

SYLLABUS

For

B.TECH. PROGRAMME

In

**ELECTRONICS & COMMUNICATION
ENGINEERING**



INSTITUTE OF TECHNOLOGY

UNIVERSITY OF KASHMIR

ZAKURA CAMPUS

SRINAGAR, J&K, 190006

8th Semester

<i>Course No</i>	<i>Subject</i>	<i>Teaching Periods</i>			<i>Credits</i>
		<i>Lect</i>	<i>Tut</i>	<i>Prac /Proj</i>	
ECE8117B	Wireless Communication	3	1	0	4
MTH8217B	Engineering Mathematics-V	3	1	0	4
ECE8**17BE	Elective II	3	1	0	4
ECE8117BL	Wireless Communication Lab	0	0	2	1
ECE8317B	Project	-	0	16	8
ECE8417B	Practical Training Viva / Professional Viva	-	-	0	4
	Total	9	3	18	25

Course No	Subject	Teaching Periods		Credits
		Lect	Tut	
ECE8117B	Wireless Communication	3	1	4

Section	Course contents	hours
1.	Introduction to Cellular Mobile Systems: A basic cellular system, performance criteria, uniqueness of mobile radio environment, operation of cellular systems, planning a cellular system, Analog & digital cellular systems.	4
2.	Elements of Cellular Radio Systems Design: General description of the problem, concept of frequency reuse channels, co-channel interference reduction factor, desired C/I from a normal case in an omnidirectional antenna system, cell splitting, consideration of the components of cellular systems.	7
3.	Cell Coverage for Signal & Traffic: General introduction, obtaining the mobile point to point mode, Radio propagation characteristics: models for path loss, shadowing and multipath fading Propagation over water or flat open area, foliage loss, propagation nearin distance, long distance propagation, point to point prediction model characteristics, cellsite, antenna heights and signal coverage cells, mobile to mobile propagation.	7
4.	Cell Site Antennas and Mobile Antennas: Characteristics of antennas, antenna at cell site, mobile antennas,LOS antennas,TDD,FDD.	5
5.	Frequency Management, Channel Assignment and handoff: Frequency management, fixed channel assignment, non-fixed channel assignment, traffic & channel assignment, handoff, types of hand off and their characteristics, hand off analysis, dropped call rates & their evaluation.	7
6.	Multiple access techniques used in mobile wireless communications: FDMA/TDMA, CDMA. FDM / TDM Cellular systems, Cellular CDMA, comparison of FDM / TDM systems and Cellular CDMA.	7
7.	Capacity,soft capacity,erlang capacity and their usage.	3
8.	Global System for Mobile Communication (GSM) system overview: GSM Architecture, Mobility management, Network signaling ,Frequency allocation and control, Base System and Master System, GSM, DCS1800, Various value added services.	8
9.	Introduction to GPRS, EDGE, UMTS, HSPDA, HSUPA, LTE.	4
TOTAL HOURS FOR THE COURSE		52

References

1. Wireless Communication; Principles and Practice; T. S. Rappaport
2. Principles of Mobile Communication, G. L. Stuber Kluwer Academic,
3. Wireless and Digital Communications; Dr. Kamil o Feher (PHI)
4. Mobile Communication HandBook; IEEE Press
5. Mobile Communication Engineering– Theory & Applications; TMH

Course No.	Subject	Teaching Periods		Credits
		Lect	Tut	
MTH8217B	Engineering Mathematics-V	3	1	4

Section	Course Contents	Hours
1.	Introduction to OR Modelling Approaches & various Real life Situations	2
2.	Linear Programming Problems (LPP)	2
3.	Basic LPP's Applications	2
4.	Various Components of LPP formulation	2
5.	Solving LPP	2
6.	Simultaneous Equations and Graphical Methods	3
7.	Simplex Method	3
8.	Duality Theory	3
9.	Big-M Method	3
10.	Transportation problems & Assignments Problems	5
11.	Network Analysis: Shortest Path	2
12.	Dijkstra Algorithm, Floyd Algorithms	4
13.	Maximal Flow Problem ((Ford-Fulkerson)	2
14.	PERT- CPM	4
15.	Queuing Theory: Introduction	2
16.	Basic Definitions & Notations	2
17.	Axiomatic Derivation of the Arrival & Departure (Poisson Queue)	3
18.	Poisson Queue Models: M/M/1: ∞ /FIFO	2
19.	M/M/1: N/ FIFO.	2
TOTAL HOURS FOR THE COURSE		50

References

1. H.A. Taha, "Operations Research", Macmillan Publishing Company.
2. Hadley G., "Linear Programming", Narosa Publishers.
3. Mital, "Optimization Methods", New Age International.
4. Rao, "Engineering Optimization", New Age International.

Course No.	Subject	Teaching Periods	Credits
		P	
ECE8117BL	Wireless Communication Lab	2	1

Experiments

1. Study of Dual SIM Phone.
2. Study of GSM.
3. Study of 3G.
4. Study of CDMA.
5. Study of Bluetooth

Course No.	Subject	Teaching Periods	Credits
		P	
ECE8317B	Project	16	8

Project

In the final project the students are required to extend the pre-project work for the final submission of the course. The final project work is to be carried out in the last semester of their respective fields of study. The supervisors will guide the students from the beginning of the pre-project in 7th semester to its accomplishment as a final project in the 8th semester. The students will be asked to submit a project report (one copy per student) in a group. These reports will be evaluated in partial fulfilment for the award of the degree of bachelors of engineering in their respective branches of study.

Course No.	Subject	Credits
ECE8417B	Practical Training Viva/ Professional Viva	4

Practical /Industrial Training/Internship:

The students have to undergo a minimum four week practical training/internship/industrial training at 5th semester or 7th semester level at any relevant industrial organization . The students will be asked to submit a Practical training report (one copy per student). These reports will be evaluated in partial fulfilment for the award of the degree of bachelors of engineering in their respective branches of study.

Professional Viva:

The students have to undergo professional Viva at eighth semester level, The professional viva is to be taken by an external examiner, and includes the overall and in-depth assessment of all the subjects taken in all the semesters.