

Welcome to Regis University SPS
Local Area Networks
CN 300
(5 Week Module)

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Leave a voice mail if I do not answer.
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Course Description

CN 300 Course Description

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Course Description



FUNDAMENTALS OF COMPUTER NETWORKS introduces the underlying concepts of data networks. The course focuses on the terminology and technologies in current networking environments and provides a general overview of the field of networking as a basis for continued study in the field.

Format

Adult student participation techniques will be used to further the learning objectives and understanding of course content such as shared experiences among students whenever possible to assist experiential learning and peer education. Active student interaction and participation in the learning process is essential for lively stimulating course work.

Rich Text Format is required for written submittals; Visio format is not acceptable for drawings and/or schematics.

Requirements

Course participation includes thoughtful written contributions, active discernment and facilitating meaningful exchange of ideas, concepts and opinions.

Learning Objectives

Learning Topic #1: Computers and Software in Networks

This learning topic includes information on computer and computer software that is used in computer networks. We begin by looking at different types of computers and the internal components of computers. We also review the different categories of computers and computer software. The topic ends with a look at how information travels from the application running on a computer, through layers of software, across a computer bus and out to a computer network.

Topic Outcomes

- Describe the different types of computers found in a network
- Differentiate between the internal components of a typical computer
- List the different types of software found in computers
- Describe the flow of information from application to a network

Learning Topic #2: Carrier Signals, Cable Types, and Network

Topologies

The first topic focused on computer basics, from the application out to the Network Interface Card or NIC. This topic picks up at the point of information flowing from a computer out to the network. We first begin with a discussion on communication signals that represent information going between computer systems. We look at the different types of cables used in a computer network and how the cable type determines the configuration of the network or topology. We study the major types of topologies found in computer networks.

Topic Outcomes

- Describe the difference between baseband and broadband signals
- List the major types of computer cables used in networks
- Describe the operation of coax, twisted pair and fiber optic cables
- List the major topologies found in computer networks

Learning Topic #3: Computer Protocols and Services

This topic includes information on computer protocols, the languages used for computer communications. In this topic we review the purpose of a protocol and how protocols are used to send and receive information between two or more computers. We also show how different layers of protocols are needed to communicate between computer processes.

Topic Outcomes

- Describe the purpose and function of a computer protocol
- Understand how computer processes, programs and protocols are related
- Describe the purpose of protocol stacks
- Understand the function of encapsulation and decapsulation of protocol headers

Learning Topic #4: The OSI Model

The Open Systems Interconnection (OSI) Model is studied for two purposes. The first is that it provides a reference point for understanding complex data networks. It is also studied because many of the systems implemented in corporate networks today use OSI model standards. This topic covers the lower four layers: Physical, Data Link, Network, and Transport.

Topic Outcomes

- Name the lower layers of the OSI model and give their relative position in the stack.
- Describe the services that the layer provides to the layer above it
- Name some of the common protocols used by each layer
- Describe the unit of information that is found at each layer.
- Explain the reason for needed three addresses for moving information across a network
- Describe the function and purpose of a frame address
- Describe the function and purpose of a network address
- Describe the function and purpose of a process address
- Describe how the lower four layers work together to get information from one computer to another using a network

Continued

Learning Topic #5: Network Components

This topic looks at the components that connect homogeneous and heterogeneous architectures. Among the topics covered are repeaters, bridges, routers, gateways hubs and switches.

Topic Outcomes

- Understand the functions of a repeater
- Understand the functions of a bridge
- Understand the functions of a router
- Understand the functions of a gateway
- Understand which situations call for each of the above devices
- Identify the layer of the OSI model that corresponds to the different types of internetworking components.
- Understand when to bridge, route or switch.
- Understand network management issues and concerns.

Learning Topic #6: Local Area Networks

This topic includes information on LAN systems such as Ethernet, Token Ring, and FDDI, which provide the infrastructure for a majority of implemented networks. It also takes a look at emerging LAN technologies such as Fast Ethernet and Wireless LANs.

