

Alarms 101 Syllabus

Basic Info

Course Name: Alarms 101 | Code: MNT 3200 | Section: 82764 | Semester: 2016CE1

Instructor: Paul J. Inferrera, SET

Office: Online

Office Hours: 8:00am - 5:00pm (EDT), Monday-Friday Excluding Holidays

Email: pinferrera@cfcc.edu

Response Time: Less than 24 hours

Contact Instructions: Please place "Alarms 101" and "Module #" in the Subject Line. All emails will be returned in less than 24 hours.

Course Overview

This course is designed for those individuals who are new to the fire alarm industry and will focus on fundamentals. Students will learn basic electrical theory and understand resistance, voltage and current. Individuals currently in the fire alarm industry would benefit from the concepts and theories, which will be built upon in the Alarms 102 course.

LEARNING OBJECTIVES

Students will acquire a basic understanding of the physics involved in the chemical reaction and the by-products of fire. Students will learn basic electrical workmanship and installation methods of fire alarm equipment and devices. The student will gain an understanding the requirements of codes and standards that govern fire alarm systems and installations. (14.4 CEU's awarded)

RECOMMENDED MATERIALS

NFPA 72, the National Fire Alarm and Signaling Code, 2013 ed.

NFPA 70, the National Electric Code (NEC), 2011 ed.

This course will also reference the 2007 edition of NFPA 72. We do this because a significant number of municipalities enforce editions prior to the reorganization of chapters in the 2010 edition and to help technicians make the transition. Having these codes books is not required, but strongly recommended. The course is designed to enable the student to become quite familiar with the codes and they are referenced throughout.

[Click Here](#) for free access to NFPA codes.

Student Expectations

ATTENDANCE

Students are expected to complete all modules by the end of the course. Students who miss more than 20% of the course modules will automatically receive a failing grade (F) for the course.

Special circumstances may be considered with prior notification of the instructor.

Since the course is 100% online you can participate as your schedule allows. Due dates are to keep students on track and you have the entire four months of the course to complete all assignments. Assignments submitted after the due date will be accepted with no penalty. This is an online course which is not affected by school closures due to incimate weather and holidays.

EXPECTED WORKLOAD

Students can expect to spend 2-3 hours per module, with three modules per week. The course is designed to present the modules on Monday, Wednesday and Friday, but you can complete them as your time permits.

EXPECTATIONS FOR INTERACTIONS

Students will be held to the highest standards of language and content in all interaction, whether online or in person. Abusive and derogatory language, actions, or content will not be tolerated. This non-discrimination policy includes face-to-face interactions, email, online discussions and all course related content and materials. To learn more about online interaction, please see “The Core Rules of Netiquette”, from the book Netiquette by Virginia Shea at: <http://www.albion.com/netiquette/corerules.html>

GRADING

Modules

Each week will include three Modules for the student to complete. There may be links to recommended reading, or references to required and suggested text books. When you have an understanding of the lesson material you can submit a thread on the Discussion Board and take the Progress Survey.

- 48 Modules
- 3 per week (approximately 2-3 hours each)

Discussion Boards

The Discussion Board will be used to evaluate the students understanding of the lesson topic and you are graded on this exercise. You are asked to be courteous in your reply to one another's post and refrain from derogatory or inflammatory responses. Include code reference and/or source(s) in your post or replies. Discussion Boards will make up 10% of your final grade.

Pre-Test

Prior to each Lesson students are encouraged to participate in the Pre-Test to evaluate your knowledge of the material and identify areas of weakness. You are allowed to take the Pre-Test twice and should do so to review before taking the Exam. Scores on Pre-Test will not be included to determine final grade.

- 5 questions, 5 minutes
- Identifies areas of focus
- Allowed to take twice

- Non-Graded

Progress Survey

A Progress Survey will follow each lesson to evaluate the students understanding of the topic. These are exams and will count towards your final grade. Students are only allowed to take the survey once for each session. The survey will consist of ten questions with a time limit of ten minutes. Progress Surveys will make up 30% of your final grade.

- 10 questions, 10 minutes
- Measures progress
- Graded

Exams

An Exam will be administered at the conclusion of each month, for a total of four. They will be limited to one-hour and consist of 60 questions. References allowed during exam will be NFPA 72 The National Fire Alarm and Signaling Code, and NFPA 70 The National Electric Code. Exams will make up 40% of your final grade, and 20% for final exam.

