 Telecommunication Engineering, BS(TE), (General Version) with effect from Fall 2012 at CIIT system:

The launching of the program is subject to approval from Pakistan Engineering Council.

i.	Minimum Duration:	04 Years
ii.	Minimum No of Semesters	08
iii.	No of Credit Hours in each Semester:	14-19
iv.	**Core Courses:**	
	a. Engineering Courses (List Attached)	25
	b. Non-Engineering Courses (List Attached)	12
v.	**Elective Courses:**	
	c. Major Electives*	2
	d. EE Open Elective***	1
	e. Non-Engineering Elective****	1
vi.	Total No of Courses:	41
vii.	Total No of Credit Hours:	138-142 Cr Hrs.

Note:
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.

This issues with the approval of the Competent Authority.

Nadeem Uddin Qureshi
Additional Registrar

Encl: Brief Introduction, Course Distribution, Tentative Plan of Studies, Course Hierarchy.

Distribution:

1. Dean, Faculty of Engineering, CIIT
2. Dean of Research, Innovation and Commercialization (DORIC), CIIT
3. All Directors, CIIT System.
4. Incharge, CIIT Islamabad Campus.
5. Chairman, Department of Electrical Engineering, CIIT
6. All Incharges, Academic Sections, CIIT Campuses
7. All HoD's/Incharges, Department of Electrical Engineering, CIIT Campuses
8. Controller of Examinations, CIIT.
9. All Incharges, Examination Departments, CIIT Campuses.

CC:

1. PS to Rector
2. PA to Registrar

Core Courses

List of Engineering Courses

Sr. No	Course Code	Course Title	Credit Hours[I]	Prerequisite(s)†
1	CSC141	Introduction to Computer Programming	4(3, 1)	
2	CSC241	Object Oriented Programming	4(3, 1)	CSC141
3	CSC341	Network Programming	4(3, 1)	EEE314,CSC141
4	EEE113	Engineering Drawing	1(0, 1)	
5	EEE114	Introduction to Telecommunications	3(3, 0)	
6	EEE121	Electric Circuits Analysis I	4(3, 1)	PHY121
7	EEE222	Electric Circuits Analysis II	4(3, 1)	MTH241, EEE121
8	EEE223	Signals and Systems	4(3, 1)	MTH241
9	EEE231	Electronics I	4(3, 1)	EEE121
10	EEE232	Electronics II	4(3, 1)	EEE231
11	EEE241	Digital Logic Design	4(3, 1)	
12	EEE251	Probability Methods in Engineering	3(3, 0)	MTH104, MTH231
13	EEE261	Electromagnetic Theory	3(3, 0)	MTH105
14	EEE314	Data Communication and Computer Networks	4(3, 1)	
15	EEE324	Digital Signal Processing	4(3, 1)	EEE223
16	EEE325	Control Systems	4(3, 1)	EEE223
17	EEE342	Microprocessor Systems and Interfacing	4(3, 1)	EEE241
18	EEE352	Analog Communication Systems	4(3, 1)	EEE223, EEE251
19	EEE353	Digital Communication Systems	4(3, 1)	EEE352
20	EEE354	Telecommunication Systems Engineering	3(3, 0)	EEE352
21	EEE454	Transmission and Switching Systems	3(3, 0)	EEE353

22	EEE463	Antenna and Radio Wave Propagation	4(3, 1)	EEE261
23	EEE464	Wireless Communication Systems	3(3, 0)	EEE353
24	EEE490	Final Year Project (Part I)**	1(0, 1)	
25	EEE490	Final Year Project (Part II)**	5(0, 5)	

