

**Advanced Computer Networks  
Final Exam  
General Topic Study Areas**

*{ The first two groupings are background concepts for the papers. }*

**TCP Congestion Control Mechanisms**

- Sliding Windows
- AIMD
- Slow Start
- Fast Retransmit
- Fast Recovery
- Tahoe, Reno, Vegas

**Measures of Performance**

- Throughput, goodput
- Utilization
- Response time, delay
- Fairness
- Other performance measures in papers

**Congestion Control Algorithms**

*{ For each algorithm you want to have a **basic** idea of the algorithm, the goals of the algorithm and the advantages and disadvantages. }*

- Drop Tail (FIFO)
- FQ, WFQ and DRR
- RED, FRED and ECN
- RIO-PS
- CSFQ
- PI
- DCN
- TCP Friendly Concept

**Traffic measurements at University of Washington**

**Infrastructure Wireless versus Ad-Hoc Networks**

*{ Wireless implies an AP and immobile nodes. Ad-Hoc Mobile implies motion and routing. }*

- Issues related to all wireless network types (*Wireless Primer*)
- 802.11 a, b and g., DCF versus PCF
- Roofnet Results
- Streaming Wireless Results
- 3G strategies
  - ACK Regulator, Window Regulator, WRS, WRB
- Multihop Wireless Metrics
  - Hop Count, RTT, packet pair, ETX
- Open Issues

**TCP-probing, WTCP, Freeze-TCP**  
**Misbehaving Wireless nodes**  
**DSR, Watchdog, PathRater**

**Network Security Issues**

*{ Generally, here you wish to know the nature of various types of attacks and be able to talk about the proposed solutions in these papers. }*

**Wireless Security**

**WEP and its flaws**

**Security Approaches**

**Split Connection, SNOOP, TCP Hack, PEP, and SPEP**

**Sensor Network Security – TinySec**

**power versus security, Auth versus AE**

**Distributed Denial-of-Service Attacks (DDOS)**

**Survey: direct versus reflector, TCP SYN ACK, Traceback, Detection and Filtering, Internet Firewall**

**PacketScore System**

**3D-R, traffic profiling, attributes and CLP**

**Power Law Networks**

**IP Traceback, Route-Based DPF**

**Wormhole and Geographic and Temporal Leashes**

**Virtual Private Networks**