

# COE 540

## Computer Networks

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### Course Description

- ✓ A graduate level course
- ✓ The course assumes you have taken an undergraduate introduction to TCP/IP networking,
- ✓ The course will then address two fundamental areas of computer networking:
  - ✓ *protocols & algorithms, and*
  - ✓ *Performance analysis*
- ✓ We will be reading a number of classic and current papers on these subjects; my lectures, the text, and supporting materials will help provide the background and overview of the topics covered by these papers

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## Evaluation / Assessment

- Assignments 20%
- Project 25%
- Midterm Exam (April 8th, 2006) 25%
- Final Exam (June 1<sup>st</sup>, 2006) 30 %
- A+ > 90, F < 60

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## Course Information (more)

- ✓ in-class style: interaction, questions (*please!*)
  - ✓ *Cheating will not be tolerated. At least 0 in quiz, homework, exam, etc.*
  - ✓ *DN Grade (exceeding 6 absences)*
  - ✓ *WF Grade (poor performance)*
- ✓ getting into this course...
  
- ✓ Questions, comments, ... ???

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## Course Overview:

### Part 1: Introduction (*2 class*)

- Computer Networks concepts:
  - Basic Terminology; Protocols; Communication architecture;
  - OSI Reference model; TCP/IP model.

### Part 2: Preliminaries

- Probabilities and Random Processes (*2 classes*)
- Queuing Theory (*4 classes*)
  - Delay Models in Data Networks:
    - ✓ Introduction to performance analysis; Little Theorem; Single queue models
    - ✓ Network of queues.

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## Course Overview:

### Part 3: (*4 classes, text: Ch. 2*)

- Point-to-Point Protocols;
  - Data Link Layer; ARQ Strategies; Analysis of ARQ Strategies;
  - Point-to-Point protocols at the Network layer;
  - Point-to-Point protocols at the Transport layer;

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## Course Overview:

Part 4: Network Layer (*6 classes, text: Ch. 5*)

### ➤ Routing in Data Networks:

- Design issues in Routing; Shortest path algorithms; Routing algorithms;
- Flow models, optimal routing and topological design.

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## Course Overview:

Part 5: (*6 classes, text: Ch. 6*)

### ➤ Flow and Congestion Control:

- Design issues of flow and congestion control; Window flow control schemes;
- Rate control schemes; Flow and congestion control in practice.

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