List of Non-Engineering Courses

Sr. No	Course Code	Course Title	Credit Hours[1]	Prerequisite(s)†
1	ECO300	Engineering Economics	3(3, 0)	
2	HUM100	English Comprehension and Composition	3(3, 0)	
3	HUM102	Report Writing Skills	3(3, 0)	HUM100
4	HUM110	Islamic Studies	3(3, 0)	
5	HUM111	Pakistan Studies	3(3, 0)	
6	MGT462	Project Planning and Management	3(3, 0)	
7	MTH104	Calculus and Analytical Geometry	3(3, 0)	
8	MTH105	Multivariable Calculus	3(3, 0)	MTH104
9	MTH231	Linear Algebra	3(3, 0)	
10	MTH241	Ordinary Differential Equations	3(3, 0)	MTH104
11	MTH375	Numerical Computations	3(2, 1)	MTH104, CSC141
12	PHY121	Applied Physics for Engineers	4(3, 1)	

Major Elective Courses *

Sr No	Course Code	Course Title	Credit Hours[1]	Prerequisite(s)†
1	EEE362	Microwave Engineering	4(3, 1)	EEE261, EEE232
2	EEE455	Optical Fiber Communications	3(3, 0)	EEE353
3	EEE456	Broadband Technologies	3(3, 0)	EEE314

4	EEE465	Microwave and Satellite Communication Systems	3(3, 0)	EEE352
5	EEE466	Radars and Navigation Aids	3(3, 0)	EEE463
6	EEE467	Telecommunication Policies Standards and Regulations	3(3, 0)	

List of Non-Engineering Electives****

Sr No.	Course Code	Course Title	Credit Hours[1]	Prerequisite(s)†
1	HUM200	Business Communication Workshop	3(3, 0)	HUM100
2	HUM202	Creative Thinking and Decision Making	3(3, 0)	
3	HUM220	Introduction to Psychology	3(3, 0)	
4	HUM320	Introduction to Sociology	3(3, 0)	
5	HUM400	Business Communication	3(3, 0)	
6	LAW300	Corporate Law	3(3, 0)	
7	MGT131	Financial Accounting	3(3, 0)	
8	MGT330	Financial Management	3(3, 0)	
9	MGT350	Human Resource Management	3(3, 0)	
10	MGT403	Entrepreneurship	3(3, 0)	
11	MGT450	HRM Policies and Practices	3(3, 0)	
12	MGT460	Operations Management	3(3, 0)	
13	MGT522	Marketing of IT and Telecom Products	3(3, 0)	
14	MTH374	Optimization	3(3, 0)	MTH102,
15	MTH375	Numerical Computations	3(2, 1)	MTH102, CSC141
16	MTH467	Operations Research	3(3, 0)	MTH102

‼ 03 credit hours of theory is equivalent to 03 hours of lectures whereas 01 credit hour of lab is equivalent to 03 hours of lab session. All the lab sessions are graded. Students have to pass both theory and lab to earn the course credits.

† Courses with prerequisites can only be allowed if all prerequisite courses have been passed.

* With the consent of Academic Advisor and Department the student has to select one course from the list of elective courses

** Students must clear all the engineering subjects in the first five semesters as given in the tentative plan to be eligible for the Final year project

*** With the consent of Academic Advisor and Department the student can take any approved course of EE which he/she has not taken before according to his/her aptitude and/or future plans.

**** With the consent of the Department the student can take Non Engineering Electives of EE which he/she has not taken before.

Bachelor of Science in Telecommunication Engineering

Introduction

Telecommunication Engineering is an enormously vibrant area of study. With the advancement in digital communication and a rapid growth in Information Technology and telecommunication sector, a new industrial base has sprung up which requires engineers with more specialized skills in this area. This new industrial base includes the traditional wired communication companies, mobile and cellular companies, wireless local loop operators, and cable and broadband communication companies. The program is designed in a way that it addresses the traditional communication techniques as well as the latest digital technologies. During the first year, reinforcement in science and mathematic subjects are provided. In second year, the students will be reinforced with the Electronic Engineering field. In the last two years of this program, emphasis is on the latest specialized telecommunication courses such as telecommunication systems engineering, wireless communication systems, transmission and switching systems and antenna and radio wave propagation is made.

