ECT100 : Analytical Electronics

General Information

Author:	• Christopher Herwerth
Course Code (CB01) :	ECT100
Course Title (CB02) :	Analytical Electronics
Department:	ECT
Proposal Start:	Spring 2026
TOP Code (CB03) :	(0934.00) Electronics and Electric Technology
CIP Code:	(47.0101) Electrical/Electronics Equipment Installation and Repair Technology/Technician, General.
SAM Code (CB09) :	Possibly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000190959
Curriculum Committee Approval Date:	11/13/2024
Board of Trustees Approval Date:	04/22/2025
Last Cyclical Review Date:	11/13/2024
Course Description and Course Note:	ECT 100 is a comprehensive study in the mathematics specifically used in the electronics and computer technology field. Topics include the application of DC circuit analysis, AC fundamentals, simultaneous equations, AC circuit analysis statistics of numerical data. Students prepare for the Photovoltaic Installer Examination for certification by the Electronics Technician Association (ETA) International.
Justification:	Mandatory Revision
Academic Career:	• Credit
Mode of Delivery:	No value
Author:	No value
Course Family:	No value

Academic Senate Discipline

Primary Discipline:	• 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

ESL141 - Grammar And Writing IV

Objectives

- Compose a 400 to 450-word thesis-based essay which: (a) summarizes and cites appropriately a reading passage provided as a prompt, (b)includes a clear thesis statement, (c) uses evidence to support the thesis, (d) shows clear organization into an introduction, body, and conclusion, and (e) uses appropriate rhetorical modes such as comparison/contrast, cause/effect, and persuasion in order to support a thesis.

Entry Standards

Entry Standards	Description
No value	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	Demonstrations
Methods of Instruction	Field Activites (Trips)

Out of Class Assignments

- Calculations (e.g. solve applied electronics calculation problems)

Methods of Evaluation	Rationale
Exam/Quiz/Test	Quizzes
Exam/Quiz/Test	Examination at the end of each instructional module
Exam/Quiz/Test	Final examination

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Melissa D. Weston and Patrick J. Klette	Electrical Math Principles and Applications	American Technical Publishers	2021	978-0-8269-1849-9

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

No Value

Learning Outcomes

Course Objectives

Demonstrate knowledge and critical thinking skills in the essentials of technical mathematics for electronics.

Determine appropriate engineering notations and electronics units of measure.

Describe National Electrical Code (NEC) and National Fire Protection Code (NFPC) calculations.

Describe the residential load calculations and standard.

Use residential and commercial electrical calculations for blueprints.

SLOs

Apply principles of electricity and electronics to calculate electrical loads and install solar panels. Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
ECT Electronics & Computer Technology - Electronics Technology Technician	Demonstrate knowledge in electrical and voltage concepts
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	Demonstrate knowledge in photo-voltaic concepts
	Demonstrate knowledge in photo-voltaic concepts
	Knowledge and training for entry into electronics and electrical industries
	Knowledge and training for entry into electronics and electrical industries

Use circuit analysis strategies with scientific calculators. Expected Outcome Performance: 70.0

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	Knowledge and training for entry into electronics and electrical industries
	Knowledge and training for entry into electronics and electrical industries

Implement appropriate engineering notation and electronic units for advanced mathematics in the electrical field. Expected Outcome Performance: 70.0

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Course Content

Lecture Content

Decimal System – Review (6 hours)
- Arithmetic functions
- Significant digits
- Electronic functions
- Resistance in series and parallel circuits
- Scientific notation
- Use of calculators in electronics

Applied Algebra Fundamentals (6 hours)
- Trade expressions and terms
- Exponents and roots
- Algebraic mathematic functions of electronics
- Linear circuits

DC Circuit Analysis (6 hours)
- Ohm's Law
- Kirchoff's Laws
- Norton theorems

AC Fundamentals (6 hours)
- The Right Triangle
- Frequency and time
- Angular velocity
- Root mean square (RMS)
- Graphing AC Phasors

Simultaneous Equations (6 hours)
- Superposition theorems
- 3 loop circuits
- Mesh method

AC Circuit Analysis (Resistive-Capacitive-Inductive) (6 hours)
- Series circuits
- Parallel circuits

- Filters

Complex Numbers (6 hours)
- RCL circuit analysis
- Rectangular form
- 3 phase circuit breakdown
- Circuit conversions

Logarithms (6 hours)
- Bode plot
- Reference levels
- Harmonics fundamentals
- Gain measurements and frequency response
- RC Time Constants

Computer Number Systems (6 hours)
- Binary
- Octal
- Hexadecimal
- Conversions
- Computer Arithmetic

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 Value

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

No Value

What term(s) will this course be offered?

No Value

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

No Value

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?

No

If yes, who is your departmental library liason?

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

Did you contact the DEIA liaison?

No

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