SYLLABUS
Wireless and Cellular Systems
INT 664

Instructor
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Classroom
Wireless and Cellular Systems meets in TH 127 from 10:30 am to 11:45 am on Tuesday and Thursday.

Required Text

On-line curriculum is also required reading. On-line curriculum is at: http://int.fhsu.edu/curr/wireless_v12/, contact instructor for login information
3) For GRAD STUDENTS - The CWNA certification exam is required.

Objectives
To deepen and broaden our knowledge of wireless and cellular systems. Lectures include information on cellular systems, EM propagation, cellular system fundamentals and design, traffic and queuing theory. Web-based curriculum concentrates on wireless data communications fundamentals, protocols and the application of those protocols, including security features.

Activities
Students in this course will study the on-line curriculum in detail. Lecture will cover additional and different topics. Quizzes, exams, labs and a project are required.

Grading
Undergraduate Students
Assignments will be weighted in the following manner:

22% On-line quizzes (11 equally weighted)
33% On-line final exam
25% Exam on Instructor's Lectures (in class exam)
20% Labs

The grade a student earns is based on the following scale measuring achievement on all assigned work

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<th>Percentage Range</th>
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<td>93.0% - 100%</td>
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**Graduate Students**
Assignments will be weighted in the following manner:

- 22% [On-line quizzes](#) (11 equally weighted)
- 33% [On-line final exam](#)
- 25% Exam on Instructor's Lectures (in class exam)
- 20% Labs

The grade a student earns is based on the following scale measuring achievement on all assigned work

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**Expectations**
Students are expected to produce high quality work and take an active role in advancing their knowledge. The instructor is available to discuss issues and assist the student in research to achieve this expectation.
Curriculum Modules and Labs

Module 1: Introduction to Wireless LANs

1.2.7 Lab Exercise: Wireless Component and Media Identification
1.4.7 Lab Exercise: Wireless Lab Setup
1.6.1 Lab Exercise: Challenges of Wireless Regulations
1.6.8 Lab Exercise: Challenges of Wireless Media

Module 2: IEEE 802.11 and Network Interface Cards

2.4.3 Lab Exercise: Install a WLAN Adapter Card
2.5.2 Lab Exercise: Install Aironet Client Utility (ACU)
2.5.2 Lab Exercise: Install Aironet Desktop Utility (ADU)
2.5.5 Lab Exercise: Configure Auto Profiles
2.5.5 Lab Exercise: Configure Auto Profiles using ADU
2.6.5 Lab Exercise: ACU Utilities
2.6.5 Lab Exercise: Using ADU Utilities
2.6.5 Lab Exercise: Creating an Adhoc Network
2.6.5 Lab Exercise: Creating an Ad Hoc Network using ADU

Module 3: Wireless Radio Technology

3.2.3 Lab Exercise: Wireless Mathematics

Module 4: Wireless Topologies
Module 5: Access Points

5.2.2  Lab Exercise: Configuring Basic AP Settings
5.2.4  Lab Exercise: Using Features of the Internetworking Operating System (IOS) command line interface (CLI)
5.2.5  Lab Exercise: Manage AP Configuration and Image Files
5.3.5  Lab Exercise: Configure Ethernet/FastEthernet Interface
5.4.4  Lab Exercise: Configure Radio Interfaces through the GUI
5.4.5  Lab Exercise: Configure Radio Interface through the IOS CLI
5.4.8  Lab Exercise: Configure an AP as a Repeater through the IOS CLI

Module 6: Bridges

6.1.6  Lab Exercise: Resetting the Bridge
6.2.2  Lab Exercise: Configuring Basic Bridge Settings
6.2.4  Lab Exercise: Using Features of the Internetworking Operating System (IOS) command line interface (CLI)
6.3.2  Lab Exercise: Configure Radio Interface through the IOS CLI
6.3.5  Resources: 1200 AP g Radio Upgrade Instructions
6.3.5  Lab Exercise: Configure Ethernet/FastEthernet Interface
6.3.6  Lab Exercise: Configure Site-to-Site Wireless Link
6.3.6  Lab Exercise: Configure Site-to-Site Wireless Link
6.4.4  Lab Exercise: Configuring Bridge Services
6.4.4  Lab Exercise: Configuring Bridge Services
6.5.3  Lab Exercise: Manage Bridge Configuration and Image Files

6.5.5  Lab Exercise: Configure Layer 3 Site-to-Site Wireless Link – OPTIONAL Challenge Lab

Module 7: Antennas

7.1.4  Lab Exercise: Antenna Setup
7.1.8  Lab Exercise: Configure AP Diversity Settings
7.1.8  Lab Exercise: Configure Bridge Diversity Settings
7.2.6  Lab Exercise: Omnidirectional Antennas
7.3.4  Lab Exercise: Directional Antennas

Module 8: Security

8.2.4  Lab Exercise: Wireless Attacks and Countermeasures
8.3.1  Lab Exercise: Configure Basic AP Security through GUI
8.3.1  Lab Exercise: Configure Basic AP Security through IOS CLI
8.3.2  Lab Exercise: Configure Filters on AP
8.3.3  Lab Exercise: Configure WEP on AP and Client
8.3.3  Lab Exercise: Configure an AP as a Repeater Using WEP
8.3.3  Verify the Firmware and Driver Versions
8.4.4  Enabling Cisco LEAP for ACU 4.15.006
8.4.4  Configuring Cisco ACS
8.4.5 Lab Exercise: Configuring LEAP/EAP Using Local RADIUS Authentication

8.4.5 Lab Exercise: Configuring LEAP/EAP Using Cisco Secure ACS (OPTIONAL)

8.5.4 Lab Exercise: Configure Enterprise Security on AP

8.5.4 Lab Exercise: Configuring Site-to-Site Wireless Link Using Enterprise Security

8.5.4 Lab Exercise: BR1310 Configuring Site-to-Site Wireless Link using Enterprise Security

8.6.2 Lab Exercise: Configure VLANs on the AP

Module 9: Applications, Design, and Site Survey Preparation

9.3.9 Lab Exercise: WLAN Design

9.5.5 Lab Exercise: Link Status Meter and Preferences

9.6.2 Lab Exercise: Using the Bridge Range Calculation Utility

Module 10: Site Survey and Installation

10.2.7 Lab Exercise: Site Survey Active Mode

10.2.7 Lab Exercise: Survey the Facility

10.3.6 Lab Exercise: Mounting and Installation

10.4.2 Lab Exercise: Request for Proposal

10.4.2 Lab Exercise: RFP Response

10.4.2 Lab Exercise: Review of RFP Response

Module 11: Troubleshooting, Monitoring, Management, and Diagnostics
11.1.4 Lab Exercise: Basic Troubleshooting on AP

11.2.6 Lab Exercise: Troubleshooting TCP/IP Issues

11.5.6 Lab Exercise: Configure Syslog on AP

11.5.6 Lab Exercise: Configure SNMP on AP

11.5.6 Lab Exercise: Configure Syslog and SNMP on the Bridge

In this lab, students will configure and use syslog logging to monitor network events. Also, the student will configure the contact and location of the SNMP agent and test the configuration.