Topic Outcomes:

- Identify important characteristics of baseband and broadband transmission and give the important characteristics of the baseband standards.
- Contrast the characteristics of bus, pure ring, and star ring topologies.
- Identify the components of the OSI 8802 (IEEE 802) protocol suite, showing their relationship to one another.
- Explain why collisions occur in a CSMA/CD network.
- Explain CSMA/CD message transmission logic.
- Explain how tokens are inserted onto and removed from a Token Ring.
- Explain why Token Ring exhibits better performance characteristics than CSMA/CD under conditions of heavy load.
- Give the rationale for FDDI's dual rings.
- State the maximum throughput of the Ethernet, Token Ring, Token Bus, and FDDI LAN Standards.

Learning Topic #7: Wide Area Networks

This topic covers the subject of Wide Area Networking, and how voice networks have changed to accommodate the needs of data communications. This section covers point-to-point and switched Wide Area Networks (WANs).

Topic Outcomes

- Describe basic Wide Area Networking services
- Understand the strengths and weaknesses of major point-to-point Wide Area Network options
- Understand the characteristics of switched WAN options
- Understand the function of common WAN components and systems
- Contrast switched versus point-to-point technology

Learning Topic #8: Integrating the Course Elements

The purpose of this learning topic is to integrate the major concepts presented in the course and to analyze the components required for operation of networks.

Topic Outcomes

- List the requirements for building a peer-to-peer network
- Understand how traffic can be isolated using switching products
- Describe the flow of information between client and server across a LAN
- Describe the flow of information between client and server across a WAN



Required Text

WestNet Learning Technologies, Introduction to Networking w/CD ROM, WestNet Learning Technologies; WB17.0, Revised Edition 2001, ISBN: 1-58676-114-5.

Errata: Text errata pages 69, 111, 363, 475

Additional readings may be selected from various sources. Students are encouraged to present additional course-related materials to the class at their own initiative.

Reading assignments are assigned in the Syllabus as well as occasionally throughout the course. Assignments are required, unless specifically designated as optional.

Rules of the Road

Let me begin by saying that I want as few rules as possible and want to stimulate participation and interaction. My role is to guide the process. However, I must also manage the process.

Our Roles

My role will be to guide the learning process. I make the assignments and evaluate your progress (through participation, depth of analysis and the written assignments). I will make input to help you understand an issue or to clarify a concept. I will try to summarize and synthesize what has been discussed and will provide feedback on your investigations.

Your role is not just to assemble facts through reading or searching the internet, book or the media. Your role is to analyze and synthesize, to think things through by drawing on your experience, the experience of the community, and using all of those "make a leap".

Format

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Rich Text Format is required for written submittals; Visio format is not acceptable for drawings and/or schematics.

Requirements

Course participation includes thoughtful written contributions, active discernment and facilitating meaningful exchange of ideas, concepts and opinions.

Ethics Statement

An integral component of SPS Undergraduate Program courses is student and facilitator/instructor self-disclosure and the use of personal experiences for the purpose of facilitating coursework. Each student is expected to honor confidentiality as it pertains to student disclosure. No shared information, comments, or opinions expressed by another student or facilitator/instructor in the educational setting should ever be used in a manner which is intended to humiliate, embarrass, harass, damage, or otherwise injure the student in his/her personal, public or business life. In addition, confidentiality must be upheld by not disclosing any information, which would identify a particular individual or organization.

An additional integral component of higher education is challenging one's own perceptions and beliefs regarding the course content and integrating information as well as understanding opposing perceptions and beliefs. Thus, students have the right to choose how much he/she will disclose and must also accept the responsibility of respecting disclosure of other students and facilitators/instructors.

Academic Dishonesty

Regis University is committed to intellectual integrity in its academic pursuits. The University's policy prohibits all forms of academic dishonesty. Academic dishonesty is normally defined by, though not necessarily limited to, the following categories:

Cheating - defined as using inappropriate sources of information on a test or assignment.

Plagiarism - defined as presenting as one's own, the ideas, words, or products of another.

