Course Syllabus
Wayne County Community College District
EE 205 Linear Integrated Circuits

CREDIT HOURS: 2.00

CONTACT HOURS: 45.00

COURSE DESCRIPTION:

Prereq: EE 111
This course will cover the fundamentals of linear integrated circuits and their application. It will concentrate on the design analysis of basic op-amps and their applications to comparators, integrators, differentiators, oscillators, amplifiers, timers, function generators, filters and phase circuits. Students will test the above circuits and devices in the lab using DC power supplies, signal generators, multimeters and oscilloscope.

EXPECTED COMPETENCIES

After completion of this course the student should be able to do the following:
1. Describe the basic op-amp and its characteristics
2. Discuss the differential amplifier and its operation
3. Discuss several op-amp parameters
4. Explain negative feedback in op-amp circuits
5. Discuss op-amp compensation
6. Analyze three basic op-amp configurations
7. Describe impedances of the three op-amp configurations
8. Troubleshoot op-amp circuits
9. Discuss the basic area of op-amp responses
10. Analyze the open-loop response of an op-amp
11. Discuss positive feedback and stability in op-amp circuits
12. Explain op-amp phase compensation
13. Analyze the operation of several basic comparator circuits
14. Analyze the operation of several types of summing amplifiers
15. Analyze the operation of integrators and differentiators
16. Troubleshoot basic op-amp circuits
17. Analyze and explain the operation of an instrumentation amplifier
18. Analyze and explain the operation of an isolation amplifier
19. Analyze and explain the operation of the OTA
20. Analyze and explain the operation of log and antilog amplifiers
21. Analyze and explain several special types of op-amp circuits
22. Describe the gain-versus-frequency responses of the basic filters
23. Describe the three basic filter response characteristics and other filter parameters
24. Analyze active low-pass filters
25. Analyze active high-pass filters
26. Analyze active band-pass filters
27. Analyze active band-stop filters
28. Discuss two methods for measuring frequency response
29. Describe the basic concept of an oscillator
30. Discuss the principles on which the operation of oscillators is based
31. Describe and analyze the operation of basic RC oscillators
32. Describe and analyze the operation of basic LC oscillators
33. Describe and analyze the operation of basic nonsinusoidal oscillators
34. Use a 555 timer in an oscillator application
35. Explain the basic concept of a phase-locked loop (PLL)
36. Describe the basic concept of voltage regulation
37. Discuss the principles of series voltage regulators
38. Discuss the principles of shunt voltage regulators
39. Discuss the principles of switching regulators
40. Discuss integrated circuit voltage regulators
41. Discuss applications of IC voltage regulators

ASSESSMENT METHODS

Student performance may be assessed by examination, quizzes, case studies, oral reports, group discussion, written reports or presentations. The instructor reserves the option to employ one or more of these assessment methods during the course.

GRADING SCALE

90%-100% = A
80%-89.9% = B
70%-79.9% = C
60%-69.9% = D
<60% = E