

UNIVERSITY OF GUAM
COLLEGE OF NATURAL AND APPLIED SCIENCES
CLASS SYLLABUS, SPRING 2016

INSTRUCTOR / GENERAL INFORMATION

Course Number and Title: **CS 403-01**
Course Name: **Data Communication & Computer Networking**
Instructor: Y. Joseph Zou, Ph.D.
Location of Class: Room 2, Ware House B (WH B)
Lecture Time: 11:00 am – 12:20 pm. Tuesday & Thursday
Instructor's Office: Room 8, Ware House B (WH B)
Office Hours: To be announced
Office Phone: (671)735-2829
Emails: yzou2002@yahoo.com, yjzou@ugum.uog.edu

CATALOG DESCRIPTION / PREREQUISITE

The course covers the following concepts: data communication and networking concepts; protocol and standards; distributed computing; local and wide area networks. Prerequisite: CS 360

COURSE DESCRIPTION

This course covers the basic concepts and principles of computer networks and data communications. Topics includes basic configuration of computer networks, OSI and TCP/IP models, fundamentals of data and signals, wired and wireless media, multiplexing, error detection and error control, LAN, MAN, WAN and Internet technologies, telecommunications systems, Network security, Network design and management.

COURSE OBJECTIVES

Upon completion of this course the student should be able to

- Gain a good understanding of the fundamental concepts and the principles of computer networks and data communications (e.g. configurations, protocols, OSI and TCP/IP models);
- Clearly understand the fundamentals of data and signal conversion,
- To use hardware and software for networks connection and multiplexing, and for network errors, error detection and error correction;
- Describe the principles and structures of the networks (LAN, MAN and WAN, Internet and World Wide web);
- Understand telecommunications systems and relations with networks;
- know networks security and principles of network design and management;
- Master skills to handle networks operating systems (NOS), e.g. MS Windows or LINUX through hands-on projects. The skills attained through the manipulation of NOS will be applicable to network administration of a client-server system utilizing the NOS.

COURSE MATERIALS:

Textbook:

Data Communications and Networking, 5th Edition

Behrouz A Forouzan

©2013, ISBN: 0073376221, McGraw Hill

Data Communications and Computer Networks: A Business User's Approach, Seventh Edition, Authors: Curt M. White ISBN: 0619160357 © Course Technology, 2012

Computing Laboratory:

Current account on the CS server will be required for which you have paid a laboratory fee. Sufficient disk space on the server should be available, but if you wish to maintain a backup copy of your work, you will need to purchase a sufficient number of 3.5" HD floppy disks or CD or DVD or USB to do so.

COURSE POLICIES AND PROCEDURES

1. Grading: The final course grade will be computed by the following way:

Class attendance & performance:	100 points
Labs and Assignments	200 points
Networks Project	250 points
Midterm Exam	20 0points
Final Exam	250 points
<u>Performance Bonus</u>	<u>50. Points</u>
TOTAL	1050 Points

Grade Scale:	A: 900 -1000 points
	B: 800 – 890
	C: 700 – 790
	D: 600 – 690
	F: below 600 points

- Attendance: The student is expected to attend all scheduled classes and is held responsible for all class work and assignments. Continued absences will result in an unsatisfactory grade report for the course. To be counted present, a student must be in the classroom during the scheduled class or lab time for **at least 80%** of schedule time.
- Tests: All students are required to be present for a test. If something extreme happens, and you can not make the test time, the student should immediately contact the instructor to receive permission before the test. Permission will be granted only under extenuating circumstances.
- Makeup Tests: Makeup tests will be given only under extenuating circumstances (major illness, death in the family, etc.). Students desiring a Makeup Test must

make arrangements with the instructor to take the test. A Makeup Test must be scheduled during office hours immediately after he/she returns school. If a student fails to take a Makeup Test within a week after the regular scheduled test, that student will receive a ZERO for the test missed.

