



Kadi Sarva Vishwavidyalaya
Faculty of Engineering & Technology
Fourth Year Bachelor of EC Engineering
 (VIIIth sem Academic Year 2020)

Subject Code: EC803B-N	Subject Title: Telecommunication and Switching Networks
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Course Objective:

The educational objectives of this course are

- To present a problem oriented introductory knowledge of Telecommunication Engineering.
- To address the underlying concepts and methods behind Telecommunication Switching and Networks Engineering.

Teaching scheme				Total Credit	EvaluationScheme					Total Marks
L	T	P	Total		Theory		IE Marks	CIA Marks	Pract. Marks	
Hrs	Hrs	Hrs	Hrs		Hrs	Marks				
04	00	02	06	05	03	70	30	20	30	150

Outline of the Course:

Sr. No.	Title of the Unit	Hours
1.	Introduction	08
2.	Evolution of Switching System	12
3.	Digital Switching	10
4.	Traffic Engineering	10
5.	Telephone Networks	10
6.	Digital Subscriber Access	10
	Total	60

Total hours (Theory): 60

Total hours (Lab):

Total hours:



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Detailed Syllabus

Sr. No	Course Content	Total Hrs.	Weightage (%)
1.	Introduction: Evolution of Telecommunications, Basic of Switching System, Simple Telephone Communication, Manual Switching System, Major Telecommunication Networks.	08	10
2.	Evolution of Switching System: Strowger, Rotary Dial Telephone, Signaling Tones, Step by Step Switching, Design Parameters, Crossbar Switching: Principal of Common Control, Touch Tone Dial Telephone (DTMF) and Principals of Crossbar Switching.	12	20
3.	Digital Switching: Switching Functions, Space Division Switching, Time Division Switching, two dimensional Switching: STS Switching, TST Switching, No.4 ESS Toll Switch, Digital Cross- Connect Systems, Elements of SS7 signaling.	10	20
4.	Traffic Engineering: Network Traffic Load And Parameters, Grade Of Service And Blocking Probability, Modeling Switching Systems, Incoming Traffic And Service Time Characterizations, Blocking Models And Loss Estimates, Delay Systems.	10	20
5.	Telephone Networks: Subscriber Loop System, Switching Hierarchy And Routing, Transmission Plan, Transmission System Numbering Plan, Charging Plan, Signaling Techniques, In-channel Signaling, Common Channel Signaling, Cellular Mobile Telephony.	10	10
6.	Digital Subscriber Access : ISDN: ISDN Basic Rate Access Architecture, ISDN U Interface, ISDN D Channel Protocol. High-Data-Rate Digital Subscriber Loops: Asymmetric Digital Subscriber Line, VDSL. Digital Loop Carrier Systems: Universal Digital Loop Carrier Systems, Integrated Digital Loop Carrier Systems, Next-Generation Digital Loop Carrier, Fiber in the Loop, Hybrid Fiber Coax Systems, Voice band Modems: PCM Modems, Local Microwave Distribution Service, Digital Satellite Services.	10	20



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Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lecture and laboratory which carries 10 marks in overall evaluation.
- One internal exam will be conducted as a part of internal theory evaluation.
- Assignments based on the course content will be given to the students for each unit and will be evaluated at regular interval evaluation.
- Surprise tests/Quizzes/Seminar/tutorial will be conducted having a share of five marks in the overall internal evaluation.
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
- Experiments shall be performed in the laboratory related to course contents.

Learning Outcome:

On successful completion of the course

- The student can identify different areas of various telecommunication network and its components. Can find the applications of all the areas in day to day life.
- Application in the area of Telecommunication engineering.

TextBook:

1. Viswanathan. T., “Telecommunication Switching System and Networks”, Prentice Hall of India Ltd., 2015.

ReferenceBooks:

1. J. Bellamy, “Digital Telephony”, John Wiley, 2003, 3rd Edition.
2. JE Flood, “Telecommunications Switching, Traffic and Networks”, Pearson.
3. R.A. Thomson, “Telephone switching Systems”, Artech House Publishers, 2000.
4. W. Stallings, “Data and Computer Communications”, Prentice Hall, 1993.
5. T.N. Saadawi, M.H. Ammar, A.E. Hakeem, “Fundamentals of Telecommunication Networks”, Wiley Interscience, 1994.
6. W.D. Reeve, “Subscriber Loop Signaling and Transmission Handbook”, IEEE Press (Telecomm Handbook Series), 1995.



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List of Experiments (Not limited to following. Subject teacher may modify the same):

Sr.No.	Name Of Experiment
1.	To study of transmission & reception of signal on telephone networks.
2.	To measure the blocking probability of telephone networks.
3.	To measure the network throughput of telephone system.
4.	To measure the traffic arrival into telephone networks.
5.	To perform the time division multiplexing.
6.	To perform the frequency division multiplexing.
7.	To perform experiment on traffic model with constant traffic.
8.	To perform experiment on traffic model with poisson traffic.
9.	To study about effects arrival rate on various network parameters