



North Central State College

MASTER SYLLABUS	2026-2027
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- A. Academic Division: Engineering Technology, Business & Criminal Justice Division
- B. Discipline: Information Technology – Networking
- C. Course Number and Title: ITEC2665 Wireless & Business Technologies
- D. Assistant Dean: Brooke Miller, M.B.A.
- E. Credit Hours: 3
Lecture: 2 hours
Laboratory: 2 hours
- F. Prerequisites: ITEC1645 (minimum grade of C-)
- G. Last Course/Curriculum Revision Date: Fall 2026 Origin date: 01/30/2020
- H. Textbook(s) Title:
CWNA Certified Wireless Network Administrator Study Guide: Exam CWNA-108
 - Author: Coleman, Westcott
 - Copyright Year: 2021
 - Edition: 6th
 - ISBN: 9781119734505
- I. Workbook(s) and/or Lab Manual: None
- J. Course Description: Upon completion of this course, students will be exposed to design, implement, and manage wireless and voice over IP (VOIP) networks, as well as remote monitoring and management (RMM) solutions and technologies.

The primary focus of this course is the installation and management of wireless networks with further solutions involving day to day operations and troubleshooting. The course follows a logical organization of the Certified Wireless Network Administrator (CWNA) Wireless exam objectives (a vendor-neutral enterprise WI-FI certification). Material is presented in a concise manner focusing on increasing the student's retention and recall of exam topics. The core wireless component of this course prepares students for the Certified Wireless Network Professional's (CWNP) CWNA wireless certification exam.

The VOIP component of this course introduces students to voice over IP (VOIP) technologies. Students will plan, implement, and manage VOIP networks. The VOIP component of this course prepares students for 3CX's Basic, Intermediate, and Advanced VOIP certification exams. Students are also introduced to remote monitoring and management (RMM) technologies and call tracking/ticketing systems.

K. College-Wide Learning Outcomes:

College-Wide Learning Outcome	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	
Quantitative Literacy	

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Define the basic characteristics of RF and RF behavior	Labs, tests, midterm/final exam
2. Identify RF signal characteristics as they relate to antennas	Labs, tests, midterm/final exam
3. Describe the components that make up an 802.11 wireless service set	Labs, tests, midterm/final exam
4. Explain 802.11 channel access methods	Labs, tests, midterm/final exam
5. Define and describe controller-based, distributed, cloud-based, and controller-less WLAN architectures	Labs, tests, final exam
6. Identify and configure WLAN security mechanisms	Labs, tests, final exam
7. Locate and identify sources of RF interference	Labs, tests, final exam
8. Define and apply troubleshooting processes to resolve common 802.11 problems for a given set of conditions	Labs, tests, final exam
9. Describe the components and primary use of dial-tone services: SIP, PRI and POTS	Labs, tests, final exam
10. Install and configure On-Premise and Cloud IP-based PBX phone systems	Labs, tests, final exam
11. Provision IP Phones and program extension properties	Labs, tests, final exam
12. Apply advanced call routing methods for a given set of conditions	Labs, tests, final exam
13. Describe Unified and Mobile Platforms which extend VOIP PBX capabilities	Labs, tests, final exam

M. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior
87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70–72	C-	1.67	Average
67–69	D+	1.33	Below Average
63–66	D	1.00	Below Average
60–62	D-	0.67	Below Average
00–59	F	0.00	Failure

N. College Procedures/Policies:

North Central State College believes that every student is a valued and equal member of the community.* Every student brings different experiences to the College, and all are important in enriching academic life and developing greater understanding and appreciation of one another. Therefore, NC State College creates an inclusive culture in which students feel comfortable sharing their experiences.

Discrimination and prejudice have no place on the campus, and the College takes any complaint in this regard seriously. Students encountering aspects of the instruction that result in barriers to their sense of being included and respected should contact the instructor, assistant dean, or dean without fear of reprisal.