5. Assignments: All assignments will be due ***on the DUE-DATE***. Late submission will be received for final grade consideration but will not be graded.
6. Final Exam: NO MAKEUP WILL BE GIVEN FOR THE FINAL EXAM. A grade of ZERO will be given to any student not present for the final.
7. Accommodation: If you a student with a disability who will require an accommodation to participate in this course, please contact me privately to discuss your special needs. You will need to provide me with documentation concerning your need for accommodations from EEO/ADA Office. If you have not registered with the EEO/ADA Office, you should do so immediately at 735-2244/2971/2243(TTY).
8. Cheating Policy. Students are expected to uphold the school's standard of conduct relating to academic honesty. Students assume full responsibility for the content and integrity of the academic work they submit. The guiding principle of academic integrity shall be that a student's submitted work, examinations, reports, and projects must be that of the student's own work. Students shall be guilty of violating the honor code if they:
 - Represent the work of others as their own.
 - Use or obtain unauthorized assistance in any academic work.
 - Give unauthorized assistance to other students.
 - Modify, without instructor approval, an examination, paper, record, or report for the purpose of obtaining additional credit.
 - Misrepresent the content of submitted work.

The penalty for violating the honor code is severe. Any student violating the honor code is subject to receive a failing grade for the course and will be reported to the Office of Student Affairs. If a student is unclear about whether a particular situation may constitute an honor code violation, the student should meet with the instructor to discuss the situation.

For this class, it is permissible to assist classmates in general discussions of computing techniques. General advice and interaction are encouraged. Each person, however, must develop his or her own solutions to the assigned projects, assignments, and tasks. A student may not use or copy (by any means) another's work (or portions of it) and represent it as his/her own.

9. Team or group work. In the hands-on networking lab assignments, we may divide students into groups and need teamwork to install, configure, and administer a client and server operation systems to complete network connection, cabling, testing and administration. In this way to let students work as a team to complete the assigned project.
10. Free tobacco campus policy. University of Guam is a non-smoking campus. Smoking tobacco is not permitted throughout the campus of the university.

11. Course and Lab Tentative Schedule

Week	Reading Assignment	Lab Assignment	Test Points	Lab Points
1	Ch1. Introduction & Networks Models	Networks LAN Project assigned		
2 - 3 4	Physical Layer Ch2. Data & Signal Ch3. Media	Communication software Project Assignment 1		50
5 6	Physical Layer Ch3. Connection Interfaces Ch4. Multiplexing	Communication hardware Project Assignment 2		50
7	Ch5. Broad and Base bands	Assignment 3		30
8	-----Spring break -----			
9	Midterm Ch6 Data Link Layer overview		200	
10 11	Data Link Layer Ch7. LLC Sublayer Ch8. MAC Sublayer	Assignment 4		20
12	Ch9. Client-server system	Assignment 5		20
13	Ch10. LAN Protocols	Assignment 6		30
14	Ch11. Network Layer and Transport Layer overview			
15	Ch12. Networks Management and Security	Networks LAN Project Due		250
16	Final Exam Review and Final Test		250	

UOG Expected Student Learning Outcomes

Some of the expected fundamental knowledge, skills, and values that the University of Guam student will have demonstrated upon completion of any degree are:

ILO1: Mastery of critical thinking & problem solving

ILO2: Mastery of quantitative analysis

ILO3: Effective oral and written communication

ILO4: Understanding & appreciation of culturally diverse people, ideas & values in a democratic context

ILO5: Responsible use of knowledge, natural resources, and technology

ILO6: An appreciation of the arts & sciences

ILO7: An interest in personal development & lifelong learning

GE QR Learning Outcomes:

UOG students will be able to apply analytical and quantitative reasoning (QR) to address complex challenges and everyday problems by:

1. Interpreting information presented in a mathematical and graphical form;
2. Representing information in a mathematical and graphical form;
3. Effectively calculating using quantitative data;
4. Analyzing quantitative information in order to scrutinize it and draw appropriate conclusions;
5. Evaluating the assumptions used in analyzing quantitative data
6. Communicating quantitative information in support or refutation of an argument.

Computer Science Program Learning Outcomes

CS PLO-1: (GE) Demonstrate competence with Windows and basic MS Office applications especially MS WORD, EXCEL, and PowerPoint.

