

CLEVELAND INSTITUTE OF ELECTRONICS SYLLABUS

AC Circuit Theory Course

View entire [Industrial Electronics with PLC Training Lab](#) program.

COURSE DESCRIPTION:

This course is designed to explore the principles of AC circuits, the components used, rectifiers, and basic amplifiers. The mathematics of square roots, phasors, graphical solutions, and scientific notation is also presented.

LEARNING ACTIVITIES:

This course consists of sixteen lessons. Each lesson requires you to read topics, or portions thereof, and to answer questions based on the assigned readings. You should solve all the problems in the exercise sections before continuing to the next topic.

PERFORMANCE REQUIREMENTS:

Master the concepts presented within each reading assignment and solve all problems in all exercise sections.

STUDENT EVALUATION AND GRADING METHOD:

Students are required to complete all performance requirements above. Each of the sixteen lessons concludes with an examination comprising of a multiple-choice test. The assignment examinations are open book

The minimum passing grade is 70%. If you receive a 69%, you must take the exam again. For AAS students, a cumulative average of 78% must be maintained.

READING LIST:

Textbook: Vital Statistics of AC Circuits / Magnetism and Magnetic Circuits/ Induced Voltage and Current (2511 A,B,C)

Author: Charles Mayer

Publisher: Cleveland Institute of Electronics

Goals: Upon the completion of this lesson the student will sine wave characteristics, phase relationships, combining ac and dc components, magnetic properties, induced voltage and Benz's Law.

Textbook: Thinking Circuits and Automatic Switches / Relays and Robots (2313 A,B,C)

Author: Edward M. Prentke

Publisher: Cleveland Institute of Electronics

Goals: Upon the completion of this lesson the student will understand digital circuits and relays as used in AND, OR and NOT circuits.

Textbook: Scientific Notation / Units of Measure (2103 A,B,C)

Author: Darrell Geiger

Publisher: Cleveland Institute of Electronics

Goals: Upon the completion of this lesson the student will comprehend the meaning of exponents, powers of 10, prefixes, and the metric system.

Textbook: Inductance / Mutual Inductance and Magnetic Coupling /Transformers (2304 A,B,C)

Author: CIE Technical Staff

Publisher: Cleveland Institute of Electronics

Goals: Upon the completion of this lesson the student will be able to comprehend inductance, magnetic coupling, transformer operation, and transformer characteristics.

Textbook: Electrical Charges and Capacitance / Capacitors in Action (2512 A,B)

Author: Charles Mayer

Publisher: Cleveland Institute of Electronics

Goals: Upon the completion of this lesson the student will be familiar with electric fields, charges, capacitor operation, phase, and reactance.

Textbook: Rectifiers and Amplifiers/ Transistor and FET Amplifiers (2403 A,B)

Author: Angelo C. Gillie

Publisher: Cleveland Institute of Electronics

Goals: Upon the completion of this lesson the student will narrate the operation of an amplifier and rectifiers, their basic operation, and circuit parameters.

Textbook: Reading and Using Graphs / Phasors and Formulas (2104 A,B)

Author: Darrell Geiger

Publisher: Cleveland Institute of Electronics

Goals: Upon the completion of this lesson the student will have a good understanding of how to read graphs, phasors, how to transpose formulas, and solve proportions.