Fall 2023

IT 220 - 101: Wireless Networks

Daniel Martino

IT220: WIRELESS NETWORKS

Your Professor: Daniel G. Martino

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My Office Hours:

This semester's office hours are as follows:

- https://njit.webex.com/meet/dgm9
- Before or after class
- To be arranged

Course Materials

Textbook:

TEXTBOOK: CWNA Guide to Wireless LANs, 3rd Edition by Mark Ciampa, Pearson Learning, 2012, **ISBN13:** 978-1133132172 **or newer edition**

Software:

No additional software is required.

Storage:

Some places to store files like Flash Drive, OneDrive, Google Drive, Box, etc.

General Description of Course (Catalog Description)

This course introduces the students to the applied topic of Wireless Networks, focusing on applied methods, tools, and technologies, as well as practical experience in designing & implementing wireless networks. Topics include hardware, software, data, applications, communication, design & installation of wireless networks, together with the implementation, performance, security, and limitations of such systems.

Number of Credit Hours

3

Pre-requisite or Co-requisite

Computing GUR

Course Objectives

At the end of this class, the students are expected to have a very good understanding of wireless communication principles, the physics behind data transmissions, the various standards that exist in wireless networks, the security, management, and administration of wireless networks as well as the main cybersecurity principles, protocols and algorithms involved in the security of wireless transmissions.

Course Requirements

This course integrates both classroom lectures and some hands-on experience.

Exams:

There are two exams. I will notify you of the exam date at least one week before the exam is given. If you miss the exam, your grade for that exam will be zero. **Makeup examinations are provided only under exceptional circumstances and the student has to notify me before the exam begins by e-mail that they will miss the exam.**

Homework / Project Assignments:

Details of the homework assignments will be handed out or posted on Canvas. Assignments are to be submitted via Canvas. All work for the class (except for the work done for the group project) must be done individually. If you are having trouble with an assignment, please feel free to contact me ASAP. **Do not copy an assignment from another student and submit it as your own. If detected, you will get a zero for the assignment and report to the Dean's office.** Every assignment must be completed and submitted via Canvas.

Class Attendance:

Class attendance will be taken. However, it is your responsibility to find out about any lecture material, homework assignments, and exams discussed in class. Attendance is highly correlated with good performance in class, so attendance will be taken at each meeting.

Absences may be excused for athletics, religious holidays, illness, military obligation, or family emergencies if you contact me before the missed class.

Typical Assignments:

Students may be assigned 3-4 discussion/research topics. Homework will be assigned based on the cases discussed in class. Forum posts are assigned on a weekly basis. A comprehensive group project is assigned and involves either a research project or a hands-on project on the topic of your choice related to Wireless Networks. Details are found under the Project Topic listed in Canvas.

Communication

The best communication method to reach me is via email. Once you get in contact with me, I will acknowledge or respond to your inquiry within 48 hours. During weekends and holidays, responses will be delayed. Please refrain from sending multiple emails of the same case via different accounts Canvas and Gmail. If it's an emergency or you need to reach me ASAP, please message me via daniel.g.martino@njit.edu or Text at 347-385-5747

In the subject line, please add:
IT220_XX: Subject

where
XX is your section number
The subject is what is your inquiry about

Late Assignment Policy

Assignments that are turned in late will be subject to penalty as follows:

- Homework - 10% reduction of the grade
- Discussion Board - 10% reduction of the grade
- Lab - 10% reduction of the grade
- Project - 20% reduction of the grade
- Quiz / Exam - 20% reduction of the grade

NOTE: The last day late assignments will be accepted the instructor is communicated via Canvas Announcements.

Assessment and Grading

All activities must be completed within the dates specified in the weekly course schedule. Your overall grade in the course will be comprised of several components as outlined below:

Grading Breakdown

Evaluation		Grading	
		A	A (90-100)
		B	B+(85-89); B (75-84)
Midterm Exam	33.3%	C	C+(70-74); C (60-69)
Team Project	33.3%	D	D (50-59)
Final Exam	33.3%	F	49 or less
Total	100%		

A 100-point system is used. At the end of the semester, the numerical grades earned for each written assignment will be averaged and translated into letter grades using the grading above.

Course Schedule

Week	Material	Activities / Dues
1	Introduction to the Course	
2	Introduction to Wireless Communications	
3	Wireless LANs	
4	Radio Frequency Fundamentals	
5	Antennas	
6	Physical Layer	
7	Medium Access Control Layer	
8	WLAM Management and Architecture	
9	Midterm Exam	Midterm Exam

Week	Material	Activities / Dues
10	Conducting a Site Survey	
11	WLAN Security Vulnerabilities	
12	Implementing WLAN Security	
13	Managing a Wireless LAN	
14	WLAN Troubleshooting & Optimization. Other Wireless Networks	
15	Project Presentations	Project
16	Final Exam - Online	Final Exam

NOTE: Chapters to cover on the indicated dates may vary according to each individual class.

Optional Topics

- Satellite Wireless Networks

Professional Conduct

This course is about learning to work in a professional team environment as well as the technical aspects. You are all expected to behave in such a manner both in and out of the classroom. You are expected to treat each other with respect and to refrain from any sort of personal misconduct. If there is conflict within a team, troubleshooting the issue is as much a responsibility of the team as any other deliverable. Any amount of disrespect or harassment will not be tolerated. See the NJIT Code of Student Conduct for further guidelines.

NJIT Protocols & Resources

- Academic Honesty and Integrity: It is very important that you understand New Jersey Institute of Technology University's policy on academic honesty and integrity. The link above provides you with resources to understand what academic standards and plagiarism are and to learn how to take a course responsively and honestly to avoid plagiarism. If you have any questions about the Code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu.
- Student Rights and Responsibilities: Find out more about your rights to access the university's resources as well as your related responsibilities.
- The NJIT Library can be accessed here: https://library.njit.edu/
- Commitment to Accessibility: Students with disabilities or special circumstances should contact their instructor as soon as possible to ensure that their needs are met in the course. Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, please contact the Office of Accessibility Resources and Services.

Technical Support

- To get help troubleshooting problems using Canvas, click on "Help" in the global navigation on the left side of Canvas. This provides links to chat, email or phone support.
- You may call the IST Service Desk directly at 973-596-2900 or 877-889-7685 or via email at ServiceDesk@njit.edu.
- The Canvas Guides provide many answers to common questions related to Canvas.
- Minimum Computer Requirements:
  - What are the basic computer specifications for Canvas?
  - Which browsers does Canvas support?
- Additional Requirements (Some courses may also require the following tools):
  - LockDown Browser System Requirements (Used for some quizzes)

Assignment Due Schedule

The below table is the proposed assignment due schedule for this semester. Keep in mind that due dates may change if the class schedule changes.

In general, assignments in this course are scheduled to be due on Sundays ***by 11:59 PM***. You should always access and return assignments via Canvas.