

Glendale College

Course Outline of Record Report

Course ID 010112
Revision - April 2025

ECT161 : Residential Electronics Systems Integrator (RESI) Training

General Information

Author:	<ul style="list-style-type: none"> Christopher Herwerth
Course Code (CB01) :	ECT161
Course Title (CB02) :	Residential Electronics Systems Integrator (RESI) Training
Department:	ECT
Proposal Start:	Spring 2026
TOP Code (CB03) :	(0934.30) Telecommunications Technology
CIP Code:	(14.1004) Telecommunications Engineering.
SAM Code (CB09) :	C - Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	Yes
Course Control Number (CB00) :	CCC000587393
Curriculum Committee Approval Date:	04/23/2025
Board of Trustees Approval Date:	06/17/2025
Last Cyclical Review Date:	04/23/2025
Course Description and Course Note:	ECT 161 introduces students to the Residential Electronics Systems Integrator (RESI). Topics include the design of prewiring for home theater and telecommunications equipment interconnection, network installation, and wiring for cable television, satellite and antenna outlets, telephone equipment outlets, audio and video entertainment, and computer equipment.
Justification:	Mandatory Revision
Academic Career:	<ul style="list-style-type: none"> Credit
Mode of Delivery:	<ul style="list-style-type: none"> In-Person Remote Online
Author:	No value
Course Family:	No value

Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none"> Electronic Technology (Radio, television, computer repair, avionics)
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Not transferable

Transferability Status

Not transferable

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	54
Total Course Out-of-Class Hours	108
Total Student Learning Hours	162

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience Education

Status (CB10)

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	3	6
Laboratory Hours	0	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	54

Laboratory	0
Studio	0
Total	54
Course Out-of-Class Hours	
Lecture	108
Laboratory	0
Studio	0
Total	108

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Prerequisites, Corequisites, Recommended Corequisites, and Recommended Preparation

Advisory

ECT110 - Electricity and Electronics Principles

Objectives

- Determine the value of resistors from their color code, measure DC (Direct Current) and AC (Alternating Current) voltage.
- Identify conductors and insulators, and test common types of switches.
- Measure current in a circuit, verify ohms law, investigate errors in measurement.
- Design a series and parallel circuit that will meet specified resistance requirements.
- Develop a general rule for calculating the voltage across each resistor in an unloaded and loaded resistive voltage divider.
- Develop methods of troubleshooting circuits using voltage, current, capacitor, and resistance measurements.
- Identify the operating controls of an oscilloscope.
- Identify the controls and features of an audio frequency generator.
- Describe the effect of AC and DC electrical motors and inductance.
- Identify and measure affect transformers and magnetic relays and contactors.

Entry Standards

Entry Standards	Description
Describe basic laboratory equipment and components.	No Value

Course Limitations

Cross Listed or Equivalent Course	Description
No value	No value

Specifications

Methods of Instruction

Methods of Instruction	Lecture
------------------------	---------

Methods of Instruction	Multimedia
------------------------	------------

Methods of Instruction	Guest Speakers
------------------------	----------------

Out of Class Assignments

- Field trip (e.g., visit IT department of a federal or state building)
- Projects (e.g., projects consisting of instructions to complete various tutorials)
- Problems (e.g., low voltage circuit analyses)

Methods of Evaluation	Description of Activity/Interaction
Exam/Quiz/Test	Quizzes
Exam/Quiz/Test	Midterm examination
Exam/Quiz/Test	Final examination

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Holt, Mike	Understanding NEC Requirements for Limited Energy & Communications Systems	Mike Holt Enterprises	2023	9781960005267

Other Instructional Materials (i.e. OER, handouts)

No Value

Learning Outcomes

Course Objectives

Describe Occupational Safety and Health Administration (OSHA) rules, National Electrical Code (NEC) and National Fire Protection Code (NFPC).

Describe the residential low-voltage industry standard.

Use residential electrical blueprints.

Install Unshielded Twisted Pair (UTP), Category (CAT) 5e and 6 fittings.

Describe inductive signals and surface mount channeling.

Calculate formulas related to power generation.

Explain power generators and electrical service to residences.

Describe analog and digital telephone systems.

Demonstrate the use of fiber optic connectors and splice methods.

Use trade tools and equipment.

Identify and explain troubleshooting methods.

SLOs

Recognize the skills required for low voltage wiring installation.

Expected Outcome Performance: 70.0

Identify the components required for use in residential wiring and components installation.

Expected Outcome Performance: 70.0

Demonstrate the use of trade tools and equipment required for low-voltage wire and component installation.

Expected Outcome Performance: 70.0

Describe the process required by ETA International to be RESI BASIC Skills and Knowledge certified.