- 60 questions, 60 minutes
- Graded

Grading Overview

Discussion Board: 10%

Pre-Test (48): This exercise does not count towards final grade

Progress Survey (48): 30%

Exams (3): 40%

Final Exam: 20%

Grading Scale

A = 92 - 100

B = 84 - 91

C = 76 - 83

D = 68 - 75

F = 0 - 67

Participants who complete the course with a C, or 76% or better have passed the course and will receive a *Certificate of Attendance* and be awarded 14.4 CEU's.

Academic Misconduct Policy

Students are expected to conduct themselves in a professional, academic manner appropriate to the college's mission as an institution of higher education. Examples of academic misconduct are plagiarism and cheating, discrimination, and lying.

Collaboration is a natural part of college and students will benefit greatly from working with other students on assigned activities. Collaboration becomes Academic Misconduct when two or more students jointly draft answers to assigned work. For example, students discussing how best to approach a problem or assignment is acceptable and even encouraged; however, students writing the same answer or choosing to copy someone else's answer is not acceptable.

Plagiarism

Plagiarism is defined as taking the words, ideas, or thoughts of another and representing them as one's own. If you use the ideas of someone else, provide a complete citation of the source work; if you use the words of another, present the words in the correct quotation notation (indentation or enclosed in quotation marks, as appropriate) and include a complete citation to the source.

STUDENT SERVICES

Disability Support Services

Any student who requests classroom accommodations because of a disability must present documentation to verify his/her disability to the CFCC's Disability Service Coordinator. On a confidential basis, the student, disability services and the instructor will determine the appropriate accommodations following documentation. These accommodations will be provided in a manner that is consistent with the objectives, outcomes, and academic standards of the course. Absences must not exceed class attendance policy.

IT Student HelpDesk

The IT Services Student Helpdesk provides first-level technical support to all students of Cape Fear Community College. They are available to assist students with basic computer and technical needs, including logging into Blackboard, myCFCC and WebAdvisor. More information, including Hours, Location, and Contact Information is available at <http://www2.cfcc.edu/studenthelpdesk/>

Blackboard Help

Answers to common Blackboard questions can be found at <http://www2.cfcc.edu/online/bb-faq> or Ask Ray.

Learning Lab

The Learning Lab at CFCC can provide Writing Assistance, Computer Competency Skills, and Tutoring. The Learning Lab is located in the Learning Resource Center (LRC) and can be found online at <http://cfcc.edu/learninglab/>.

Learning Resource Center (Library)

The CFCC Learning Resource Center (Library) provides students with the following resources: Books/Materials, Course Reserves, Computer/Internet Access, Online Databases/Journals, Group Study Space, Quiet Study Space. The Learning Resource Center (Library) is located on the 2nd Floor of the L-Building (Downtown Campus) or on the 1st Floor of the McKeithan Center (North Campus) and can be found online at <http://cfcc.edu/lrc>.

MyCFCC – Student Accounts

Your myCFCC account is a single username and password for all of your CFCC network accounts: email, WebAdvisor, Blackboard, campus computer access, and more. The email account provided to you (yourusername@mail.cfcc.edu) is used for all official communication with CFCC instructors and staff. Some information will ONLY be sent by email and not by postal mail, so it is very important that you check this account. This account may also be used

for personal mail, but it is subject to the CFCC Acceptable Use Policy. Be sure to log out of your account in each service you may have opened (email, Blackboard, etc.) when you leave a shared computer, otherwise it is possible for the next user of the computer to access your information.

Additional Student Support and Academic Services

For a list of CFCC Student Support and Academic Services, please visit <http://www2.cfcc.edu/online/student-support/>.

Lessons

Module 1: Safety

Understand the proper safe use of ladders, scaffolds, hand and power tools. Also the proper use of eye and hearing protection and other PPE (Personal Protective Equipment). Know the purpose of Material Safety Data Sheets (MSDS). Be able to recognize unsafe work conditions.

Module 2: First-Aid

Be able to recognize common injuries and conditions to include: cuts, sprains, heat exhaustion, frost bite, fractured limbs, head trauma and heart attacks. Demonstrate proper first-aid techniques.

Module 3: Composition and Documentation

Use proper punctuation, vocabulary, spelling, and sentence structure. Follow written instructions. Be able to produce reports, documentation and forms using Microsoft Word© and Excel©.