CS PLO-2: Demonstrate technical competence in Programming:

- Analyze problems and create algorithm/heuristic solutions.

CS PLO-3: Demonstrate technical competence in Programming:

- Develop these using computer-programming methodologies in several programming languages.

CS PLO-4: Demonstrate technical competence in Systems:

- Identify and analyze system requirements, criteria and specifications.

CS PLO-5: Demonstrate technical competence in Systems:

- Design and implement human sensitive/compatible computer based systems using appropriate tools, methods and techniques.

CS PLO-6: Demonstrate technical competence in Systems:

- Effectively manage, organize, and retrieve all forms of information.

CS PLO-7: Demonstrate technical competence in Systems:

- Evaluate system design solutions and their risks.

CS PLO-8: Demonstrate technical competence in Databases:

- Be able to design and implement a functional database.

CS PLO-9: Demonstrate technical competence in Networks:

- Be able to design, install, administer, and maintain a computer network.

CS PLO-10: Demonstrate technical competence in Networks:

- Be able to setup, install, and use two different operating systems and be able to program client-server applications for them.

CS PLO-11: Develop socially, professionally, and ethically utilize these technical skills to construct robust, secure, beneficial (commercial, educational, social) systems i.e. NO Spam, Phishing, Hacking, Deceptive, Fraudulent, Criminal, or Terroristic systems.

CS PLO -12: Be able to process multimedia data including text, graphic, animation, audio and video data, and be skillful in developing web-pages and short-movies.

* Technical Competence means to be able to design, implement (build/code, test, debug), communicate effectively (in written, oral, and numerical forms), individually, and as part of a team.

Course SLOs:	Program Learning Outcomes (PLOs)	University Learning Outcomes (ILOs)	Method of Assessment
<i>After completion of CS403, students will be able to</i>			
Gain a good understanding of the fundamental concepts and the principles of computer networks and data communications (e.g. configurations, protocols, OSI and TCP/IP models);	CS PLO-4 CS PLO-5 CS PLO-9	IL-O-1 ILO-2 ILO-5 ILO-6	Hands-on projects, class-work & homework, quizzes and tests.
Clearly understand the fundamentals of data and signal conversion;	CS PLO-9 CS PLO-10	ILO-1 ILO-2 ILO-5	Hands-on computer projects, quizzes and tests.
To use hardware and software for networks connection and multiplexing, and for network errors, error detection and error correction;	CS PLO-6 CS PLO-7 CS PLO-12	ILO-5 ILO-6	Class and home projects, quizzes and tests.
Describe the principles and structures of the networks (LAN, MAN and WAN, Internet and World Wide web);	CS PLO-4 CS PLO-5 CS PLO-9 CSPLO-10 CS PLO-12	ILO-1 ILO-2 ILO-5	Projects, assignments, both written and hands-on exams
Understand Telecommunications systems and relations with networks;	CS PLO-4 CS PLO-5 CS PLO-6	ILO-3 ILO-5	Assignments on homework, quizzes and tests.
know networks security and principles of network design and management;	PLO-11	ILO-1 ILO-2 ILO-5 ILO-6	Projects, assignments, both written and hands-on exams
Master skills to handle networks operating systems (NOS) through hands-on projects.	CS PLO- 9 CS PLO -10 C PLO -12	ILO-5	Projects, written and hands-on exams
Master skills attained through the manipulation of NOS to be applicable to network administration of a client-server system .	PLO-9 PLO-10	ILO-1 ILO-2 ILO-5	Reports of project assignments, written and hands-on exams

CS425

SYSTEMS ANALYSIS & DESIGN

UOG, Spring 2016

Instructor: Dr. Carl Swanson

Office: Sci 226 Tel: 735-2827/25

Hours: MTWTh: 3:20-4:00pm; 5:50-6:40pm.