Expected Outcome Performance: 70.0

Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

Safety (5 hours)

- Tasks performed by trained first aid workers
- Electricity lethality to humans
- OSHA body restraint rules
- Use of ladders and working at heights
- Technician adherence to NEC and NFPC codes
- Usage of the Residential Electrical Maintenance Code (REMC)

Industry Standards (4 hours)

- Telecommunication Industry Association standards
- Cabling components and methods addressed by industry standards
- Telcordia standards related to cabling
- Cable pair colors and applicable standards

Low Voltage Wiring (5 hours)

- Use of electrical blueprints and adherence to specifications
- American Wire Gauge (AWG) standards
- Governmental permits required for low voltage wiring
- Low voltage lighting
- Usage
- Precautions
- Audio signal and speaker cabling and wiring
- CAT 5e and 6 UTP cables and preferred usages
- Control and sensor wiring
- Home automation
- Manual operation

Cabling and Connectors (6 hours)

- Copper coax
- Plastic optical fiber
- 66 or 110 block panels
- Distribution
- Interface center for telecom services

- Patch cabling
- Workstation cables
- Backbone/distribution cabling
- Comparison to link, workstation and patch cables
- Composite and Hybrid Cables
- Cable prepping tools and techniques
- Types of signal losses in cables
- Purpose of matching correct impedances
- Converting dB levels to microvolt levels
- Installation of F coaxial cable fittings
- Installation of UTP, CAT 5e and 6 fittings
- Ground loops in electrical circuits

Prewiring (5 hours)

- Roughing-in cabling
- Biscuit jacks/surface mount boxes
- Wall plates
- Location inside structure
- J-hooks and cable trays
- Inductive signals and interference
- Effects and precautions
- Separation distances for cabling
- Stranded vs. solid wiring
- Detriments in exceeding Tensile Strength/Bend Ratios
- Wiring labeling
- Purposes
- How applied
- Methods to estimate cable requirements for individual applications
- UTP untwist precautions
- NEXT/FEXT
- Problems associated with coaxial cable installation or repair
- Surface mount channeling

Electrical Basics (5 hours)

- Calculations used for Ohm's Law, E, I, R & W formulas
- Electric power generators and service
- Wire size choices and distribution
- Fuse and circuit breaker boxes components
- Electrical meters
- DC and AC
- Electric circuit grounding and NEC rules
- Lightning
- Hazards
- Arrestors
- Ground blocks
- Comparison of AC power, voice, radio, TV and data frequencies
- Causes and methods of reducing electrical interference

Telephone Systems (4 hours)

- Basic telephone circuit
- Tip and Ring
- Wiring conventions in POTS systems
- Expected voltages on telephone plugs
- Conventional color of UTP wires used with 2/4/8 wire connections
- Comparison of Analog and Digital telephone systems
- Punch Down Blocks – 66/110
- Differences between Internet - Cable TV – Wireless Systems and B-VoIP
- Problems associated with telephone systems
- Repair solutions

Fiber Optics (3 hours)

- Eye, skin and inhalation safety precautions
- Basic light theory
- Commonly used wavelengths/frequencies
- Connector and splice methods and testing
- Differences between glass and plastic optical fiber

Residential Management (2 hours)

- Bar coding and modern inventory control methods
- Manual, automatic and programmable appliances control

Premises Restoration (2 hours)

- Drywall penetrations of walls and ceilings
- Restoration techniques and materials used

Tools & Equipment (4 hours)

- Usage of Volt/Ohm/Amp multimeters
- Wire strippers, crimps, punch-down tool & fish tapes
- Gopher poles, drills/bits, scissors and face mask
- Toner and light meter/source
- Installation of F connector using compression tool
- Use of wire pull lubricant
- Usage and safety concerns for hand & power tools
- Cable markers
- Identification of wires that have no markers

Customer Orientation & Documentation (5 hours)

- Customer/owner relations
- Problem prevention
- Conflict resolution concepts

Troubleshooting (4 hours)

- Divide & conquer troubleshooting method
- Common problems and solutions in residential cabling
- Sources of on-line and phone technical help from product makers and suppliers

Total hours: 54**Additional Information****Repeatability**

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Is it possible this course will have a material fee?

No

I have contacted my library liaison (<https://campusguides.glendale.edu/faculty/liasons>):

Yes

What term(s) will this course be offered?

Fall/Spring/Summer

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value

Resources

Did you contact your departmental library liaison?

Yes

If yes, who is your departmental library liaison?

Adina Lerner (Technology & Aviation, Visual & Performing Arts)

Did you contact the DEIA liaison?

Yes

Were there any DEIA changes made to this outline?

No

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value