Course Number	CS 540	Course Title	Advanced Computer Networks
Semester Hours	3	Course Coordinator	Bidyut Gupta
Catalog Description	Topics include routing protocols used in internet; data compression techniques; telecommunication systems - its services, architecture and protocols; high speed networks; routing protocols in mobile ad-hoc networks; and a detailed performance analysis of different window flow control and congestion control mechanisms using queuing theory.		

Textbooks

SP17

No Books Required.

References

Course Learning Outcomes

Assessment of the Contribution to Student Outcomes

Outcome →	1	2	3	4	5	6	7
Assessed →		X	X		X		X

Prerequisites by Topic

CS 440 with a grade of C or better, or consent of the instructor.

Major Topics Covered in the Course

1. Queuing Theory
   M/M/1 queue
   State-dependent queues – M/M/N/N queue etc. {4 classes}
2. Performance analysis
   Data Link Layer protocols
   Flow Control and Congestion Control Mechanisms
   Virtual circuit model, Sliding window model {4 classes}
3. Queuing Networks
   Open Queuing Networks
   Closed Queuing Networks {3 classes}
4. Internet Routing
   Static Routing
   Dynamic routing
   Routing in The Global Internet
   Interior Gateway Protocols
   Exterior Gateway Protocols {8 classes}
5. Data Compression Techniques
   Run length encoding
   Arithmetic coding
   String matching Algorithms {4 classes}
6. Routing Protocols in Unidirectional Networks {2 classes}
7. High Speed Networks
   ATM
   High speed LANs {4 classes}
8. Introduction to Telecommunication Systems
   GSM – Services, Architecture, and Protocols {5 classes}
9. Routing Protocols in Mobile Ad-hoc Networks {4 classes}
10. Quality of Service {2 classes}
11. Term Paper, there may be some Lab(s) which is up to the instructor.