Program Objectives:

The objective of this program is:

- To equip students with fundamental and advance concepts of Telecommunication Engineering with particular emphasis on the application of concepts.
- To equip the students with hands-on experience on key telecommunications test and measurement equipment.
- To produce well-trained, skilled and efficient professional engineers
- To develop their communication skills
- To prepare graduates who are capable of entering and succeeding in an advanced degree program in their field of study
- To create an excellent environment for research and development activities

Program Outcomes:

The graduates of the program will be able to:

- Possess essential engineering knowledge for meeting the requirements of Telecom industry and other organizations needing graduate engineers.
- Do planning, specification, design, implementation, and operation of systems.
- Apply engineering knowledge, mathematical tools and probabilistic/statistical methods to solve technical problems

Course Distribution

Domain	Knowledge Area	Total Courses	Total Credits	Overall %age
Non-Engineering	Humanities	4	12	31.7%
	Management Sciences	2	6	
	Natural Sciences	6	19	
	Non Engineering	1	3	
	Sub Total	**13**	**40**	
Engineering	Computing	3	12	68.3%
	Engineering Foundation	10	34	
	Major Engg. Core (Breadth)	6	24	
	Major Engg. Core (Depth)	6	19-21	
	Minor Engineering Elective	1	3-4	
	Final Year Project	2	6	
	Sub Total	**28**	**98-102**	
Grand Total		**41**	**138-142**	**100%**

Courses of Non-Engineering Domain

Knowledge Area	Course Title	Credit Hrs.	Total Courses	Total Credit Hrs.	%age
Humanities	English Comprehension and Composition	3(3,0)	4	12	9.8%
	Report Writing Skills	3(3,0)			
	Islamic Studies	3(3,0)			
	Pakistan Studies	3(3,0)			

Management Sciences	Engineering Economics	3(3,0)	2	6	4.9%
	Project Planning and Management	3(3,0)			
Natural Sciences	Applied Physics for Engineers	4(3,1)	6	19	14.63 %
	Calculus and Analytical Geometry	3(3,0)			
	Linear Algebra	3(3,0)			
	Multivariable Calculus	3(3,0)			
	Ordinary Differential Equations	3(3,0)			
	Numerical Computations	3(2,1)			
Non Engineering	Non-Engineering Elective	3(3,0)	1	3	2.43%
	Total		**13**	**40**	**31.7%**

Courses of Engineering Domain

Knowledge Area	Course Title	Credit Hrs.	Total Courses	Total Credit Hrs.	%age
Computing	Introduction to Computer Programming	4(3,1)	3	12	7.3%
	Object Oriented Programming	4(3,1)			
	Network Programming	4(3,1)			
Engineering Foundation	Introduction to Telecommunications	3(3,0)	10	34	24.39%
	Signals and Systems	4(3,1)			
	Digital Logic Design	4(3,1)			
	Electric Circuits Analysis I	4(3,1)			
	Electric Circuits Analysis II	4(3,1)			
	Electronics I	4(3,1)			
	Electronics II	4(3,1)			
	Electromagnetic Theory	3(3,0)			
	Probability Methods in Engineering	3(3,0)			

	Engineering Drawing	1(0,1)			
Major Engineering Core Courses (Breadth)	Digital Signal Processing	4(3,1)	6	24	**14.6%**
	Control Systems	4(3,1)			
	Antenna and Radio Wave Propagation	4(3,1)			
	Analog Communication Systems	4(3,1)			
	Digital Communication Systems	4(3,1)			
	Microprocessor Systems and Interfacing	4(3,1)			
Major Engineering Core Courses (Depth)	Telecommunication Systems Engineering	3(3,0)	6	19-21	**14.6%**
	Data Communication and Computer Networks	4(3,1)			
	Wireless Communication Systems	3(3,0)			
	Transmission and Switching Systems	3(3,0)			
	Major Elective I	3(3,0) / 4(3,1)			
	Major Elective II	3(3,0) / 4(3,1)			
Minor Engineering Elective	EE Open Elective	3(3,0) / 4(3,1)	1	3-4	**2.43%**
Final Year Design Project	Final Year Project (Part I)	1(0,1)	2	6	**4.9%**
	Final Year Project (Part II)	5(0,5)			
	Total		**28**	**98-102**	**68.3%**

Tentative Plan of Studies

The course offering in each semester as given below is not fixed; it may vary depending on the availability of faculty and needs of the students.