TEXT. Notes and Handouts

DESCRIPTION:

This course is an advanced topics class in programming computer systems. It functions as a capstone course, and teaches how to:

1. *Apply General Systems Theory to describe any system in terms of its components and sub-systems.*
2. *Identify and describe the purpose of a specified system.*
3. *Identify and describe the inputs, outputs, and resources of a specified system.*
4. *Design a system to achieve its specified purpose*
5. *Implement the designed system to transform the inputs and resources into the desired outputs to achieve its intended specified purpose.*

GRADING:

<u>Content:</u>		<u>Evaluation:</u>
Homework	30%	90% -100% => A
Tests & Quizzes	30%	80% - 89% => B
Final Project	30%	70%-79% => C
Class Participation	10%	60%-69% => D

Tentative Course Calendar is attached, but subject to change at instructor's discretion according to the needs of the class.

DISABILITY ASSISTANCE:

If you are a student with a disability who will require some accommodation to participate in this class, please contact me privately to discuss your specific needs. You will need to provide me with documentation from the University of Guam's EEO/ADA Office concerning your need for accommodation(s). If you have not yet registered with the EEO/ADA Office, please do so immediately by calling 735-2244/2243/2971 to coordinate your request for accommodation.

CS 425 –STUDENT LEARNING OBJECTIVES

2016.01.22

Upon successful completion of this course, students will be able to:

6. *Apply General Systems Theory to describe any system in terms of its components and sub-systems.*
7. *Identify and describe the purpose of a specified system.*
8. *Identify and describe the inputs, outputs, and resources of a specified system.*
9. *Design a system to achieve its specified purpose*
10. *Implement the designed system to transform the inputs and resources into the desired outputs to achieve its intended specified purpose.*

CS/CIS Program Learning Objectives:

- I. Demonstrate competence with **Windows** and basic **MS Office** applications especially MS WORD, EXCEL, and PowerPoint.
- II. Demonstrate **technical competence*** in **Programming**:
Analyze problems and create algorithmic/heuristic solutions.
Develop these using computer-programming methodologies in several programming languages.
- III. Demonstrate **technical competence** in **Systems**
Identify and analyze system requirements, criteria & specifications.
Design and implement human sensitive/compatible computer-based systems using appropriate tools, methods and techniques.
Effectively manage, organize, and retrieve all forms of information.
Evaluate system design solutions and their risks.

** **Technical Competence** means to be able to: design; implement (build/code, test, debug); communicate effectively in written, oral, and numerical forms individually, and as part of a team.*

Course SLOs:	Program Learning Outcomes (PLOs)	University Learning Outcomes (ILOs)	GE QR Learning Outcomes	Method of Assessment
CS425 SLOs 1-5 (above)	CS PLO's- I, II, III (above)	ILOs-1, 2, 3, ILOs-5, 6	QR-1, 2, 3 QR-4, 5, 6	Homework assignments, quizzes and tests.

WHERE, for the ILO's of the University:

UOG Expected Student Learning Outcomes (December 2008)

Some of the expected fundamental knowledge, skills, and values that the University of Guam student will have demonstrated upon completion of any degree are:

- ILO1: Mastery of critical thinking & problem solving
- ILO2: Mastery of quantitative analysis
- ILO3: Effective oral and written communication
- ILO4: Understanding & appreciation of culturally diverse people, ideas & values in a democratic context
- ILO5: Responsible use of knowledge, natural resources, and technology
- ILO6: An appreciation of the arts & sciences
- ILO7: An interest in personal development & lifelong learning

AND, for Quantitative Reasoning:

GE QR Learning Outcomes:

UOG students will be able to apply analytical and quantitative reasoning (QR) to address complex challenges and everyday problems by:

1. Interpreting information presented in a mathematical and graphical form;
2. Representing information in a mathematical and graphical form;
3. Effectively calculating using quantitative data;
4. Analyzing quantitative information in order to scrutinize it and draw appropriate conclusions;
5. Evaluating the assumptions used in analyzing quantitative data
6. Communicating quantitative information in support or refutation of an argument.

Tobacco-free/Smoke-free campus:

UOG is a tobacco-free, smoke-free, e-cigarette free and betel nut free campus. Thank you for not using the above products on campus, and for helping make UOG a healthy learning and living environment.

