

# INTERNET MANAGEMENT AND MEASUREMENT

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# PURPOSE OF THIS COURSE

## THE PURPOSE OF THIS COURSE IS TO GET AN UNDERSTANDING OF:

- WHICH MANAGEMENT INFORMATION EXISTS WITHIN THE INTERNET
  - WHO DEFINES THIS INFORMATION
- THE SYNTAX IN WHICH THIS INFORMATION IS DESCRIBED
  - THE PROTOCOLS THAT ALLOW THIS INFORMATION TO BE MONITORED / MODIFIED
- HOW TO MEASURE THE FLOW OF INTERNET DATA

# MATERIAL

## BOOK

William Stallings: SNMP, SNMPv2, SNMPv3, RMON 1 & 2;  
Addison Wesley, ISBN 0-201-48534-6

- REAL MEDIA PRESENTATIONS

<http://www.simpleweb.org/tutorials/video/>

- SLIDES

<http://www.simpleweb.org/tutorials/slides.html>

- EXERCISES

<http://www.simpleweb.org/tutorials/exercises.html>

- TELETOP WEBSITE

# COURSE ORGANIZATION

## COURSE CONSISTS OF THREE ELEMENTS:

- FIVE LECTURES IN CLASS ROOM
- TWO LECTURES AS SELF STUDY
  - EXERCISES

## CLASS ROOM LECTURES

DATE	LOCATION	TOPIC
26 APRIL	TEMP-6	INTRODUCTION
3 MAY	TEMP-6	SIMPLE NETWORK MANAGEMENT PROTOCOL
10 MAY	TEMP-6	SNMPv3, NEW DEVELOPMENTS
31 MAY	TEMP-6	DISTRIBUTED MANAGEMENT & MONITORING
7 JUNE	TEMP-6	INTERNET MEASUREMENTS

**NOTE: NO COURSE ON 19 APRIL, 17 & 24 MAY**

# SELF STUDY LECTURES

BEFORE	TOPIC
1 MAY	STRUCTURE OF MANAGEMENT INFORMATION
8 MAY	MANAGEMENT INFORMATION BASES

## MATERIAL:

- REAL MEDIA PRESENTATIONS  
<http://www.simpleweb.org/tutorials/video/>

- BOOK OF STALLINGS  
William Stallings: SNMP, SNMPv2, SNMPv3, RMON 1 & 2;  
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## EXERCISES:

READY	TOPIC	WEIGHT
3 MAY	STRUCTURE OF MANAGEMENT INFORMATION	15%
10 MAY	MANAGEMENT INFORMATION BASES	15%
31 MAY	SNMP: COMPARISON VERSION 1, 2 AND 3	15%
7 JUNE	INSTALLING AN SNMP AGENT	15%
8 JULY	FINAL EXERCISE	40%

- TO BE PERFORMED IN GROUPS OF TWO STUDENTS
  - FIRST FOUR EXERCISE: SAME FOR ALL GROUP
  - FINAL EXERCISE: DIFFERENT FOR ALL GROUPS
- SUBMISSION OF RESULTS VIA TELETOP

# DETAILED OVERVIEW



# CLASS ROOM LECTURE 1

ON APRIL 26, 2005

- STALLINGS CHAPTERS 1, 2 & 4
- REAL MEDIA PRESENTATIONS: MANAGEMENT STANDARDS + INTRODUCTION TO SNMP

## EXAMPLES OF MANAGEMENT INFORMATION

- CAMPUSNET
- SURFnet

## DIFFERENT APPROACHES TO MANAGEMENT

- AD-HOC APPROACHES
- STANDARD APPROACHES

## SNMP

- BASIC OPERATION
  - HISTORY
- STANDARDS
  - GOALS

# SELF STUDY LECTURE 1

DONE BEFORE MAY 1, 2005

- STALLINGS CHAPTERS 5 & 11
- REAL MEDIA PRESENTATION: SMI

## STRUCTURE OF MANAGEMENT INFORMATION

- SCALARS
- TABLES
- ROW CREATION
- TEXTUAL CONVENTIONS

# EXERCISE 1

DONE BEFORE MAY 3, 2005

SMI

USE SMIv2 TO  
DEFINE AND VALIDATE A SIMPLE MIB MODULE

# CLASS ROOM LECTURE 2

ON MAY 3, 2005

- STALLINGS CHAPTERS 7, 11 & 12

## SIMPLE NETWORK MANAGEMENT PROTOCOL

- SNMPV1
- PROXIES
- MESSAGE ENCODING
- SNMPV2

# SELF STUDY LECTURE 2

DONE BEFORE MAY 8, 2005

- STALLINGS CHAPTERS 6 & 13
- REAL MEDIA PRESENTATIONS: INTRODUCTION TO MIBs, MIB-II

## MANAGEMENT INFORMATION BASES

### MIBS

### MIB-II

- SNMPv2 MIB
  - IF MIB
  - IP MIB

## **EXERCISE 2**

DONE BEFORE MAY 10, 2005

MIBs

RETRIEVE SPECIFIC MIB VALUES

# CLASS ROOM LECTURE 3

ON MAY 10, 2005

- STALLINGS CHAPTERS 15, 16 & 17

## SNMPv3

- DESIGN DECISIONS
  - ARCHITECTURE
- SNMP MESSAGE STRUCTURE
  - SECURE COMMUNICATION
    - ACCESS CONTROL
      - RFCS

## NEW DEVELOPMENTS

- WEB SERVICES BASED MANAGEMENT

## **EXERCISE 3**

DONE BEFORE MAY 31, 2005

### SIMPLE NETWORK MANAGEMENT PROTOCOL

PERFORM SNMP OPERATIONS ON A DEMO MIB

COMPARE THE RESULTS FOR:

- SNMPv1
- SNMPv2
- SNMPv3



# CLASS ROOM LECTURE 4

ON MAY 31, 2005

- STALLINGS CHAPTERS 8, 9 & 10

## DISTRIBUTED MANAGEMENT AND MONITORING

- DISMAN
- RMON

## EXERCISE 4

DONE BEFORE JUNE 7, 2005

### INSTALL AN SNMP AGENT

OTHER STUDENTS SHOULD BE INFORMED ABOUT AGENT DETAILS:

- IP NUMBER
- PORT NUMBER
- COMMUNITY STRING
- SECURITY NAME
- SECURITY KEYS

AGENTS SHOULD CONTINUE RUNNING UNTIL JULY 9

- AGENTS WILL BE USED IN FINAL EXERCISES
- YOUR AGENT WILL BE USED BY ALL OTHER STUDENTS

# **CLASS ROOM LECTURE 5**

ON JUNE 7, 2005

- STUDY MATERIAL WILL BE PROVIDED

## **INTERNET MEASUREMENTS**

- ACTIVE VERSUS PASSIVE MEASUREMENTS
  - MEASUREMENT LOCATION
  - MEASUREMENT TOOLS
- MEASUREMENT RESULTS: EXAMPLES

# **EXERCISE - FINAL**

DONE BEFORE JULY 8, 2005

MANAGEMENT AND MEASUREMENT

EACH GROUP GETS A SPECIFIC ASSIGNMENT