# CYBR201: Introduction to Computer Networking

# College of Graduate and Continuing Studies, Norwich University

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## Course Description

**3 credits**

This course explores the convergence of computer networking and telecommunications technologies. Capabilities and limitations of converged networking infrastructure are analyzed through voice, data and video applications in relation to performance, management and security challenges.

This course is the study of the core theories and protocols that are the foundation of computer networking. The Open Systems Interconnection (OSI) model and the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite are discussed in detail. This course provides a detailed overview of networking terminology, while examining the different networking topologies and architectures.

Pre-requisites: None

## Course Outcomes

Students who complete the course will be able to:

- Explain how the evolution of communications and networking technologies has produced new business solutions
- Differentiate between the standards, specifications, and technologies that drive current LAN connectivity
- Examine the TCP/IP protocol family and how IP is used to support voice, video, data, and Internet communications
- Analyze how Layer 2 networking technology is used for end-point connectivity and developing VLAN resiliency to meet business requirements
- Describe how Layer 3 networking protocols are used to establish communications over the network
- Describe the wireless standards and security methodologies used to increase business productivity
- Explain how VoIP allows modern networks to carry regular voice traffic
- Describe unified communications and Session Initiation Protocol
- Analyze how fault, configuration, asset control, performance, security (FCAPS) is used for network management

## Weekly Outline

| Week | Topic | Readings | Assignments |
|---|---|---|---|
| Week 01 | Today's Communications Requirements and Challenges | Week 1 lecture; Ch 1& 2 Pgs 1-55 | Week 1 discussion; |
| Week 02 | The Evolution Of Communications and Ethernet | Week 2 lecture; Ch 3 Pgs 56-89 Ch 4 Pgs 92-124 | Week 2 discussion; Research Paper #1 Due Sunday |

| Week 03 | TCP/IP and Wireless LAN Standards | Week 3 lecture; Ch 5 Pgs 125-159 Ch 9 Pgs 244-280 | Week 3 discussion |
|---|---|---|---|
| Week 04 | Layer 2 and Layer 3 Networking | Week 4 lecture; Ch 6, 7 & 8 Pgs 160-243 | Week 4 discussion; Research Paper #2 Due Sunday |
| Week 05 | Voice over Internet Protocol, Unified Communications and Session Initiation Protocol | Week 5 lecture; Ch 10 & 11 Pgs 281-342 | Week 5 discussion; |
| Week 06 | Network Performance | Week 6 lecture; Ch 12 & 13 Pgs 346-391 | Week 6 discussion; Research Paper #3 Due Sunday |
| Week 07 | Network Performance and Security | Week 7 lecture; Ch 14 & 15 Pgs 392-442 | Week 7 discussion |
| Week 08 | Final Project Completion | | Week 8 discussion; Final Project |

## Required Textbooks

Required textbook for this course:

- **Solomon, Kim, and Carrell. (2015).** *Fundamentals of communications and networking (2nd ed.).* **Jones & Bartlett Learning.**

In lieu of a writing handbook, we strongly recommend that students use the *Purdue Online Writing Lab* as a primary writing resource. Your instructor will provide additional writing guidance.

## Discussion Groups

In this course, you will be assigned to a small discussion group (if class size permits). Each week your group will discuss one (1) question, all of which will be graded. The quality of your posts and those of your fellow students will create a lively discussion and ensure that a high level of learning takes place. You are expected to contribute at least three posts to each question every week. Your first post should be substantive (approximately 150-250 words) and it should be made by Tuesday at the latest (Note: the earlier you make your initial posts, the more your classmates, and you, will have to work with). It should answer the question using your own experience, if appropriate, and, very importantly, it should refer to the readings of that week, using correct citations. You should all conduct additional readings and research beyond the readings and resources provided for each week. Your second two posts should be responses to posts of your fellow group members. Responses such as, "Good point," or, "I agree," are not sufficient. Your response posts should be substantive –ask questions, point out additional thoughts, spur deeper insights and thoughts, etc. Posts should build on the course content and add momentum to our collective learning. Disagreement and critical feedback are part of an academic classroom, as is respect for the diversity of opinion. Above all, respect for each other as learners is paramount. Challenging, disrespectful, abusive, or profane language will not be tolerated in any form.

For more information about what is expected in regard to discussion postings, please review the Weekly Discussion Rubric and Discussion Guidelines in the Resource area of this classroom.

## Assignments

## RESEARCH TOPIC/PAPERS

*Three Research Paper Assignments:* Each will be a 3-4 page research paper. All papers are to be written using the APA formatting with a cover page.

## FINAL PROJECT

*Network Design Proposal:* 8-12 page Project Report and 10-12 slide Project Presentation with at least six external sources. APA formatting with a cover page is required.

In Week 4 your need to submit a proposal to your instructor a project title in an un-graded dropbox. **Do not begin working on your paper until your instructor approves your title**.