The academic dishonesty policy, as stated in the Regis University Bulletin, applies to all courses, regardless of learning format. The academic dishonesty policy also applies to any assignment or exam submitted by a student, whether in person or by electronic means.

Attendance Policy

The expectation is for students to attend all classes and dress in an appropriate manner such as "business casual". Because of the accelerated nature of the course work in the School for Professional Studies, missing any class may have a negative impact on the student's learning and course

performance. Any student who misses the first class due to emergency circumstances must contact the facilitator/instructor or the Faculty and Curriculum department prior to the course starting. If the student fails to do so, they will automatically be dropped from the course and assessed a drop fee. Recognizing emergency circumstances do occur, the following guidelines are available for students and facilitators/instructors.

Make up work should be required if the student misses a class. This work is arranged, in advance, between the facilitator/instructor and the student. The student is responsible for contacting the facilitator/instructor for the additional assignment(s).

Number of Class Meetings	Number of Absences
Five Meetings (20 hours)	One
Ten Meetings	One (class meets twice weekly 25 hours)
Eight Meetings (32 hours) Sixteen Meetings	Two
Sixteen Meetings	Two (class meets twice weekly 32 hours)

Definition of Participation

The collaborative adult learning model Regis University implements require students to participate and actively engage in the learning process. Participation is not the same as attendance. Attendance is simply being present in the classroom but does not require the student to actively participate.

Participation requires students to be actively involved in the learning process, which makes the classroom experience more meaningful. The contributions made by the student should be related to the course content and meaningful to the class discussion. You are expected to participate. If you have a great deal of experience in a particular subject so much the better. Your expertise adds to the learning process. **Please see the Grading Criteria section below in order to fully understand the essentials of participation.**

Office Hours

Office hours are Monday through Friday 6 p.m. to 9 p.m. (U.S. Mountain Time). I will need prior notification if you wish to have a one-on-one telephone conversation during these times; with pre-arrangement, I am available on special request at other times. I will advise the class if there is any change in this arrangement.

E-mail

Written assignments will be sent to me by e-mail, as an attachment. Please try to use Microsoft Word, in any case, save the attachment in Rich Text Format (RTF). If you have a different word processor/office set-up, please let me know so we can negotiate the differences.

Please use the following file naming convention for e-mailing assignments:

1. Send as an attachment and be sure to put your name within the file (on the document).
2. Name the written assignment file with your first initial and last name, the week of the class assignment, and a description of the assignment.
3. The prefix in the subject line of the email should read "CN457" and your name.

Examples follow:

jrichardsW01U01L02 Activities.rtf (from Judy Richards Week 01 Unit 01 Lesson 02 Activities assignment)

Deadlines and Basis of Grades

There are deadlines for assignments; note CN457 assignments must be emailed to me each Friday of the week. That means that I will be using the weekends to review your work. I will return your work by email with a grade as soon as possible. Please try to make deadlines. If you cannot, you must let me know. If you have a good excuse, we can negotiate. If you do not, expect that lateness will reduce your grade by 25%. There may be options offered in order for you to make up work, if necessary. Except under extraordinary circumstances, I will not accept work more than 1 day late.

Assignments

All assignments are typewritten, double spaced, 12 pt Font. Grammar,

punctuation and critical thinking are imperative to your success and assignments will be graded accordingly. Written assignments will be graded: 25% mechanics/grammar, 25% quality of presentation and organization, and 50% for analysis. You may use the American Psychological Association (APA) format. Regis has an online writing program (OWL) if you need help in this area - see regis.edu for more information. As mentioned above, I will return all assignments with a grade as soon as possible.

Emergency Contact

If you want to discuss something with me on a confidential basis please contact me at 303-664-1339. I can usually be reached between 6-9 p.m. (US Mountain Time), leave a detailed message if I do not answer. Of course, you may contact me at my email address, jlrichar@regis.edu.