Academic dishonesty:

All assignments and tests must be your own work. The term "plagiarism" includes, but is not limited, to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials. Plagiarizing in your essay or cheating on tests will be punished with a mark of 0. If a plagiarized essay is not replaced with original work I will assign you a grade of F for the course. There will be no make up for tests. If you are not sure what plagiarism is and how to avoid it in using sources for your work, see www.indiana.edu/~wts/pamphlets/plagiarism.shtml— but be careful when paraphrasing not to change the meaning of scientific information. Answers you write on the tests must come only from in your head or the information supplied in the test papers; anything else is cheating. The term "cheating" includes, but is not limited to: (1) use of any unauthorized assistance in taking quizzes, tests, or examinations, e.g., looking at other students' answers, using crib notes (including electronic), getting information from another person via any kind of communication;

(2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; or (3) the

acquisition, without permission, of tests or other academic material belonging to a member of the University faculty or staff. If you need to use an electronic translator, you must discuss this with me in advance.

CS 425 CALENDAR

#	W <i>Starting Date 2015</i>	Topic
1	1/21	<i>Preliminaries; Concepts Survey</i>
2	1/26	<i>Review HW 8. SW Basics—</i>
3	2/02	<i>Early DP Strategies—</i>
4	2/09	<i>General Systems Theory</i>
5	2/16	<i>General Systems Theory</i>
6	2/23	<i>General Systems Theory</i>
7	3/02	<i>General Systems Theory</i>
8	3/09	<i>General Systems Theory</i>
9	3/16	<i>General Systems Theory</i>
10	3/23	<i>SPRING BREAK</i>
11	3/30	<i>General Systems Theory</i>
12	4/06	<i>General Systems Theory</i>
13	4/13	<i>General Systems Theory</i>
14	4/20	<i>General Systems Theory</i>
15	4/27	<i>Future Horizons</i>
16	5/04	<i>Presentations</i>
17	5/11	<i>Review</i>
18	5/18	<i>FINAL EXAM—Happy Vacation!</i>

UNIVERSITY OF GUAM
COLLEGE OF NATURAL AND APPLIED SCIENCES
COURSE SYLLABUS, SPRING 2016

1. INSTRUCTOR / BASIC INFORMATION:

COURSE: **CS 492-01 Practicum in Computer Science**
CREDIT HOURS: 1 - 3
INSTRUCTOR: Y. Joseph Zou, Ph.D.
SEMESTER: Spring 2016
MEETINGS: RM 2, WH B or at IT Office of Internship Company
OFFICE: Room 8, WB (Warehouse Building)
TELEPHONE: (671)735-2829
EMAIL: yjzou@uguam.uog.edu
OFFICE HOURS: To be announced

2. COURSE DESCRIPTION:

This course requires students to practice in a local area and wide area network environment by hands-on multi-user networking operating systems and all related applications on the network, establishing and controlling client-server computing capabilities, and performing network administration using tools such as Cisco Routers, different types of servers, clients and LAN and WAN protocols, other related hardware and software in telecommunications.

Through the on-site hands-on practice, students will be expected to administer TCP/IP or IPX/SPX as well as other protocol services, to be able to handle Wide Area Networking (WAN) equipments and protocols. The end result will be the establishment of a Windows- or LINUX-based server which the student will be able to manage all necessary internet services based on the principles of data communications and computer networks.

COURSE OBJECTIVES:

Upon completion of this course through internship the student should be able to

1. Attain visual and functioning knowledge of Networks routers, switches in a Corporate WAN (Wide Area Network) setting.
2. Attain knowledge of Networks servers and their functions in a Corporate-wide network.
3. Attain visual and functioning knowledge of media-gateways in an IP telephony environment.
4. Work with trouble-shooting, repairing and configuring Desktops and laptops, printers, and Xerox printers/copiers.

