CSCI 3400-800 NETWORKING FUNDAENTALS

Course Details:
Fall 2025 | August 25th – December 11th .
Monday | Wednesday 10:00 AM – 12:00PM

Prerequisites: Referenced in Goldlink
Corequisites: None
Credit: 3 credit hours

Instructor Information:
Benjamin Burton
Email: burtonbr@etsu.edu

Office Hours (2.2I11):
Monday | Wednesday: 4:00 PM – 6:00 PM
Tuesday: 10:30 AM-12:30 PM

COURSE DESCRIPTION AND MAJOR TOPICS:

CSCI 3400 provides a comprehensive introduction to computer networking concepts, protocols, and technologies. This course covers the fundamental principles of network design, implementation, and management, with a focus on practical skills and hands-on experience.

Key Topics:

- Network architectures and topologies
- OSI and TCP/IP reference models
- Physical layer and data link layer technologies
- Network/Internet layer protocols, including IP addressing and routing
- Transport layer protocols (TCP and UDP)
- Application layer protocols and services
- LAN, WAN, and wireless networking technologies
- Network security fundamentals
- Cloud computing and virtualization concepts

COURSE LEARNING OUTCOMES:

At the end of this course, students who earn a passing grade shall be able to:

1. Describe the basic hardware and software components of computer networking (Student Outcomes 3b*, IT-2*).
2. Describe the OSI networking model (Student Outcomes 3b*, IT-2*).
3. Describe the major responsibilities of each layer of the OSI model (Student Outcomes 3b*, IT-2*).
4. Demonstrate the operation of selected applications and hardware devices for operating networks (Student Outcome 3b*, IT-2*).
5. Use network utilities like protocol analyzers to illustrate the stages of network operations (Student Outcomes 3b*, IT-2*).

REQUIRED TEXTBOOKS, PLATFORMS, AND RESOURCES

No required textbook for this course. Additional software and resources will be provided on D2L throughout the semester including:

- Cisco Networking Academy access
- Cisco Packet Tracer software
- Wireshark network protocol analyzer

COURSE DELIVERY METHOD

This course employs a flexible delivery approach that primarily meets in-person at the ETSU BlueSky Chattanooga Center as scheduled. While most class sessions will be conducted face-to-face, some sessions may utilize alternative delivery methods, including:

Virtual Lab Days: Certain lab activities may be conducted remotely when the learning objectives can be effectively achieved through virtual means. These sessions will be announced in advance.

Collaborative Work Sessions: Some class periods may be designated for independent or group work that can be completed outside the classroom, with instructor availability via online office hours.

Technology-Enhanced Learning: We may occasionally leverage online tools and platforms to supplement in-person instruction.

All class sessions, regardless of delivery method, count toward the required contact hours for this course. Students are expected to participate fully in all scheduled activities, whether in-person or through alternative methods. This flexible approach is designed to enhance your learning experience while maintaining BlueSky program quality standards.

COURSE ASSESSMENTS AND GRADING

Skynet Infrastructure Labs - SIL (25%)

Weekly infrastructure assignments using Cisco Packet Tracer and Wireshark for hands-on network engineering experience. These virtual lab exercises build practical networking and security skills progressively, starting with basic network topology design and protocol analysis, advancing through complex routing configurations and VLAN implementations, and culminating in advanced security protocol deployment scenarios. Each SIL emphasizes hands-on application of networking concepts through realistic Cyberdyne facility scenarios and requires comprehensive lab reports documenting network analysis, configuration procedures, and troubleshooting methodologies for distributed AI systems.

Neural Network Knowledge Assessments - NNKA (10%)

One security clearance assessment per module administered through D2L covers recent content using multiple-choice, short answer, and network scenario-based questions. Assessments evaluate understanding of networking fundamentals, protocol operations, routing and switching concepts, and cybersecurity principles to ensure continuous learning throughout the Skynet development timeline.

Cyberdyne Engineering Certifications - CEC (25%)

The intermediate certification (10%) after Module 4 covers networking fundamentals, IP addressing, and basic routing concepts through technical scenarios and network diagnostic case studies. The comprehensive senior certification (15%) integrates all course material and requires application of advanced routing protocols, network security implementations, and distributed system design principles. Both certifications are paper-based to ensure academic integrity and assess deep conceptual understanding of mission-critical infrastructure requirements.

Project Genesis: Facility Network Deployment - PFND (30%)

A collaborative comprehensive network design project adapted for the semester timeline. Teams select a Cyberdyne facility scenario, conduct systematic network requirements assessment using industry frameworks, develop complete network infrastructure specifications and implementation plans, and present findings through detailed technical proposals and oral presentations to the Cyberdyne engineering board. The project demonstrates mastery of network design principles, security protocols, and professional technical communication skills essential for Skynet infrastructure deployment.

