

<b>Dept Number</b>	<b>CS 540</b>	<b>Course Title</b>	<b>Advanced Computer Networks</b>							
<b>Semester Hours</b>	<b>3</b>	<b>Course Coordinator</b>	<b>Bidyut Gupta</b>							
<b>Catalog Description</b>	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.									
<b>Textbooks</b>										
<b>References</b>										
<b>Course Learning Outcomes</b>										
<b>Assessment of the Contribution to Program Outcomes</b>										
<b>Outcome →</b>	1	2	3	4	5	6	7	8	9	10
<b>Assessed →</b>		X	X		X		X			
<b>Prerequisites by Topic</b>										
CS 440 with a grade of C or better, or consent of the instructor.										

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<b>Major Topics Covered in the Course</b>		

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.