This course is going to be **fun!**

- learn a lot about *how networks work* (Internet, telephone, cellular, emergency response)
- learn about *policy, privacy, social, business* aspects of networking as well
- new course:
  - first time I’ve taught it, seen it taught anywhere
  - I volunteered to teach it
  - grew out of cs453 honors section
  - help me develop this course!
Who is this course for?

- interested in how networks work … but not at the level of a computer science or electrical engineering major
  - inform your studies, work in other areas
- interested in networks in broader context: social, policy, legal, business
- not a CS major (this course doesn’t “count” as CS elective)
  - take CS 453

Course information

- prerequisites: none!
  - programming not required (but good reading, studying skills are)
- course materials:
  - online: videos, newspaper/magazine articles (posted on www site)
  - class notes (print and bring to class)
Course information (more)

- **class WWW site:**
  - the most important piece of info you will receive today!
  - http://www-net.cs.umass.edu/cs290nw/

- everything is posted on this site!
  - syllabus
  - TA info (TBD)
  - class notes (powerpoint, pdf)
  - assignments
  - readings
  - nothing will be handed out in class :-)

Course information (more)

- **online discussion:** we will be trying Piazza (discussion forum)
- **workload (approx):**

<table>
<thead>
<tr>
<th>coursework</th>
<th>approx amount</th>
<th>approx %</th>
</tr>
</thead>
<tbody>
<tr>
<td>written homeworks</td>
<td>6-7</td>
<td>35%</td>
</tr>
<tr>
<td>hands-on assignments</td>
<td>3-4</td>
<td>15%</td>
</tr>
<tr>
<td>midterm</td>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>2nd midterm</td>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>Final</td>
<td></td>
<td>20%</td>
</tr>
</tbody>
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The 25% each if you don’t take final.
**Course information (even more)**

*Odd and ends…*

- in-class style: interaction, questions *(please!)*, discussion
- *slow me down* if we’re going too fast, technical content is too overwhelming
- incomplete policy
- academic honesty

questions, comments, … ???

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**Course overview:**

1: Internet overview

- what is the Internet, what is a protocol?
- Internet structure
  - network edge, network core, network access
- brief history of networking, Internet
- who owns, runs the Internet?
Course overview:

2: WWW: the world wide web
- why the WWW is not the Internet
- how does the web work?
  - web protocols and "cookies"
- privacy (not!): tracking you on the web:
  - web bugs, 3rd party cookies
  - ad networks, data brokers
  - mobile apps and tracking

Course overview:

3: How the Internet is structured
- a tiered network of networks
- peering, customer/provider relationships
- how ISP make a profit (or not)
- tussles in peering
Course overview:

4: Dealing with scale - the Internet is HUGE
- largest engineered system ever
- structuring large, complex systems
  - layering, hierarchy
- case study: the Internet’s Domain Name System (DNS)
- case study: Content Distribution Networks (CDN), Akamai
  - CDN Business perspective
- case study: Netflix

Course overview:

5: The Internet’s TCP/IP protocols
- packet routing
- dealing with congestion
- network neutrality:
  - goals
  - Comcast v FCC
Course overview:

6: The Internet’s edge: Access Networks
- Ethernet
- cable/DSL access networks
- WiFi and cellular networks
  - radio spectrum – a scare public resource
- preserving the open Internet

Course overview:

7: Telephone and Cable Networks
- how the telephone and cable networks work
- regulation
- corporate reincarnation: reborn without a soul
- telecom and monopoly in the new gilded age
- digital divide:
  - National Broadband Plan
Course overview:

8: Network Security and Privacy
- threats and attacks
- cryptography
- digital signatures, authentication
- wiretapping: technology
- wiretaps and the law
  - NSA in the news
- effectiveness of wiretapping

Course overview:

9: Communication during crises
- emergency alert system
- 911
- emergency response networks

10: Looking into the future
end of course overview

comments, questions?