## Quizzes

A weekly 20 question, multiple choice quiz will be opened every Friday in the weekly outline. ALL course material will be testable (discussions, readings, instructor comments/slides) for the content of the week. These quizzes are 20 questions from a larger pool, are timed, only open for Friday and Saturday, and only allowed to be taken one time. If you will have trouble with fitting the quizzes into your schedule due to travel or other special circumstances, please contact your instructor *immeadiately* to make arragements.

All quizzes and exams are timed and will automatically submit when the time runs out - even if the student is not finished. Each quiz and exam will be open for 2 days and the student will have one attempt.

If the student will have any trouble with the quizzes or exams (scheduling, amount of time, etc.) make sure to contact the instructor immediately. If the student has any problem with any of the questions in the quizzes or exams they should note the question number and copy the **entire** text of the question and send the instructor an email explaining the problem. For example, if there is a spelling mistake that would make an otherwise correct answer wrong or the textbook not agreeing with the answers.

## Late Paper Submission

It is important that writing assignments and discussion posts be completed on time. Extensions of deadlines will be given only for serious extenuating circumstances. In the absence of such extensions, assignments may be downgraded for lateness at the discretion of the instructor.

## Grades

You will be provided a weekly commentary/lecture and have required readings, discussion, assignments and quizzes. There will be reading and discussion every week and a number of written assignments and exercises, which are explained thoroughly in the week they are due. Participation in discussion topics/groups will be evaluated as well. Quizzes are electronicly graded. The course grade is distributed across the components listed below, with both points and percent of final grade indicated.

As a student in this course, you have a number of responsibilities that will affect the level of learning you achieve. These responsibilities include: 1) working actively to create a challenging and useful learning experience for yourself, your discussion group and the class as a whole; 2) encouraging and supporting the learning of each member of the class in all activities; 3) preparing and participating fully in discussions as well as group and/or class activities; and 4) completing all assigned work on time or making prior arrangements if an absence of late submission is unavailable.

All written academic work must be submitted by the deadline specified in the assignment and late submissions must be telephonically discussed with the instructor. Written work must be formatted in accordance with the

*Publication Manual of the American Psychological Association* (6th Edition) and will be graded in accordance with the **APA Guidelines for Written Work** as detailed in the respective rubric.

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1. Working actively to create a challenging and useful learning experience for yourself, your discussion group and the class as a whole.
2. Encouraging and supporting the learning of each member of the class.
3. Preparing and participating fully in discussions as well as group and/or class activities. and
4. Completing all assigned work on time or making prior arrangements if an absence of late submission is unavailable.

The course grade will be determined as follows:
There are a possible **1000** points awarded for the required number of assignments, discussions, and quizzes over the course of the course.
Please note that the Final Network Design Project is worth almost ½ of the course total.

| Graded Activity | # Required | Points per Activity | Total Points | % of Grade |
|---|---|---|---|---|
| Weekly Discussions (8 x 25 pts) | 25 | 8 | 200 | 20% |
| Weekly Quizzes (8 x 25 pts) | 25 | 8 | 200 | 20% |
| Research Papers (3 x 50 pts) | 50 | 3 | 150 | 15% |
| Final Network Design Project | 450 | 1 | 450 | 45% |
| TOTAL | | | 1000 | 100% |

Letter grades for the course will be based on the following grading scale:

| Letter Grade | Percentage | Grade Point |
|---|---|---|
| A | 93-100% | 4.0 |
| A - | 90-92.9% | 3.7 |
| B + | 87-89.9% | 3.3 |
| B | 83-86.9% | 3.0 |
| B - | 80-82.9% | 2.7 |
| C + | 77-79.9% | 2.3 |
| C | 75-76.9% | 2.0 |
| C - | 73-74.9% | 1.7 |
| D + | 70-72.9% | 1.3 |
| D | 67-69.9% | 1.0 |
| D- | 63-66.9% | 0.7 |
| F | 0-62.9% | 0.0 |

For complete information on the Grading Policy for Bachelor Degree students, please refer to the CGCS Online Catalog (Sub-Section of Catalog on "Grades.")

## Academic Honesty and the Norwich University Honor Code

A student must submit work that represents the student's own original analysis and writing. Copying another's work is not appropriate. If the student relies on the research or writing of others, the student must cite those sources. Words or ideas that require citations include, but are not limited to all hardcopy or electronic publications, whether copyrighted or not, and all verbal or visual communication when the content of such communication clearly originates from an identifiable source. While students are encouraged to seek editing feedback, extensive revisions of one's work by another person is considered a lack of academic honesty, as it is representing another student's work as one's own.

For more information see:

Academic Dishonesty
Academic Integrity
Norwich University Honor Code

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## Section 504 of the Rehabilitation Act of 1973/ADA

Please consult Appendix H: University Policy - Section 504 of the Rehabilitation Act of 1973/Americans with Disabilities Act (ADA) for instructions on obtaining an accommodation.

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Disclaimer: Please note the specifics of this Course Syllabus are subject to change. Students are responsible for abiding by any such changes. Your instructor will notify you of any changes.