King Fahd University of Petroleum & Minerals
College of Computer Sciences and Engineering

CSE 552 - Network Management (3-0-3)
SM: 6:30-7:45 PM, Room: 22-134
Fall 2006 (Term 061)

Syllabus

Catalog Description
Management Protocols. Remote Management. Configuration for Data Collection. Monitoring and Reconfiguration. Operational Issues in Managing Heterogeneous Networks under Different Operating Systems.

Prerequisite: (COE 540 and (ICS 431 or Equivalent)) or Consent of Instructor.

Course Description
Network Management Standards and Models. Network Management Protocols. Abstract Syntax Notation One (ASN.1). Simple Network Management Protocol (SNMP). SNMPv2 and SNMPv3. Structure of Management Information (SMI). Management Information Base (MIB). Remote Monitoring (RMON). RMON 1 and 2. Network Management Tools and Systems. Web-Based Management. Network Management Applications.

Instructor: Dr. Mohammed Houssaini Sqalli

Office: 22-149   **Phone:** 1725   **Email:** sqalli@ccse.kfupm.edu.sa

Office hours: UT 8:30-10:00AM, SM 8:00-8:30PM, and by appointment.

Course URL: http://www.ccse.kfupm.edu.sa/~sqalli/061/cse552

Text Book:

"Network Management – Principles and Practice" by Mani Subramanian, Addison-Wesley Pub Co, First Edition, 2000.

Reference Book:
"SNMP, SNMPv2, SNMPv3, AND RMON 1 and 2" by William Stallings, Addison-Wesley, Third Edition, 1999.

Grading Policy:

Assignments/Quizzes	20%	
Project	30%	
Midterm	20%	November 13, 2006, 6:30-8:00 PM
Final Exam	25%	January 22, 2007, 7:00-10:00 PM
Attendance and participation	5%	

Attendance: attendance is required by all students. Official excuse for an authorized absence must be presented to the instructor no later than one week following the absence. More than 6 unexcused absences lead to a "DN" grade.

Course Objectives:
- ➢ Gain in-depth theoretical and practical knowledge of network management, and in particular of SNMP (Simple Network Management Protocol).
- ➢ Familiarization with network management to be prepared for a career in the industry or to pursue further research on the subject.

Course Topics:

1. ***Data Communications and Network Management Overview (Ch. 1)***   **(1 Week)**
   - ➢ Analogy of Telephone Network Management.
   - ➢ Communications Protocols and Standards.
   - ➢ Case Histories on Networking and Management.
   - ➢ Network Management Functions.
   - ➢ Network and System Management.

2. ***Basic Foundations: Standards, Models, and Language (Ch. 3 & 13)***   **(2 Weeks)**
   - ➢ Network Management Standards.
   - ➢ Network Management Models.
   - ➢ Organization Model.
   - ➢ Information Model.
   - ➢ Communication Model.
   - ➢ Functional Model.
   - ➢ Network Management Applications.
   - ➢ Abstract Syntax Notation One: ASN.1.
   - ➢ Encoding Structure.

3. ***SNMPv1 Network Management (Ch. 4-5)***   **(3 Weeks)**
   - ➢ History of SNMP Management.
   - ➢ Internet Organizations and Standards.
   - ➢ SNMP Model.
   - ➢ Organization and Information Models.
   - ➢ Communication and Functional Models.

4. ***SNMP Management: SNMPv2 (Ch. 6)***   **(2 Weeks)**
   - ➢ Major Changes in SNMPv2.
   - ➢ SNMPv2 System Architecture.
   - ➢ SNMPv2 Structure of Management Information.
   - ➢ SNMPv2 Management Information Base.
   - ➢ SNMPv2 Protocol.

5. ***SNMP Management: SNMPv3 (Ch. 7)*** **(2 Weeks)**
  - ➤ SNMPv3 Key Features.
  - ➤ SNMPv3 Documentation Architecture.
  - ➤ SNMPv3 Applications.
  - ➤ SNMPv3 Management Information Base.
  - ➤ SNMPv3 User-based Security Model.
  - ➤ Access Control.

6. ***SNMP Management: RMON (Ch. 8)*** **(2 Weeks)**
  - ➤ Remote Monitoring.
  - ➤ RMON SMI and MIB.
  - ➤ RMON1.
  - ➤ RMON2.
  - ➤ A Case Study on Internet Traffic.

7. ***Some Current Network Management Topics*** **(2 Weeks)**
  - ➤ Web-Based Management (Ch. 14).
  - ➤ XML-Based Network Management.
  - ➤ Distributed Network Management.
  - ➤ Reliable & Fault Tolerant Network Management.
  - ➤ Other topics.

8. ***Projects Presentations*** **(1 Week)**
  - ➤ More details will be posted on the course web site about the projects.