5. Attain knowledge of WAN Devices in the Micronesia Area and their applications, such as Frame-relay Access (FRADs), etc.
6. Gain knowledge of Networks receivers, controllers, terminals which are used widely and very reliable, especially wireless communication Networks.
7. Learn how to do simple Cat5e cabling and crimping, as well as coax cable for legacy equipment.
8. Experience different applications used for remote control of PCs and also remote updating with Microsoft's SMS and Remote Desktop.
9. Experience with Equipment Inventory in a corporate environment.
10. Experience with Customer Service dealing with users on a LAN/WAN environment
11. Experience with moving and relocating IP telephony Equipment.

COURSE MATERIALS:

Textbooks:

T. Dean: **Network + Guide to Networks**, 5rd Ed.
 ISBN 13-9781423902454 or 10-1423902459 @2010, Thomson Learning.

Data Communications and Networking, 5th Edition
 by Behrouz A Forouzan, ©2013, ISBN-0073376221 McGraw Hill

COURSE POLICIES AND PROCEDURES:

1. Grading: The final course grade will be computed by the following way:

Class & Internship Attendance	30 points
Internship Performance, Team Work and skill learned	40 points
Reports of Internship	30 points

90 – 100:	A
80 – 89:	B
70 – 79:	C
60 – 69:	D
59 more less	F

2. Attendance: The student is expected to attend all scheduled classes, interns and Labs and is held responsible for all class work and assignments in the interns. Continued absences will result in an unsatisfactory grade report for the course. To be counted present, a student must be in the classroom during the scheduled class or lab time for as least 80% of schedule time.
3. Project Assignments: All lab documents and project reports must be due on the DUE

DATE. Final Report must be submitted before final exam.

4. Internship at an IT industrial Company is actually an employee of the company, students must obey company's rules and regulations after signed an Internship Agreement.
5. **Accommodation:** If you a student with a disability who will require an accommodation to participate in this course, please contact me privately to discuss your special needs. You will need to provide me with documentation concerning your need for accommodations from EEO/ADA Office. If you have not registered with the EEO/ADA Office, you should do so immediately at 735-2244/2971/2243(TTY).
6. **Cheating Policy.** Students are expected to uphold the school's standard of conduct relating to academic honesty. Students assume full responsibility for the content and integrity of the academic work they submit. The guiding principle of academic integrity shall be that a student's submitted work examinations, reports, and projects must be that of the student's own work.

The penalty for violating the honor code is severe. Any student violating the honor code is subject to receive a failing grade for the course and will be reported to the Office of Student Affairs. If a student is unclear about whether a particular situation may constitute an honor code violation, the student should meet with the instructor to discuss the situation.

7. Submission Standard.

Make sure your name, student ID, and exercise number appear in the upper-left corner. If an exercise has multiple sheets, then staple them together. Do not staple different assignments together. Disorganized assignments (pages out of order, mislabeled, unreadable, etc.) will receive a grade of zero. If there are multiple sheets are to be handed in, then sequence them according to the order you were told to print them in the exercise.

8. Teamwork or Group work.

In the course project, students will be divided into several groups. Students will work as a group or team to help each other including assistance to those team members who are lagging behind classes or projects. A project's score is decided by two parts: 50% is from your group work (team performance) and another 50% is from individual effort.

9. **Tobacco-Free Campus Policy.** University of Guam is a non-smoking campus, please don't smoke in classroom or anywhere in the campus of this university.

10. Course and Lab Tentative Schedule

Week	Reading Assignment	Lab Assignment	Test Points	Lab Points
1	Ch1. Metropolitan Area Networks (MAN)	CS492 Report Guide lines given		
2	Ch2. Wide Area Networks - Network Layer - Transport Layer	WAN software Project Assignment 1		10
3	Ch3. US Telephone System	WAN Hardware Assignment 2		10
4	Ch4. Wireless Technology	Wireless Assignment 3		10
5	Ch5. Voice over IP	Internship Agreement signed		
6	Internship Starts			
7	-----Spring break			
8- 12	Internship companies visited			
13	Intern Evaluation Forms Issued			
14	Intern Companies visited			
15	Intern Evaluations collected			30
16	Internship Final Report Due			40

UOG Expected Student Learning Outcomes

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ILO2: Mastery of quantitative analysis

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ILO7: An interest in personal development & lifelong learning

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UOG students will be able to apply analytical and quantitative reasoning (QR) to address complex challenges and everyday problems by:

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2. Representing information in a mathematical and graphical form;
3. Effectively calculating using quantitative data;
4. Analyzing quantitative information in order to scrutinize it and draw appropriate conclusions;
5. Evaluating the assumptions used in analyzing quantitative data
6. Communicating quantitative information in support or refutation of an argument.