Disabilities

If you have a documented disability requiring academic adjustments for this class, please contact Dr. KoKo Oyler, Director of Disability Services (303-458-4941), koyler@regis.edu). She will review your documentation with you and help determine appropriate, reasonable accommodations. Following the meeting with Dr. Oyler, please make an appointment with me, as your instructor, to discuss your accommodation request in light of the course requirements. You may self-disclose and request an academic adjustment any time during the term. However, I strongly recommend that you do so as soon as possible, because accommodations are not provided retroactively and adequate lead-time is required.

Flexibility

You may have questions about the class set up, while we have a syllabus and outline, I am flexible. If circumstances and expectations dictate, we can modify this course as necessary.

Grading Criteria

For the official Regis definitions regarding grades, attendance, ethics, see below; I will use these definitions as my guide for determining grades, attendance and ethics issues.

Definition of Letter Grades

- A = Demonstrates an accurate and sophisticated understanding of the readings and issues. Does more than repeat what the text says or what was said in class. Draws out additional important implications. Shows a critical stance toward opinions expressed in class or in the readings. Expresses his/her own views articulately and defends them well. Shows originality of thought in expressing the critical stance, in drawing out additional implications from the readings and class discussions, and in finding personal meaning in the readings and issues discussed. Expresses his/her ideas clearly. Papers contain minor grammatical or stylistic weaknesses.
- B = Shows all the elements of A work, but with less accomplishment. There is still accurate understanding of readings and issues with a demonstrated ability to do more than repeat the text; a critical stance with some effort, not always successful, to defend that stance; some attempt to find personal meaning, with at least hints of originality and creativity of thoughts and ideas.
- C = Overall demonstrates an accurate grasp of the readings and issues, but with some inaccuracy and without deeper sophistication and the ability to draw out additional implications. Some attempt to take a critical stance, but with little effort or success in defending that stance. Some attempt to find personal meaning. Sufficient clarity of expression to communicate ideas, but stylistic or grammatical weaknesses creates some difficulties.
- D = An effort to understand has been made, with some demonstrated understanding of readings and issues, but with serious deficiencies. Generally lacking in critical stance or in a defense of that stance. The attempt to find personal meaning is either lacking or greatly hindered by difficulties in understanding.
- F = Simply an unsatisfactory effort in key respects, especially in understanding or clarity of expression.

Awarding of Incomplete Grades

A grade of "I" denotes that the required work for the course is incomplete due to extraordinary circumstances. The student must specifically request in

writing from the instructor that such a grade be assigned. If accepted, the facilitator/instructor is responsible for establishing the time frame for completing the course requirements. This should be done as quickly as possible and communicated, in writing, to the student. The recommended time frame for completing the course requirements is within 30 days of the end of the course. However, the maximum allowable time to complete an incomplete grade is defined as the end of the semester following the semester during which the I/alternate grade was assigned. Spring semester grades are an exception; they are due at the end of fall, not summer, semester.

When submitting a grade of "I", the facilitator/instructor will also submit an alternate grade (e.g. "I/C", "I/D", etc.). The alternate grade will become the permanent grade if the facilitator/instructor does not submit a final grade by the end of the maximum time period. The alternative grade is the grade the facilitator/instructor determines the student should receive in the event that the student fails to complete the required work.

Deadlines and Basis of Grades

There are deadlines for assignments; note CN457 assignments must be emailed to me each Friday of the week. That means that I will be using the weekends to review your work. I will return your work by email with a grade as soon as possible. Please try to make deadlines. If you cannot, you must let me know. If you have a good excuse, we can negotiate. If you do not, expect that lateness will reduce your grade by 25%. There may be options offered in order for you to make up work, if necessary. Except under extraordinary circumstances, I will not accept work more than 1 day late.