* *Inclusive of race, color, religion, gender, gender identity or expression, national origin (ancestry), military status (past, present or future), disability, age (40 years or older), status as a parent during pregnancy and immediately after the birth of a child, status as a parent of a young child, status as a foster parent, genetic information, or sexual orientation*

Important information regarding College Procedures and Policies can be found on the syllabus supplement located at

<https://ncstatecollege.edu/documents/President/PoliciesProcedures/PolicyManual/Final%20PDFs/14-081b.pdf>



North Central State College
SYLLABUS ADDENDUM

Academic Division:	Engineering Technology, Business & Criminal Justice Division	Discipline:	Information Technology
Course Coordinator:	Daniel Foss		
Course Number:	ITEC-2665-900	Course Title:	Wireless & Business Technology
Semester / Session:	Fall 2026	Start / End Date:	8/17/2026 thru 12/11/2026

Instructor Information

Name:	Daniel Foss	Credentials:	M.Ed., Curriculum and Instruction – Computer B.S., Education
Phone Number:	419-755-4728	E-Mail Address:	dfoss@ncstatecollege.edu
			Mondays 12:00am - 2:00pm Wednesdays, 12:00am - 2:00pm at Kehoe 139 https://tinyurl.com/ITEC-Office-Hours
Office Location:	Kehoe Room 141 https://ncsc.zoom.us/j/88982241963	Office Hours:	Other days/times by appointment

I. Topical Timeline / Course Calendar (Subject to Change – refer to Canvas for schedule):

Week	Modules Covered	Assignments / Labs / Simulations	Due Date (Friday)
1	CWNA Overview & 802.11 Standards	Preso: 1–2; Lab 2: Familiarization with Wireless AP/Router Connection; Simulation 1: 4.6.5 – Connect a Wired & Wireless LAN; Quiz: CWNA Overview, 802.11 Overview	21-Aug-26
2	RF Fundamentals & RF Components/Math	Preso: 3–4; Lab 3: Configuring an Infrastructure Network; Quiz: RF Basics, RF Calculations	28-Aug-26
3	Antenna Concepts & WLAN Topologies I	Preso: 5–6; Quiz: 12.8.2 – WLAN Concepts; Quiz: Antenna Theory, WLAN Types	4-Sep-26
4	WLAN Topologies II & Medium Access	Preso: 7–8; Simulation 2: 13.1.10 – Configure a Wireless Network; Lab 7: Configuring Basic Security in an Infrastructure Network; Quiz: WLAN Design, CSMA/CA	11-Sep-26
5	WLAN Regulations & Standards & MAC Layer	Preso: 9–10; Lab 8a: Installing and Running Wireshark on an Infrastructure Network; Simulation 9: 13.2.7 – Configure a Basic WLAN on the WLC; Quiz: 802.11 MAC, HT/VHT Concepts	18-Sep-26
6	WLAN Architecture & Power over Ethernet	Preso: 11–12; Simulation 10: 13.3.12 – Configure a WPA2 Enterprise WLAN on the WLC; Lab 9a: Studying the Effect of Adjacent Channel Interference; Quiz: WLAN Models, PoE Standards	25-Sep-26
7	WLAN Design Concepts & Site Survey/Validation + Optimization (Roaming, QoS, Airtime Fairness)	Preso: 13–14; Simulation 5: 13.4.5 – Troubleshoot WLAN Issues; Lab 10a: Troubleshooting Wireless Network; Quiz: Design Principles, Validation Techniques, Optimization	2-Oct-26
8	Midterm Exam	Exam: Covers Preso: 1–14; In-class review	9-Oct-26
	Fall Break		16-Oct-26
9	Troubleshooting & Wireless Attacks	Preso: 15–16; Simulation 6: 13.5.1 – WLAN Configuration; Quiz: Problem Solving, Attack Types	23-Oct-26
10	Advanced WLAN Troubleshooting Scenarios	(Integrated into Preso 15–16); Additional scenario-based exercises; Quiz: Advanced Troubleshooting	30-Oct-26