Computer Science Program Learning Outcomes

CS PLO-1: (GE) Demonstrate competence with Windows and basic MS Office applications especially MS WORD, EXCEL, and PowerPoint.

CS PLO-2: Demonstrate technical competence in Programming:

- Analyze problems and create algorithm/heuristic solutions.

CS PLO-3: Demonstrate technical competence in Programming:

- Develop these using computer-programming methodologies in several programming languages.

CS PLO-4: Demonstrate technical competence in Systems:

- Identify and analyze system requirements, criteria and specifications.

CS PLO-5: Demonstrate technical competence in Systems:

- Design and implement human sensitive/compatible computer based systems using appropriate tools, methods and techniques.

CS PLO-6: Demonstrate technical competence in Systems:

- Effectively manage, organize, and retrieve all forms of information.

CS PLO-7: Demonstrate technical competence in Systems:

- Evaluate system design solutions and their risks.

CS PLO-8: Demonstrate technical competence in Databases:

- Be able to design and implement a functional database.

CS PLO-9: Demonstrate technical competence in Networks:

- Be able to design, install, administer, and maintain a computer network.

CS PLO-10: Demonstrate technical competence in Networks:

- Be able to setup, install, and use two different operating systems and be able to program client-server applications for them.

CS PLO-11: Develop socially, professionally, and ethically utilize these technical skills to construct robust, secure, beneficial (commercial, educational, social) systems i.e. NO Spam, Phishing, Hacking, Deceptive, Fraudulent, Criminal, or Terroristic systems.

CS PLO -12: Be able to process multimedia data including text, graphic, animation, audio and video data, and be skillful in developing web-pages and short-movies.

* Technical Competence means to be able to design, implement (build/code, test, debug), communicate effectively (in written, oral, and numerical forms), individually, and as part of a team.

Course SLOs: After completion of CS492 students will be able to	Program Learning Outcomes (PLOs)	University Learning Outcomes (ILOs)	Method of Assessment
Attain visual and functioning knowledge of Networks routers, switches in a Corporate WAN (Wide Area Network) setting.	CS PLO-9 CS PLO-10	IL-O-1 ILO-2 ILO-5	Hands-on projects, class-work & homework, Internship
Attain knowledge of Networks servers and their functions in a Corporate-wide network.	CS PLO-9 CS PLO-10	ILO-1 ILO-2 ILO-5	Class and home Projects Internship Report
Attain visual and functioning knowledge of media-gateways in an IP telephony environment.	CS PLO-09 CSPLO-10	ILO-5 ILO-6	Class and home Projects Internship Report
Work with trouble-shooting, repairing and configuring Desktops and laptops, printers, and Xerox printers/copiers.	CS PLO-09 CSPLO-10	ILO-5 ILO-6	Class and home Projects Internship Report
Experience working with different equipment in a LAN, WAN, and Wireless Technology.	CS PLO-09 CSPLO-10	ILO-1 ILO-2 ILO-5	Projects, assignments; Internship Reports
Gain knowledge of Networks receivers, controllers, terminals which are used widely and very reliable, especially wireless communication Networks	CS PLO-09 CSPLO-10	ILO-5 ILO-6	Class and home Projects Internship Report
Learn how to do simple Cat5e cabling and crimping, as well as coax cable for legacy equipment.	CS PLO-09 CSPLO-10	ILO-1 ILO-2 ILO-5 ILO-6	Class and home Projects Internship Report
Experience different applications used for remote control of PCs and also remote updating with Microsoft's SMS and Remote Desktop.	CS PLO-09 CSPLO-10	ILO-3 ILO-4 ILO-5	Class and home Projects Internship Report