Module 4: Mathematic Fundamentals

Become familiar with fundamental math concepts from basic operations through fractions, decimals, and percents and the fundamentals of algebra and geometry.

Module 5: Metric System and Conversions

Know the origin and history of the Metric System. Be able to manipulate units and perform conversions.

Module 6: Physical Science Concepts

Terms and definitions related to concepts from mechanics and chemistry. Understand the relationship between electricity, heat, and light.

Module 7: Ohm's Law

Understand Ohm's Law and how it applies to DC and AC circuits. Understand conductor characteristics, series, and parallel circuits.

Module 8: Electrical Theory

Know common electrical symbols used in wiring diagram and circuit schematics. Be able to demonstrate the operation of AC and DC circuits from electrical schematics. Draw simple schematics from system sequence of operation.

Module 9: Schematic Reading and Interpretation

Know common electrical symbols used in wiring diagram and circuit schematics. Be able to demonstrate the operation of AC and DC circuits from electrical schematics. Draw simple schematics from system sequence of operation.

Module 10: Test Equipment

Demonstrate the proper selection and use of test equipment and accessories. Equipment covered include multi-meter, ohm meter and dB meter.

Module 11: Electrical Workmanship Standards

Standards of electrical installation methods per NFPA 70, The National Electric Code (NEC) and "good workmanship". Grounding, conductor insulation characteristics and power limitations.

Module 12: Wiring Fundamentals

Understand the wiring requirements and protection of wiring for fire alarm systems. Select outlet and junction boxes, cable and conduit. Calculate proper wire size, and over-current protection for the system.

Exam #1

Exam will be limited to one-hour and consist of 60 questions covering Modules 1-12. References allowed during exam will be NFPA 72, the National Fire Alarm and Signaling Code, and NFPA 70, the National Electric Code.

Module 13: Codes and Standards

Develop a basic understanding of NFPA codes and standards in the fire alarm industry. Understand application and use appropriate NFPA standards.

Module 14: Fire Alarm Symbols and Terminology

Standard symbols and terms utilized in the fire alarm industry.

Module 15: Fire Alarm Systems

Discuss the types of fire alarm systems and their requirements. Included are initiating devices and notification appliances. Basic sprinkler systems, fire alarm panel control functions and system signals.

Module 16: Device and System Compatibility

Know the purpose for ensuring operational compatibility of fire alarm devices and control panels. Discuss approving methods from a recognized testing lab. Understand how codes and standards ensure device and system compatibility.

Module 17: Circuits and Pathways

Understand the various styles and classes of circuits associated with intelligent devices, notification appliances and initiating device circuits.

Module 18: Power Sources

Understand the configurations for primary, secondary and trouble power supply sources. Know the code requirements for various fire alarm systems.

Module 19: System Calculations

Be able to perform battery calculations, voltage drop calculations and secondary power requirements.

Module 20: Initiating Devices

Know the basic operation and application of fire alarm and suppression system initiating devices. Be familiar with requirements of NFPA 72 that determine the installation and operation.

Module 21: Automatic Detection Methods

Understand the basic principles of automatic fire detectors. Select the best type of detection for the application and ambient conditions.

Module 22: Prevention of Nuisance and False Alarms

Know the proper selection and placement of automatic detectors. Maintenance programs for reliable and proper operation of fire alarm systems. System program features to reduce unwanted alarms from utilizing alarm verification; positive alarm sequencing; cross zoning and pre-signal. Also electronic and pneumatic retard mechanisms for sprinkler water devices.

Module 23: System Notification Appliances

Know the audible and visual requirements as well as proper placement of notification appliances. Understand how environmental and acoustical conditions affect operation and selection on devices.

Module 24: Relocation and Evacuation Signals

Understand the recommended fire alarm evacuation signal, its purpose, where it is used, the recommended sound pressure level in various occupancies and modes, and how to determine the sound pressure level needed.

Exam #2

Exam will be limited to one-hour and consist of 60 questions covering Modules 13-24. References allowed during exam will be NFPA 72, the National Fire Alarm and Signaling Code and NFPA 70, the National Electric Code.

Module 25: Smoke Detector Operation

Know the basic operating principles of different smoke-sensing devices. Know the advantages and disadvantages of each. Be able to determine the best device for the hazard or application.

Module 26: Smoke Detector Spacing

Understand the proper placement and spacing of detection for irregular ceilings and compartments. Know the factors which affect spacing such as ceiling height, air movement, partitions, and ceiling construction. Determine the best device and quantity required for adequate protection.