Grading Criteria

Understanding of course content will be analyzed using the following activities:

Written assignments will be graded on the following criteria:

25% mechanics/grammar

- Citations/reference page follow guidelines
- Properly cites ideas/info from other sources
- Paper is laid out effectively--uses, heading and other reader-friendly tools

Paper is neat/shows attention to detail
Rules of grammar, usage, punctuation are followed
Spelling is correct
Sentences are complete, clear, and concise
Sentences are well-constructed with consistently strong, varied structure
Transitions between sentences/paragraphs/sections help maintain the flow of thought
Words used are precise and unambiguous
The tone is appropriate to the audience, content, and assignment

25% quality of content and organization

Executive summary is provided
The introduction provides a sufficient background on the topic and previews major points
Central theme/purpose is immediately clear
Structure is clear, logical, and easy to follow
Subsequent sections develop/support the central theme
Conclusion/recommendations follow logically from the body of the paper
The introduction provides a sufficient background on the topic and previews major points
Central theme/purpose is immediately clear
Structure is clear, logical, and easy to follow
Subsequent sections develop/support the central theme
Conclusion/recommendations follow logically from the body of the paper

50% for analysis

Key elements of assignments covered
Content is comprehensive/accurate/persuasive
Displays an understanding of relevant theory
Major points supported by specific details/examples
Research is adequate/timely
Writer has gone beyond textbook for resources
Writer compares/contrasts/integrates theory/subject matter with work environment/experience
At an appropriate level, the writer analyzes and synthesizes theory/practice to develop new ideas and ways of conceptualizing and performing

Oral presentations assignments will be graded on the following criteria:

Content

- Presentation content clearly follows the written paper upon which it is based (if applicable)
- Topic is relevant and addresses assignment specifications
- Content presented is comprehensive, accurate, and believable
- Key points are noted
- Topic is researched adequately

Organization/Structure

- Presentation is well-organized, clear, and effectively structured
- If this is a group presentation, it is integrated rather than being a disjointed series of individual presentations
- There is an introduction to gain the audience's attention and explain the purpose of the presentation

Style/Presentation/Appearance

- Dress and grooming are appropriate to the setting
- Non-verbal cues/gestures are appropriate to presentation and flow of ideas
- Content knowledge/confidence are evident
- Time was used well/not rushed

Use of Visual Aids

- Visual aids are used where appropriate
- Visual aids are appropriately professional given the presentation's context
- They are easy to see/read
- Media are used correctly--i.e., overheads, videos, computer generated slides, charts, etc.
- Visual aids contribute to the overall effectiveness of the presentation

Audience Participation

- The presenter(s) involved the audience and solicited feedback
- Questions from the audience are effectively addressed and answered correctly

Adherence to Time Limit

- The presenter(s) stayed within the allotted time limit (Failure to do so may result in a *deduction* of points)

Participation Policies

Class participation is 10% of your grade and will include interaction and discussions during class period, including all in-class exercises, small group and large group discussions and facilitated discussion. Thinking, being creative, curious and sharing of your ideas with the class is important.

Guidelines for Evaluation of Class Participation			
Grade	Criteria	Points	Percentage
"A" Level	<p>In addition to the lists below, students who are judged to have excellent participation will also ask questions which:</p> <ul style="list-style-type: none"> • Clarify and synthesize discussion • Relate their ideas and/or experience to classroom topics • Contribute examples or counter-examples which are relevant to classroom topics • Challenge what is being taught with logic, examples and consideration • Acknowledge and extend the ideas and contributions of others • Relate content from class materials, readings and experiences to the discussion 	<p>20.00-18.5 100-93% (Active in class discussions, shares ideas, raises issues.) 18.49-18.0 92-90% (Interacts with class, discusses issues and subject matter.)</p>	
"B" Level	<p>In addition to the list below, students who are judged to have good participation will also:</p> <ul style="list-style-type: none"> • Speak in class • Give eye contact and attention to whomever is speaking • Listen thoughtfully and attentively 	<p>17.99-17.5 89-87.5% (Was responsive to issues and class discussions when asked.) 17.49-16.5 87-83% (Was "alive" during class, with some good contribution.) 16.49-16.0 82-80% (Was "alive" during class but contribution was minimal.)</p>	
"C" Level	<p>Students who are judged to have just adequate participation will:</p> <ul style="list-style-type: none"> • Be present for the entire class • Be on time when returning to class • Have all necessary materials • Provide intelligent and informed responses to inquiries 	<p>15.99-14.5 79-73% (Was "alive" during class, but not obvious to other students.) >14.49 > 72% (Was "alive" but all academic vital signs were non-functional.)</p>	

