CNST A155: INTRO TO HOME AUTOMATION

Item	Value
Curriculum Committee Approval Date	12/02/2020
Top Code	095220 - Electrical
Units	2 Total Units
Hours	72 Total Hours (Lecture Hours 18; Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)

Course Description

Wiring for interior low voltage systems, including layout and construction methods, code requirements, both sizing and installation standards, emphasis on material conservation practices and compliance with the National Electrical Code. ADVISORY: CNST A275. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Properly install a CATV/Satellite system with all the components sized per the NEC (National Electrical Code) and install any type of switching, receptacle or light fixture that will be on that circuit.
2. Determine the difference between Home Integration versus Home Automation and be able to install integrated and automated lighting control systems, security systems and whole house audio systems.

Course Objectives

- 1. Identify the correct wiring for CATV/Satellite systems.
- 2. Identify the correct wire/connectors for home networking.
- 3. Know optimal placement for a home theater system.
- 4. Understand the pro and cons of an automated lighting control compared to none.
- 5. Understand the limitations and the benefits of a security system.
- 6. Use the index of the National Electrical Code (NEC) to identify specific codes that are relevant to residential buildings.
- 7. Read and comprehend electrical definitions and terminology of the NEC.
- 8. Recognize and properly name various connectors, conduit, fittings, and boxes necessary for the installation of receptacles and switches.
- 9. Calculate the appropriate wire size per the NEC.
- 10. Use Ohms law to perform calculations to determine volts, amperes, and watts.

Lecture Content

Orientation / Introduction. Tools and Safety. (Home Integration VS Home Automation) Homework (Draw Your Own Home) Home Automation Control vs. Automation. Lab Activity: Power to all equipment and project setup. Wire and Cable Basics Lab Activity: RG 6, RG 59, and F connector, BNC Connectors, RCA Cables and Telephone Cable Structured Wiring Installation Lab Activity: Cat 5 cabling to modems, routers and hubs. Home Lighting Basics Lab Activity: Programming Lighting Control Home Lighting Basics Lab Activity: Programming Lighting Control Lab Activity: ISY Installation Lab Activity: ISY Programming Telecommunications Basics Midterm Security System Lab Activity: Elk System Lab Activity: Elk System Lab Activity: Security Cameras Security System Security System Heating Ventilation and Air-conditioning Lab Activity: Thermostats Lab Activity: Program and Install Sling Box Audio and Video Systems Lab Activity: Whole Audio System Channel Vision Surround Sound Systems May 20 Clean-up Equipment May 27 Final Examination

Lab Content

Orientation / Introduction. Tools and Safety. (Home Integration VS Home Automation) Homework (Draw Your Own Home) Home Automation Control vs. Automation. Lab Activity: Power to all equipment and project setup. Wire and Cable Basics Lab Activity: RG 6, RG 59, and F connector, BNC Connectors, RCA Cables and Telephone Cable Structured Wiring Installation Lab Activity: Cat 5 cabling to modems, routers and hubs. Home Lighting Basics Lab Activity: Programming Lighting Control Home Lighting Basics Lab Activity: Programming Lighting Control Lab Activity: ISY Installation Lab Activity: ISY Programming Telecommunications Basics Midterm Security System Lab Activity: Elk System Lab Activity: Elk System Lab Activity: Security Cameras Security System Security System Heating Ventilation and Air-conditioning Lab Activity: Thermostats Lab Activity: Program and Install Sling Box Audio and Video Systems Lab Activity: Whole Audio System Channel Vision Surround Sound Systems May 20 Clean-up Equipment May 27 Final Examination

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- Lab (04)
- DE Live Online Lab (04S)

Instructional Techniques

Lecture, demonstrations, cooperative learning groups, and lab assignments.

Reading Assignments

.

Writing Assignments

Short answer homework assignments and electrical house load calculations

Out-of-class Assignments

.

Demonstration of Critical Thinking

Students will be given various types of written tests for their evaluation in this course during this semester. These will include identification, multiple choices, fill-in the blank and mathematical calculation.Students will be required to do lab assignments to meet code requirements per the NEC (National Electrical Code)Students will be required to participate in class discussions and presentations.

Required Writing, Problem Solving, Skills Demonstration

Short answer homework assignments and electrical house load calculations

Textbooks Resources

1. Required Glister, Ron with Heneveld. HTI+ Home Technology Integrator CEDIA Installer I Exam Guide All-In-One, ed. McGraw-Hill/Osborne, 2004 Rationale: - 2. Required National Fire Protection Association.. National Electrical Code 2008., ed. Massachusetts: National Fire Protection Association, Inc, 2007