Module 27: Heat Detector Operation

Know the basic operating principles of different thermal-sensing devices. Know the advantages and disadvantages of each. Be able to determine the best device for the hazard or application.

Module 28: Heat Detector Spacing

Understand the proper placement and spacing of detection for irregular ceilings and compartments. Know the factors which affect spacing such as ceiling height, air movement, partitions, and ceiling construction. Determine the best device and quantity required for adequate protection.

Module 29: Logic and Control Functions

Understand the operation of fire alarm control panels central processing unit upon receiving an alarm signal. Know what conditions are required to produce system outputs. Understand basic logic functions.

Module 30: Types of Fire Alarm Systems

Discuss the types of fire alarm systems and their requirements. Know the documentation requirements and codes for various systems.

Module 31: Protective Premises Systems

Understand the systems purpose and basic requirements of power sources and supervision. Know the characteristics and capacity of circuits. Be familiar with codes and standards that apply.

Module 32: Proprietary Supervising Systems

Understand the systems purpose and basic requirements of power sources and supervision. Know the characteristics and capacity of circuits. Be familiar with codes and standards that apply.

Module 33: Central Station Systems

Understand the systems purpose and basic requirements of power sources and supervision. Know the characteristics and capacity of circuits. Be familiar with codes and standards that apply.

Module 34: Remote Station Systems

Understand the systems purpose and basic requirements of power sources and supervision. Know the characteristics and capacity of circuits. Be familiar with codes and standards that apply.

Module 35: Auxiliary Systems

Understand the systems purpose and basic requirements of power sources and supervision. Know the characteristics and capacity of circuits. Be familiar with codes and standards that apply.

Module 36: Guard's Tour Service

Understand a manual fire alarm system, including location, mounting, and distribution of manual fire alarm boxes, and use and operation of combination manual fire alarm and guard's tour stations. Understand special requirements for guard's tour supervisory service.

Exam #3

Exam will be limited to one-hour and consist of 60 questions covering Modules 25-36. References allowed during exam will be NFPA 72, the National Fire Alarm and Signaling Code, and NFPA 70, the National Electric Code.

Module 37: Listing Agencies

Understand the purpose of agency listing of fire alarm equipment.

Module 38: Household Systems

Know the protection required by NFPA 72 for dwelling units, including power supplies and performance. Know the spacing and location of alarm initiating devices and notification appliances.

Module 39: Systems Integration

Understand the combination of systems that are permitted by the codes, such as paging, music, burglar alarm, energy management, and process monitoring, their purpose, restrictions, basic requirements, supervision, and priority of signals.

Module 40: Emergency Voice and Alarm Communication Systems (EVAC)

Know the purpose, operation and basic requirements of emergency voice and alarm communication systems. Include power supply sources, survivability, and types.

Module 41: System Integrity and Supervision

Understand the principles of monitoring for integrity and types of signals produced by fire alarm systems. Discuss methods of supervision for various circuit types.

Module 42: System Periodic Test

Know periodic equipment and circuit testing procedures, including frequency of tests and method of testing each component and circuit of a fire alarm system.

Module 43: Commissioning and Acceptance Testing

Understand the requirements and related procedures for conducting and documenting proper fire alarm system acceptance tests. Know code and insurance requirements.

Module 44: Maintenance Procedures

Understand the methods to isolate and identify faulty or malfunctioning components. Know methods of cleaning, servicing and proper operation.

Module 45: Inspections

Understand the acceptable system test methods per NFPA 72. Know frequency of inspections and equipment to be tested. Review required documentation and reporting system deficiencies.

Module 46: Fire Suppression Systems

Understand the interface of special hazard suppression systems and the building fire alarm system. Know the requirements of supervision and signal processing. Know the difference between cross-zoning and cooperative detector operation.

Module 47: Reports and Contracts

Understand the relationship of various positions in the construction industry and their interaction. Be familiar with service contracts, maintenance contracts and other documents.

Module 48: Project Specifications

Project specifications consist of the body of information that should guide designers, installers, and Authority Having Jurisdiction (AHJ) through all phases of the project.

Final Exam

Exam will be limited to one-hour and consist of 60 questions covering all Modules in the course. References allowed during exam will be NFPA 72, the National Fire Alarm and Signaling Code, and NFPA 70, the National Electric Code.