



COURSE OUTLINE : ECT 100
D Credit – Degree Applicable
COURSE ID 001439
Cyclical Review: September 2020

COURSE DISCIPLINE : ECT
COURSE NUMBER : 100
COURSE TITLE (FULL) : Analytical Electronics
COURSE TITLE (SHORT) : Analytical Electronics

CATALOG DESCRIPTION

ECT 100 is designed to offer the student a comprehensive study in the mathematics specifically used in the electronics and computer technology field. Phases covered include application of DC circuit analysis, AC fundamentals, simultaneous equations, AC circuit analysis statistics of numerical data. This class helps in preparing students to pass the Photovoltaic Installer examination and becoming certified by Electronics Technician Association (ETA) International.

Total Lecture Units: 3.00

Total Laboratory Units: 0.00

Total Course Units: 3.00

Total Lecture Hours: 54.00

Total Laboratory Hours: 0.00

Total Laboratory Hours To Be Arranged:0.00

Total Contact Hours: 54.00

Total Out-of-Class Hours: 108.00

Recommended Preparation: ENGL 100 or ESL 141.



ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	ESL	141	Grammar And Writing IV	Demonstrate control of verb tenses in active and passive voice, gerunds and infinitives, conditionals real and unreal, adjective, noun, and adverb clauses, and transitional expressions;	Yes
2	ESL	141	Grammar And Writing IV	comprehend multi-paragraph reading passages in textbooks.	Yes
3				summarize, analyze, and synthesize information, express and apply standards for judgment, compare and contrast, and evaluate evidence in order to form and state reasoned opinions;	Yes
4				gather and organize information through library research;	Yes
5				demonstrate a command of grammar, diction, syntax, and mechanics sufficient for college level work.	Yes
6	ENGL	100	Writing Workshop	Read, analyze, and evaluate contemporary articles and stories to identify topic, thesis, support, transitions, conclusion, audience, and tone;	Yes
7	ENGL	100	Writing Workshop	read, analyze, and evaluate contemporary articles and stories for the comprehension of difficult content and the identification of main ideas and (topic-based) evidence;	Yes
8	ENGL	100	Writing Workshop	read, analyze, and evaluate student compositions for unity, development, use of evidence, interpretation, coherence, and variety of sentence form;	No
9	ENGL	100	Writing Workshop	write a summary of a contemporary article or story with correct citation techniques;	Yes
10	ENGL	100	Writing Workshop	write an argumentative essay that has an introduction, body paragraphs, and a conclusion, demonstrating a basic understanding of essay organization;	No
11	ENGL	100	Writing Workshop	write an argumentative essay that addresses the topic, is directed by a thesis statement, uses appropriate textual evidence, develops logical interpretations, and concludes with some compelling observations;	No



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12	ENGL	100	Writing Workshop	write an argumentative essay that integrates the ideas of others (i.e., authors) through paraphrasing, summarizing, and quoting with correct citation techniques;	No
13	ENGL	100	Writing Workshop	write an argumentative essay that generates novel ideas (those that add to the conversation rather than repeating the author's ideas) related to the topic and the readings;	No
14	ENGL	100	Writing Workshop	write compositions (e.g., summaries and argumentative essays) that are easy to read and follow, though some errors in grammar, mechanics, spelling, or diction may exist;	Yes
15	ENGL	100	Writing Workshop	proofread and edit essays for content, language, citation, and formatting problems.	No

EXIT STANDARDS

- 1 Demonstrate knowledge and critical thinking skills in the essentials of technical mathematics for electronics by solving at least 70% of assigned problems correctly in all phases of course;
- 2 determine appropriate engineering notations and electronics units of measure;
- 3 describe National Electrical Code (NEC) and National Fire Protection Code (NFPC) calculations;
- 4 describe the Residential load calculations and standard;
- 5 use residential and commercial electrical calculations for blueprints.

STUDENT LEARNING OUTCOMES

- 1 apply principles of electricity and electronics in order to calculate electrical loads and install solar panels;
- 2 use circuit analysis strategies with scientific calculators;
- 3 implement appropriate engineering notation and electronic units for advanced mathematics for in the electrical field.

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Decimal System – Review <ul style="list-style-type: none"> • Arithmetic functions • Significant digits • Electronic functions • Resistance in series and parallel circuits • Scientific notation • Use of calculators in electronics 	6	0	6



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2	Applied Algebra Fundamentals • Trade expressions and terms • Exponents and roots • Algebraic mathematic functions of electronics • Linear circuits	6	0	6
3	DC Circuit Analysis • Ohm’s Law • Kirchoff’s Laws • Norton theorems	6	0	6
4	AC Fundamentals • The Right Triangle • Frequency and time • Angular velocity • Root mean square (RMS) • Graphing AC Phasors	6	0	6
5	Simultaneous Equations • Superposition theorum • 3 loop circuits • Mesh method	6	0	6
6	AC Circuit Analysis (Resistive-Capacitive-Inductive) • Series circuits • Parallel circuits • Filters	6	0	6
7	Complex Numbers • RCL circuit analysis • Rectangular form • 3 phase curicuit breakdown • Circuit conversions	6	0	6
8	Logarithms • Bode plot • Reference levels • Harmonics fundamentals • Gain measurements and frequency response • RC Time Constants	6	0	6
9	Computer Number Systems • Binary • Octal • Hexadecimal • Conversions • Computer Arithmetic	6	0	6
				54

OUT OF CLASS ASSIGNMENTS

- 1 calculations (e.g. solve applied electronics calculation problems).



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METHODS OF EVALUATION

- 1 quizzes;
- 2 examination at the end of each instructional module;
- 3 final examination.

METHODS OF INSTRUCTION

- Lecture
- Laboratory
- Studio
- Discussion
- Multimedia
- Tutorial
- Independent Study
- Collaboratory Learning
- Demonstration
- Field Activities (Trips)
- Guest Speakers
- Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
Electronics and Computer Math	Required	Pearson Prentice Hall	8	Print	Deem, Bill R.	0-13-091127-5	2006