

COURSE TITLE	TE142317: Traffic & Network Engineering Credits: 2 Semester: I
LEARNING OBJECTIVES	To study various modeling and characterization of traffic of information sources: voice, data, image and video, transported in various networks: fixed, cellular, wireless, LAN, MAN, WAN, as well as related techniques and protocols.
COMPETENCY	The students understand: <ul style="list-style-type: none"> • basics of traffic engineering and its analysis, as well as implementation in telecommunication network • principles of router architecture for IP network, as well as its performance in relation to various traffic models and routing techniques
SUBJECTS	Traffic definition and unit. Traffic characteristics and models: voice and data. Loss system. System model: Erlang B, blocking probability, Poisson process; circuit dimensioning. Demand and traffic forecast. QoS in wireless network. Markov process and chain. Queueing system: infinite and finite waiting time system, Erlang C. Internet router architecture. Token leaky bucket, multiplexing flow. Queueing network with static routing, loss network. Stable open queueing network. Dynamic routing, routing with incentive. Shortest and widest path algorithms.
MAIN REFERENCES	<ul style="list-style-type: none"> • ITU-D, <u>Teletraffic Engineering Handbook</u>, 2003 • Kesidis, G., <u>An introduction to communication network analysis</u>, Wiley, 2007 • Chuah, M.C. dan Zhang, Q., <u>Design and Performance 3G Wireless Networks and Wireless LANs</u>, Springer, 2006. • Medhi, D. dan Ramasamy, K. <u>Network Routing</u>, The Morgan Kaufmann Series, 2007
OPTIONAL REFERENCES	<ul style="list-style-type: none"> • IEEE/ACM Trans. on Networking
PREREQUISITE	-