11	Security Architecture & BYOD	Preso: 17–18; Simulation 7: 13.5.2 – Wireless Technology Exploration; Quiz: Security, BYOD	6-Nov-26
12	WLAN Validation Tools & Performance Testing	Simulation 8: Spectrum Analyzer & Protocol Analyzer Demo (virtual or recorded); Lab 15: Help Desk and Network Inventories; Quiz: RF Tool Usage, Validation	13-Nov-26
13	802.11ax (Wi-Fi 6/6E), Emerging Tech – Wi-Fi 7, IoT WLAN Integration	Preso: 19; Quiz: 802.11ax Features, OFDMA, MU-MIMO	20-Nov-26
14	Thanksgiving Break		27-Nov-26
15	Emerging Tech – Wi-Fi 7 Preview, IoT WLAN Integration	Lab 17: IoT WLAN Setup; Quiz: Emerging Tech	4-Dec-26
16	Finals Week	Exam: Final Exam – CWNA 109 Domains 1–6	9-Dec-26

II. Grading and Testing Guidelines:

Category	Count	Total Points	Weight
Labs	11	1,100	25
Simulations	10	1,000	25
Quizzes	15	1,500	20
Exams	2	200	30

Grading scale is the college grading scale:

NUMERIC	GRADE	POINTS	DEFINITION
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80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70–72	C-	1.67	Below Average
67–69	D+	1.33	Below Average
63–66	D	1.00	Below Average
60–62	D-	0.67	Poor
00–59	F	0.00	Failure

III. Examination Policy:

- All exams must be submitted through the Cisco Networking Academy LMS and/or Canvas.
- You may reference the CWNA textbook, official Cisco Networking Academy LMS, and other reputable sources.
- Collaboration on exams is not permitted unless explicitly authorized.
- AI tools (e.g., Copilot, ChatGPT) are not allowed during quizzes or exams.
- Free Tutoring Service is available: <https://ncstatecollege.edu/student-services/tutoring/>

Assignment Policy:

- All assignments must be completed using the Cisco Networking Academy LMS and/or Canvas.
- AI Tools like Copilot and ChatGPT may be used for feedback or clarification, but final submissions must reflect your own independent work.
- Use of the online curriculum for reference is encouraged.
- You may consult documentation, tutorials, and forums for guidance.
- Download, complete, and upload your own work. All submitted project files must be your own original work.
- Plagiarism or submission of work not your own is a serious offense and may result in course failure.
- If you need assistance with the course assignments, contact the Tutoring Department or the Instructor. Tutoring Information (free) can be found at: <https://ncstatecollege.edu/student-services/tutoring/>

IV. Course Attendance and Late Assignment Policy:

- Class attendance is recorded by completion of weekly assignments and activities.
- Assignments are due before midnight every Friday.
- Early submissions are encouraged.
- Except for the final project, all assignments are allowed to be submitted late.
- Each assignment builds on previous work, do not skip assignments. If it is late, submit as soon as possible.
- If you anticipate missing a deadline, contact the instructor in advance to discuss possible accommodation.
- Excused absences include:
 - a. Hospitalization
 - b. Death in the family
 - c. Personal illness or illness in immediate family
 - d. Military leave
 - e. Travel for employment

V. Course Expectations:

- All students are expected to demonstrate professional behavior and use language appropriate for the learning experience, both written and orally.
- For online classes, students are required to have access to an internet connection and a laptop or desktop computer. Chromebooks are not adequate for this course.
- MacBooks are acceptable, however, there may be some assignments that can only be completed on a Windows computer.
- The college provides free computer labs - <https://ncstatecollege.edu/student-services/computer-labs/> and loaner laptops - <https://ncstatecollege.edu/advocacy-and-resources/> - select Technology Resources