A final letter grade will be assigned according to the following criteria:

Letter Grade	Percent
A	90 - 100%
B	80 - 89%
C	70 - 79%
D	60 - 69%
F	<60%

Criteria	Percent of Total
Attendance	5%
Participation	10%
Weekly Activities	20%
Weekly Quizzes	20%
Final Exam	25%
Outline	05%
Oral Presentation	15%

CN 300

Introduction to Local Area Networking

(5 Week Module)

This syllabus and assignments document takes precedent over all documents that are otherwise available to date.

Week 1: Computers & Software in Networks - Unit 1

Preliminary Work

ASSIGNMENTS LISTED HERE ARE PART OF ADVANCE CLASS PREPARATION AND SHOULD BE COMPLETED PRIOR TO THE CLASS FOR WHICH THEY ARE ASSIGNED.

Required Reading:

All documents: Faculty, Course Description, Text, Rules of the Road, Grading and Syllabus & Assignments.

Read **Unit 1**, Lessons 1-4

1. Send to facilitator: email address and information regarding your virus protection software (no graphics) as well as the date of the last virus signature update by Friday.
2. Submit All Activities to Facilitator by Friday. The Extended Activities are not required.
3. Submit Unit 1 quiz to Facilitator by Friday.

Lecture Unit 1 and Unit 2, Lessons 1 & 2

- Introductions
- Choose Class Representative

Assignment for next week:

Read **Unit 2** lessons 1-6

Read **Unit 3** lessons 1-3

Week 2: Carrier Signals, Cable Types, & Network Topologies - Unit 2 Computer Protocols & Services - Unit 3

Units 2 & Unit 3

Read **Unit 2**, Lessons 1-6

1. Submit the first two activities for each lesson to Facilitator by Friday.
2. Submit Unit 2 Quiz By Friday.

Read **Unit 3**, Lessons 1-3

3. Submit the first two activities for each lesson to Facilitator by Friday.
4. Submit Unit 3 Quiz By Friday
5. Submit for approval a one page outline of your 10 to 15 minute detailed oral presentation regarding a CN300 subject due Week 5.

Lecture **Unit 2, Lessons 3>** and **Unit 3**

Assignment for next week:

Read **Unit 4** lessons 1-8

Read **Unit 5** lessons 1-6

Week 3: The OSI Model - Unit 4

LANs - Unit 5

Unit 4

1. Submit your Detailed Outline for your Presentation.
2. Submit the first two for each lesson to Facilitator by Friday.
3. Submit Unit 4 Quiz By Friday.

Unit 5

4. Submit the first two activities for each lesson to Facilitator by Friday.
5. Submit Unit 5 Quiz By Friday.

Lecture Units 4 and 5

Class Representative Report

Assignment for next week:

Read **Unit 6** lessons 1-5

Read **Unit 7** lessons 1-3

Week 4: Network Components - Unit 6

WANs - Unit 7

Unit 6

1. Submit the first two for each lesson to Facilitator by Friday.
2. Submit Unit 6 Quiz By Friday.

Unit 7

3. Submit the first two activities for each lesson to Facilitator by Friday.
4. Submit Unit 7 Quiz By Friday.

Lecture Units 6 and 7

Assignment for next week:

Read **Unit 8** lessons 1-4

Week 5: Integrating the Course Elements - Unit 8

Unit 8

1. Submit the first two activities for each lesson to Facilitator by Friday.
2. Submit Unit 8 Quiz By Friday.
3. Submit Final Exam by Friday.
4. Be prepared to present your detailed 10 to 15 minute Oral Presentation on a CN 300 subject of your (previously approved) choice.

Lecture Unit 8 & Presentations

5. Course Evaluation.