Cyberdyne Team Collaboration Metrics - CTCM (10%)

Active participation in facility briefings, contribution to network planning sessions, and engagement in troubleshooting discussions that support the collaborative development of Skynet infrastructure systems.

GRADE DISTRIBUTION

The instructor will base the final grade on the following attached weights:

GRADED ITEM	WEIGHT
SKYNET INFRASTRUCTURE LABS	25%
NEURAL NETWORK KNOWLEDGE ASSESSMENTS	10%
CYBERDYNE ENGINERRING CERTIFICATIONS	25%
PROJECT GENESIS	30%
CYBERDYNE TEAM COLLABORATION METRICS	10%
TOTAL	100%

A student can keep track of their grades throughout the semester using D2L. Students should calculate the grade according to the "Grade Distribution" information provided for the course.

GRADING SCALE:

*Percentage	Letter	*Percentage	Letter
93.000 – 100.00	A	77.000 – 79.999	C+
90.000 – 92.999	A-	73.000 – 76.999	C
87.000 – 89.999	B+	70.000 – 72.999	C-
83.000 – 86.999	B	60.000 – 69.999	D
80.000 – 82.999	B-	0 – 59.999	F

Note: *Final Grades **will not observe** traditional rounding rules. (i.e., 89.999 will result in a B+)

ATTENDANCE POLICY

Attendance is mandatory for all class meetings. I will be tracking attendance at the beginning and end of class. **You are allotted two unexcused absences without penalty, after which half a letter grade will be deducted from your final average.** Tardiness or leaving early may result in further penalties or discussions.

Some course materials and assignments may be made accessible online, allowing you to complete them on your schedule, if you adhere to the expected deadlines and due dates. The primary method of instruction will involve weekly class meetings, during which the instructor will deliver instruction in real-time in the classroom.

Please be aware that missing class or arriving late, regardless of the reason, can significantly impact your learning experience and may adversely affect your achievement in the course. Absence from class may result in receiving a zero on the class content covered during that session, including assignments, quizzes, or discussions.

If you must miss class, it is your responsibility to obtain missed information from your classmates. Please note that missing class does not extend deadlines or allow for makeup assignments, except in exceptional circumstances as determined by the instructor.

If you face extenuating circumstances that may affect your attendance, such as a severe illness or family emergency, please communicate with me as soon as possible to discuss potential accommodation. However, such accommodation will be made at the instructor's discretion and may require appropriate documentation.

Please note that this class also follows the BlueSky Tennessee Institute Student handbook attendance policy found in the BlueSky Student Resources: BlueSky Tennessee Institute (etsu.edu)

LATE WORK POLICY

Please be aware that late work will not be accepted without proper documentation justifying a university-approved absence. It is the student's responsibility to submit assignments, projects, and other coursework by specified deadlines.

In the event of a university-approved absence, such as a serious illness, family emergency, or participation in university-sponsored events, students must provide the instructor with appropriate documentation explaining the circumstances. This documentation should be submitted to the instructor as soon as possible, preferably before the absence occurs or immediately upon returning to class.

If you anticipate any issues with meeting deadlines or have concerns about potential absences, please communicate with the instructor proactively to discuss your situation and explore possible solutions.

More information can be found here: Attendance Policy (etsu.edu)

STAYING ENGAGED AND INFORMED

To ensure your success with this course, it is essential to stay engaged and informed beyond attending class meetings. Here are a few suggestions for success in this course:

EMAIL COMMUNICATION:

- You should only use email as a tool to contact the instructor if necessary. If you have a complex question or a question related to the course, it is better to schedule a meeting rather than await an email response. Start on assignments early, so you have ample time to finish and ask questions.
- Check your email frequently and regularly to stay current with university-related communications and communications regarding this course.
- Respond promptly to any emails from the instructor or your classmates that require your attention or action.
- All email subjects must be in the format of **CSCI {Course #} - {Subject Matter}**. (E.g., CSCI 1900-800 Huffman Code Question) Following the format will ensure an email is appropriately delivered and notify the instructor. You are not guaranteed a response should you fail to adhere to this subject line format.
- I strive to respond to emails within 24-48 hours during the regular business week (Monday through Friday) between 9 am and 5 pm. If you send an email over the weekend, you can generally expect a response on the following business day.

D2L (DESIRE2LEARN)

- Access the D2L platform daily to keep current with any changes or new information regarding this course.
- Regularly review course materials, announcements, and updates posted on D2L.
- Utilize D2L to submit assignments, participate in discussions, and access additional resources provided by the instructor.

STUDENT AND INSTRUCTOR EXPECTATIONS

To foster a productive and engaging learning environment, students and instructors should have mutual expectations of one another. Remember, mutual respect and open communication between students and instructors are essential for creating a positive and effective learning experience.

