Academic Course Description

BHARATH UNIVERSITY

Faculty of Engineering and Technology

Department of Electronics and Communication Engineering

Sixth Semester, 2015-16 (Even Semester)

Course (catalog) description

To learn about the various switching systems
To learn in detail about time division switching.
To know about traffic management.
To understand about various signaling in tele communication systems
To analyze various telecommunication networks
To estimate the performance of telecommunication networks.

Compulsory/Elective course: Elective course

Credit hours : 3 credits

Course Coordinator : Dr.E.Kanniga Associate Professor

Instructors :

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@ bharathuniv.ac.in	Consultation
Dr E.Kanniga	Final year ECE	SA003		Kanniga.etc@bharathuniv.ac.in	9.00-9.50 AM
Mr Jasmin	Final year ECE	SA003		jasmine.ece@bharathuniv.ac.in	12.45-1.15 PM

Relationship to other courses:

Pre –requisites : Signals and System and communication system and mathematics, Physics

Assumed knowledge : The students will have a physics and mathematics background obtained at a high school (or equivalent) level. In particular, working knowledge of basic mathematics including differentiation, integration and probability theories are assumed.

Following courses : Satellite Communication, Mobile Communication

Syllabus Contents

UNIT -I SWITCHING SYSTEMS 9

Introduction-Message switching-Circuit switching-Manual switching-Functions of switching system- Strowger step by step system-Register translator-Senders-Distribution frames-Cross bar systems-General trunking-Electronic switching-Reed electronic systems-Digital switching systems.

UNIT- II TIME DIVISION SWITCHING 9

Introduction-Space and time switching-Time division switching networks-grades of services-Time division switching networks-non blocking networks-synchronization.

UNIT -III TELECOMMUNICATION TRAFFIC 9

Introduction-Unit of traffic-Congestion-Traffic measurement-A mathematical model-Local call systems-Queuing systems.

UNIT -IV TELECOMMUNICATION SIGNALLING 9

Introduction-Customer line signaling- Audio frequency junction and trunk circuits-FDM carrier systems-PCM signaling- Inter register signaling- Common channel signaling principles-CCITT signaling, CCITT signaling, Digital customer line signaling.

UNIT-V TELECOMMUNICATION NETWORKS 9

Introduction-Analog networks-Integrated digital networks-Integrated service digital networks-Cellular radio networks-Intelligent networks-Private networks-numbering-charging-Routing-Network management.

TOTAL NO OF PERIODS: 45

TEXTBOOK:

1. J.E FLOOD, "telecommunication switching, traffic and networks" Pearson education.

REFERENCE BOOKS:

1. T.V.SWAMINATHAN, telecommunication switching system &networks, PHI.
2. **http://www.newagepublishers.com/samplechapter/000969.pdf**

Computer usage: Yes

Professional component

General	-	10%
Basic Sciences	-	0%
Engineering sciences & Technical arts	-	10%
Professional subject	-	80%

Broad area: switching systems | Electronics | Communication systems | Switching Networks |
Test Schedule

S. No.	Test	Tentative Date	Portions	Duration
1	Cycle Test-1	February 2nd week	Session 1 to 14	2 Periods
2	Cycle Test-2	March 2nd week	Session 15 to 28	2 Periods
3	Model Test	April 2nd week	Session 1 to 45	3 Hrs
4	University Examination	TBA	All sessions / Units	3 Hrs.

Mapping of Instructional Objectives with Program Outcome

To develop problem solving skills and understanding of circuit theory through the application of techniques and principles of electrical circuit analysis to common circuit problems. This course emphasizes:	Correlates to program outcome		
	h	m	l
To learn about the various switching systems	a,b,c,g,	a,b,c,g	
To learn in detail about time division switching.	a,b	c,d,	c,d
To estimate the performance of telecommunication networks.	c	a,b,d,e	j,k
To understand about various signaling in tele communication systems		i,k,l	
To analyze various telecommunication networks	e	a,b,c,d,g	j,k
To know about traffic management.	h		

H: high correlation, M: medium correlation, L: low correlation

Draft Lecture Schedule

Session	Topics	Problem solving (Yes/No)	Text / Chapter
	UNIT -I SWITCHING SYSTEMS		
1.	Introduction - Reed electronic systems-Digital switching systems	No	[T1] Chapter -1, [T1]Chapter-3
2.	Message switching	Yes	
3.	Circuit switching	No	
4.	Manual switching	Yes	
5.	Functions of switching system	Yes	
6.	Strowger step by step system	Yes	

7.	Register translator-Senders-Distribution frames	Yes	
8.	Cross bar systems, General trunking	Yes	
9.	Electronic switching	Yes	
UNIT- II TIME DIVISION SWITCHING			
10.	Introduction Space and time switching	No	[T1] Chapter -6 Page156-175
11.	Time division switching networks	Yes	
12.	Basic networks	No	
13.	Bidirectional paths	No	
14.	Concentrators	No	
15.	PBX switches	No	
16.	non blocking networks	No	
17.	Synchronization.	No	
18.	Time switching	Yes	
UNIT -III TELECOMMUNICATION TRAFFIC			
19.	Introduction	Yes	
20.	Unit of traffic	Yes	
21.	Congestion	Yes	
22.	Traffic measurement	Yes	

23.	A mathematical model	Yes	[T1]Chapter-4 87-116
24.	Local call systems	Yes	
25.	Queuing systems	Yes	
26.	Probability of delay	Yes	
27.	Simulation	No	
UNIT -IV TELECOMMUNICATION SIGNALLING			
28.	Introduction	No	[T1]Chapter-8 204-229
29.	Customer line signaling	No	
30.	Audio frequency junction and trunk circuits	No	
31.	FDM carrier systems	No	
32.	PCM signaling	No	
33.	Inter register signaling	No	
34.	Common channel signaling	No	
35.	principles-CCITT signaling	No	
36.	Digital customer line signaling	No	
UNIT-V TELECOMMUNICATION NETWORKS			
37.	Introduction	No	
38.	Analog networks	No	
39.	Integrated digital networks	No	
40.	Integrated service digital networks	No	
41.	Cellular radio networks	No	

42.	Intelligent networks	No	[T1] Chapter 10 Pp254-291
43.	Private networks	No	
44.	Numbering	No	
45.	Charging-Routing-Network management.	Yes	

Teaching Strategies

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures
- Tutorials, which allow for exercises in problem solving and allow time for students to resolve problems in understanding of lecture material.
- Laboratory sessions, which support the formal lecture material and also provide the student with practical construction, measurement and brainstroming skills.
- Small periodic quizzes, to enable you to assess your understanding of the concepts.

Evaluation Strategies

Cycle Test – I	-	10%
Cycle Test – II	-	10%
Model Test	-	25%
Attendance	-	5%
Final exam	-	50%

Prepared by: Dr.E.Kanniga Associate professor , Department of ECE **Dated : 10 -5-2016**