

INST 346 Topic List

May 7, 2018

- The final exam is comprehensive, integrating material from across the entire course. There are already topic lists posted for exams 1 and 2, so this study guide contains the topic list for material covered after exam 2. You must also refer to the other two topic lists to have a complete picture of the topics that may be tested.
- Material covered in assigned readings, in class, in homeworks, and by Analysis Teams is testable. This topic list covers only the readings and class discussions, so you should also review the homework assignments (on the Web) and the Analysis Team presentations (on ELMS).
- This will be a two-hour exam, and the use of a computer with network access and Wireshark installed is required.

The Web (e1q4)

- HTTP message formats (GET, Conditional GET, response)
- HTTP use of TCP (persistent, non-persistent)
- Cookies
- Proxy servers

PHP

- Intermixing HTML and PHP
- Use of SQL by PHP
- Ajax

Information Architecture

- Heterogeneity
- Organizing principles
- Manhattan layout

Data Architecture

- Logical data model
- Enterprise data modeling process

Cloud Computing

- Costs of local and cloud computing
- Capabilities of local and cloud computing
- Other considerations for cloud computing (Service-Level agreements, privacy, ...)
- Map Reduce
- Content distribution networks

Data Centers

- Electricity use
- Site selection considerations
- Accommodating component failures

Networked Malware

- Browser hijacking
- SQL injection attack
- Bots and botnets
- Denial of service (DoS) and Distributed DoS (DDoS) attacks
- Ransomware

Cyberdefense (e2q3)

- Firewalls (stateful, stateless)
- Gateways
- Intrusion detection systems (signature-based, anomaly detection)

Blockchain (e3q3b)

- Hashchain
- Blockchain
- Distributed blockchain ledgers (synchronization, proof of work, rate limiting)
- Bitcoin
- Adoption of innovations

Information Governance

- Integration across disciplines
- Records management
- Risk management
- E-Discovery

Surveillance (e3q2)

- FISA Section 702
- Upstream collection
- About collection
- Multi-communication transactions

Hacking

- Social attacks
- Disinformation

Overarching skills

- Timing diagrams
- Protocol inspection using Wireshark
- Understand how protocol layers work together
- Understand the social consequences of and social control over technology

Key for question references:

- To see the prior exams for Fall 2017 section 0101, go to the fall 2017 semester schedule (from the Spring 2018 section 0101 home page, select prior semester, then schedule)
- Exam code: e1 for exam 1, e2 for exam 2, e3 for the final exam
- Question code: q1 for question 1, etc.

- Example: e3q1b refers to part b of question 1 on the Fall 2017 final Exam