Semester 1			
Course Code	**Course Title**	**Credit Hours[1]**	**Prerequisite(s)†**
HUM100	English Comprehension and Composition	3(3, 0)	
MTH231	Linear Algebra	3(3, 0)	
PHY121	Applied Physics for Engineers	4(3, 1)	
MTH104	Calculus and Analytic Geometry	3(3, 0)	
EEE113	Engineering Drawing	1(0, 1)	
EEE114	Introduction to Telecommunications	3(3, 0)	
		17(15, 2)	

Semester 2			
Course Code	**Course Title**	**Credit Hours[1]**	**Prerequisite(s)†**
EEE241	Digital Logic Design	4(3, 1)	
MTH105	Multivariable Calculus	3(3, 0)	MTH104
MTH241	Ordinary Differential Equations	3(3, 0)	MTH104
CSC141	Introduction to Computer Programming	4(3, 1)	
EEE121	Electric Circuits Analysis I	4(3, 1)	PHY121
		18(15, 3)	

Semester 3			
Course Code	**Course Title**	**Credit Hours[1]**	**Prerequisite(s)†**
EEE222	Electric Circuits Analysis II	4(3, 1)	MTH241, EEE121
EEE223	Signals and Systems	4(3, 1)	MTH241
EEE251	Probability Methods in Engineering	3(3, 0)	MTH104, MTH231
EEE231	Electronics I	4(3, 1)	EEE121
CSC241	Object Oriented Programming	4(3, 1)	CSC141
		19(15, 4)	

Semester 4			
Course Code	**Course Title**	**Credit Hours[1]**	**Prerequisite(s)†**
EEE314	Data Communication and Computer Networks	4(3, 1)	
EEE261	Electromagnetic Theory	3(3, 0)	MTH105
EEE352	Analog Communication Systems	4(3, 1)	EEE223, EEE251
EEE342	Microprocessor Systems and Interfacing	4(3, 1)	EEE241
EEE232	Electronics II	4(3, 1)	EEE231
		19(15, 4)	

Semester 5			
Course Code	**Course Title**	**Credit Hours[1]**	**Prerequisite(s)†**
MTH375	Numerical Computations	3(2, 1)	MTH104, CSC141
EEE325	Control Systems	4(3, 1)	EEE223
ECO300	Engineering Economics	3(3, 0)	
EEE324	Digital Signal Processing	4(3, 1)	EEE223
EEE353	Digital Communication Systems	4(3, 1)	EEE352
		18(14, 4)	

Semester 6			
Course Code	**Course Title**	**Credit Hours[1]**	**Prerequisite(s)†**
EEE463	Antenna and Radio Wave Propagation	4(3, 1)	EEE261
EEE454	Transmission and Switching Systems	3(3, 0)	EEE353
EEE464	Wireless Communication Systems	3(3, 0)	EEE353
EEE354	Telecommunication Systems Engineering	3(3, 0)	EEE352
CSC341	Network Programming	4(3, 1)	EEE314,CSC141
		17(15, 2)	

Semester 7			
Course Code	**Course Title**	**Credit Hours[1]**	**Prerequisite(s)†**
HUM102	Report Writing Skills	3(3,0)	HUM100
EEE490	Final Year Project (Part I)	1(0,1)	
	Major Elective I	3(3,0)/4(3,1)	
	Major Elective II	3(3,0)/4(3,1)	
	Non-Engineering Elective	3(3,0)/4(3,1)	
HUM110	Islamic Studies	3(3,0)	
		16-19(15,1-4)	

Semester 8			
Course Code	**Course Title**	**Credit Hours[1]**	**Prerequisite(s)†**
MGT462	Project Planning and Management	3(3,0)	
EEE490	Final Year Project (Part II)	5(0,5)	
HUM111	Pakistan Studies	3(3,0)	
	EE Open Elective.	3(3,0)/4(3,1)	
		14-15(9,5-6)	

Total 138-142 Credit Hours

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Course Hierarchy