STUDENT RESPONSIBILITIES:

- Arrive to class on time and well-prepared.
- Be attentive and actively participate in class discussions and activities.
- Complete assignments by their due dates.
- Strive to meet the course objectives.
- Devote ample time and effort to the course (a minimum of 2-3 hours outside of class for each hour in class).
- Ask relevant questions and contribute to class discussions to enhance learning for all.
- Take comprehensive notes during class to support the learning process.
- Respect classmates and instructors, maintaining a distraction-free learning environment.
- Engage in professional communication with classmates and faculty, building good habits for future careers.

INSTRUCTOR COMMITMENTS:

- Maximize every student's learning potential.
- Be prepared, organized, and respectful toward each student.
- Arrive to class on time and well-prepared.
- Be attentive to student's needs and available to answer questions.
- Provide assistance related to the course and help students achieve course objectives.
- Make suitable arrangements for class continuity in the rare event of the instructor's absence.
- Devote significant time and effort to the course.

INSTRUCTOR USE OF ARTIFICIAL INTELLIGENCE:

In accordance with ETSU's policy on Artificial Intelligence Technologies, I utilize various AI tools including ChatGPT, Claude, Copilot, and others to enhance our learning environment. These tools assist me in creating engaging course materials, labs, and activities; generating diverse assessment questions; supporting grading processes for certain assignments; developing visual content; and streamlining administrative tasks.

All AI-generated content undergoes my personal review to ensure accuracy, relevance to our course objectives, and freedom from bias. When using AI for grading assistance, student information is always de-identified to protect privacy. I maintain full responsibility and oversight for all course content, feedback, and assessment decisions. This approach allows me to dedicate more time to meaningful interactions with students while leveraging technology to enhance your learning experience.

If you have questions about AI use in this course, please feel free to discuss them with me.

PERSONAL TECHNOLOGY USE POLICY

To maintain a focused and productive learning environment, students must silence all electronic devices, including mobile phones, iPads, laptops, and tablets, during classroom and lab lectures. While the use of laptops or tablets is permitted in class, they should be used solely for activities that contribute to the classroom learning experience, such as taking notes or accessing course-related materials.

If a student is found using electronic devices for purposes unrelated to the classroom learning environment, the instructor reserves the right to ask the student to leave the classroom. This policy ensures that all students can engage fully in the course content without distractions.

EXAM POLICY

During exams, ALL electronic devices must be turned off and put away, including cell phones. If you have an emergent need that requires the use of an electronic device, please schedule that need outside of the exam time to avoid any disruptions.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Students with disabilities who require the use of electronic devices during exams should register through the university's disability services office. Once registered, students must provide the instructor with the appropriate accommodation form to ensure that their needs are met while maintaining the integrity of the exam environment.

ACADEMIC INTEGRITY & CODE OF CONDUCT POLICIES

Without exception, all submitted work for this class is to be done on an individual basis. Student-teacher relationships are built on trust. For example, students must trust that teachers have made responsible decisions about the structure and content of the course, and teachers must trust that work submitted by a student was indeed done by the student. Acts that violate this trust undermine the educational process and are inconsistent with our very reason for being at ETSU.

You are encouraged to discuss the material and issues addressed in the course with members of the class and others. Helping one another understand the process for problem-solving is permitted as long as submitted work is done as an individual attempt. Everyone must do his/her work. Completing an assignment "by committee" and submitting it as individual work is academic misconduct unless the assignment has been designated as a team assignment. Your name on the submitted work is an affirmation that the work is yours.

HONOR CODE

East Tennessee State University is committed to developing the intellect and ethical behavior of its students. Students who violate policies on plagiarism, cheating, or fabrication will be held accountable for their actions. Students should report any knowledge of academic misconduct. Students are expected to act with honesty, integrity, and civility in all matters.

HONOR PLEDGE (PLEDGED AT UNIVERSITY ORIENTATION)

By becoming a member of the campus community, students agree to live by the standards of the honor code and thereby pledge the following: "I pledge to act with honesty, integrity, and civility in all matters."

PLAGIARISM

Plagiarism involves using someone else's words, ideas, and code without crediting the original author. Even if one does not copy the words exactly or even copies only a tiny part of someone else's work, one must cite the original author's name and provide a reference to that person's work (e.g., the title of work, year of publication, and name of publisher).

ARTIFICIAL INTELLIGENCE STATEMENT

You are welcome to use generative artificial intelligence (AI) tools (such as ChatGPT) in this class as doing so aligns with our course learning goals. However, you must properly cite any AI tools that you use in your work and be responsible for the accuracy and quality of the content generated by them.

