Electronics 2
Outline of Instruction

Course Information
Organization: Monroe County Community College, Applied Science and Engineering Technology
Developers: Thomas Harrill
Development Date: 10/24/2007
Course Number: ELEC 134
Potential Hours of Instruction: 90
Total Credits: 4

Description
A continuation of Electronics I. Topics covered include: decibels, multistage and differential amplifiers, negative feedback, frequency limitations, op-amp applications, special-purpose ICs, oscillators, power amplifiers, regulated power supplies and an introduction to radio-frequency techniques. An important part of the course is the construction

Major Units
1. Decibels and frequency limits
2. Multistage amplifiers and feedback
3. Differential amplifiers
4. Op-amp applications
5. Power amplifiers
6. Oscillators

Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Lecture/Lab</td>
<td>60</td>
<td>3</td>
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Textbooks
Thomas L. Floyd. ELECTRONIC DEVICES.

Learner Supplies
Proto-Board.
Scientific Calculator.
Tools (Not Required).

Prerequisites
ELEC 132

Exit Learning Outcomes
Program Outcomes
A. Acquire and apply technical expertise in the areas of Circuit analysis, Analog electronics, Digital electronics, Microprocessors, and Communication systems.
B. Develop and Demonstrate Problem Solving Skills.
C. Develop a willingness to learn independently.
D. Develop and demonstrate effective wiring and laboratory skills.
E. Demonstrate Equipment/Instrumentation Competence
F. Develop and demonstrate Technical Documentation/Lab Report writing skills and the ability to comprehend Technical Documentation including Schematic Diagrams
G. Value Safety Training, Safe Work Practices and acknowledge Safety Standards
H. Demonstrate a thorough understanding of DC and AC theory and operating concepts.

General Education Outcomes
A. Apply mathematical approaches to the interpretation of numerical information
B. Apply mathematical approaches to the analysis of numerical information
C. Demonstrate an understanding of the process of scientific inquiry
D. Use computer technology to retrieve information

Course Outcomes
1. Identify/Recognize negative-feedback, dif-amp, push-pull, complementary-symmetry, and oscillator circuits
2. Identify/Recognize class-C amplifier, amplitude modulator, and AM detector circuits
3. Identify/Recognize time and oscillator circuits using the 555 IC timer
4. Demonstrate/Practice by determining the high- and low-frequency limits of a common-emitter amplifier, and prepare a Bode plot
5. Demonstrate/Practice open-loop gain and feedback factor, calculate the closed-loop gain of an amplifier
6. Demonstrate/Practice by measuring the differential and common-mode gain of a dif amp
7. Demonstrate/Practice by analyzing a complementary-symmetry amplifier for voltage gain and maximum output voltage
8. Demonstrate/Practice given the feedback components C1, C2, and L, determine the frequency and gain requirement of a Colpitts oscillator
9. Demonstrate/Practice by analyzing an oscillator using a 555 IC for frequency
10. Demonstrate/Practice by analyzing a zener regulator circuit for ripple, maximum output current, and minimum input voltage
11. Demonstrate/Practice by constructing a 0-to-20 V regulated power supply with current limiting from 10 mA to 500 mA, using four transistors and a printed-circuit board
12. Demonstrate/Practice by troubleshooting and performing a specifications check on the above power supply