Please note that this policy is a general-use policy on Artificial Intelligence. Your instructor reserves the right to change this policy based on individual circumstances and assignments. The use of Artificial Intelligence is strictly prohibited on examinations and falls under the university’s academic misconduct policy.

REPEATING A COURSE AND COURSEWORK RESUBMISSION

When students must repeat a course, they may not resubmit work submitted in a prior class instance. In the case of research papers or other class items, students must select a different topic, and the work on the project must be wholly different from the work previously submitted. For other course assignments, the student must submit original work. Students may not submit work from other classes.

VIOLATION OF THE HONOR CODE

In cases where the honor code or other topics in the academic integrity section are violated, known as academic misconduct, the penalty will be an 'F' in the course. Be aware that repeated academic misconduct may result in the University applying other penalties.

STUDENT SERVICES RESOURCES

STUDENT SERVICES

The ETSU Services webpage includes a comprehensive list of services available to all ETSU students.

ACADEMIC ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

It is the policy of ETSU to accommodate students with disabilities according to federal law, state law, and the University's commitment to equal educational access. Any student with a disability who needs accommodation, for example, arrangement for examinations or seating placement, should inform the instructor at the beginning of the course. ETSU provides Faculty accommodation forms to students through Disability Services in the D.P. Culp Center, Room 326, telephone 423-439-8346. Visit the Disability Services webpage for more information.

MENTAL HEALTH SERVICES

The BucsCARE website is meant to be a resource for students and student referrals. BucsCARE includes the most referenced offices and campus resources in various categories. This page includes a link to ETSU's "Need Help?" site, including a comprehensive listing of other resources by topic area.

Learn more about the BucsCARE services at: https://www.etsu.edu/bucscare/default.php

LIBRARY RESOURCES

The Sherrod Library extends access and services to all currently enrolled ETSU students. These services include traditional library patronage via Research and Instructional Services, Technology, and Content Services. Learn more about the Sherrod Library by visiting https://libraries.etsu.edu

TECHNICAL RESOURCES

HELP DESK

The Information Technology Services (ITS) Help Desk is the best resource for most technical problems. Find answers to common questions on the Help Desk website, call, email, or stop in to see them on the first floor of the Sherrod Library. Phone: 423-439-4648 Email: itshelp@etsu.edu

DESIRE2LEARN (D2L) ONLINE HELP

Faculty, Staff, and Students can find answers to D2L-related questions on the D2L Help Student Home. If you still have trouble finding what you need, contact the Help Desk.

MICROSOFT OFFICE SOFTWARE

Microsoft Office productivity applications, including Word, PowerPoint, Excel, OneNote, and more, are free for students through the University's Office 365 campus agreement. For instructions on obtaining the software, see the Office 365 page of the ITS Help Desk website.

TURNITIN PLAGIARISM DETECTION

Turnitin is a plagiarism detection service available to students and faculty at ETSU. This tool compares student-written work against a comprehensive database of other work and various internet sources. Faculty may employ this service for some or all written assignments to help students learn to cite sources accurately and ensure academic integrity. Learn more on the Turnitin home page.

ETSU TECHNICAL RESOURCES

Faculty, Staff, and Students can find many other technical resources on the Online Help webpage.

SYLLABUS ATTACHMENT

Students can find information regarding other University policies, procedures, and resources here:
https://www.etsu.edu/curriculum-innovation/syllabusattachment.php

BLUESKY STUDENT HANDBOOK ATTACHMENT

BlueSky students can find information regarding other BlueSky policies, procedures, and resources here:
https://www.etsu.edu/cbat/computing/bluesky-tn-institute.php

DISCLAIMERS

SYLLABUS CHANGES

The instructor reserves the right to change the syllabus including grade distribution. The instructor will immediately notify students of such changes by posting the notification and the nature of the change(s) on the course site.

SCHEDULE CHANGES

The instructor reserves the right to change the course schedule. The instructor will immediately notify students of such changes by posting the notification and the nature of the change(s) on the course site.

SKYNET/TERMINATOR COURSE THEME DISCLAIMER

The Skynet/Terminator theme, including all related terminology, characters, concepts, and fictional technologies (such as Cyberdyne Systems, Skynet, Terminator units, neural network processors, time displacement equipment, and other elements from the Terminator franchise), is used solely for educational purposes.

This course material makes fair use of these elements to create an engaging learning environment for networking and cybersecurity education. All rights to the Terminator franchise and related content belong to StudioCanal, Skydance Productions, Paramount Pictures, and the estate of James Cameron. No copyright infringement is intended, and no commercial use or profit is derived from the use of these materials. This academic adaptation is designed purely to enhance the educational experience and student engagement in learning computer networking fundamentals.

The use of this fictional framework serves to illustrate real-world networking concepts, protocols, and security principles through an entertaining and memorable context that encourages student participation and retention of technical material.