



Purpose: It is the intention of this Administrative-Master Syllabus to provide a general description of the course, outline the required elements of the course and to lay the foundation for course assessment for the improvement of student learning, as specified by the faculty of Wharton County Junior College, regardless of who teaches the course, the timeframe by which it is instructed, or the instructional method by which the course is delivered. It is not intended to restrict the manner by which an individual faculty member teaches the course but to be an administrative tool to aid in the improvement of instruction.

Course Title - Linear Integrated Circuits

Course Prefix and Number - CETT 1457

Department – Electronics Eng. Tech.

Division - Technology and Business

Course Type: (check one)

- Academic General Education Course (from ACGM – but not in WCJC Core)
- Academic WCJC Core Course
- WECM course (This course is a Special Topics or Unique Needs Course: Y or N)

Semester Credit Hours # : Lecture hours# : Lab/other hours # **4:3:3**

Equated Pay hours for course – 4.5

Course Catalog Description - A study of the characteristics, operations, stabilization, testing, and feedback techniques of linear integrated circuits. Application in computation, measurements, instrumentation, and active filtering.

List Lab/ Other Hours
Lab Hours 3
Clinical Hours
Practicum Hours
Other (list)

Prerequisites/Co requisites - Credit for CETT 1405 and CETT 1429

Prepared by David Kucera

Date 06/20/12

Reviewed by department head David Kucera

Date 06/20/12

Accuracy verified by Division Chair David Kucera

Date 08/03/12

Approved by Dean of Vocational Instruction or Vice President of Instruction Lac

Date 11-9-12



I. Topical Outline – Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, clinical or other non-lecture instruction):

The following performance will be expected of any student completing this course with a passing grade. There is no absolute time limit on the performance of these objectives, unless noted, but the grade received by the student will depend, in part, on the relative speed and precision of the student's performance in these tasks. Where subjective evaluations are indicated, the instructor will make these judgments based on his or her knowledge of the skills required to place a graduate with the expectation of successful on-job performance.

The student will be expected to perform the following tasks in written examination or laboratory demonstration:

Frequency Effects

- Amplifier frequency response
- Decibel power gain
- Decibel voltage gain
- Bode plots
- Miller effect
- Bandwidth

Differential Amplifiers

- DC analysis
- AC analysis
- Input characteristics of an OP-Amp
- Common mode gain
- Integrated Circuits

Operational Amplifiers

- The 741
- Inverting
- Non-inverting
- Applications
- Linear ICs

Negative Feedback

- Types
- VCVS voltage gain
- ICVS amps
- VCIS amplifier
- Bandwidth

Linear Op-Amp Circuits

- Inverting
- Non-inverting
- Differential amplifiers
- Instrumentation amplifiers
- Summing amplifiers

- Current boosters
- Voltage controller sources
- Automatic gain control

Active Filters

- Ideal response
- Passive filters
- First order stages
- Higher order filters
- Low pass
- High pass
- Band pass

Nonlinear circuits

- Comparators
- Integrators
- Waveform generators
- Differentiator

Oscillators

- Wein bridge
- Colpitts oscillator
- LC oscillators
- Crystal
- 555 timer
- PLL

II. Course Learning Outcomes

Course Learning Outcome	Method of Assessment
Students successfully complete all aspects of the course and retain the knowledge and skills required to work and keep a job in Electronics Technology.	Assessed in Capstone Experience: CETT 2370 Final Project course.

III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.

A printed text covering appropriate material such as Electronics Principles by Malvino and Bates.

IV. Suggested Course Maximum - 30 lecture, 15 laboratory

V. List any specific spatial or physical requirements beyond a typical classroom required to teach the course.

Lecture facilities for 30 students. Laboratory facilities for 18 students must include 9 bench positions each with a digital meter, logic probe, 20 MHz oscilloscope and probes, bread boarding facility with power supply and signal generator, and a stock of basic AC circuit components.

VI. Course Requirements/Grading System – Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course

Evaluation of Performance:

Course grades will be determined by the percentage of course objectives for which the student can demonstrate mastery and by attendance as stated in the Departmental Policy sheet provided to the student. Mastery of course objectives will be determined by written examinations, an attendance grade as described in the Departmental Policy handout, a daily work grade which will include graded homework, graded laboratory work, and a comprehensive final exam.

Approximate Grade Evaluation Summary:

Major tests	60%
Attendance.....	10%
Lab reports, homework, and quizzes.	15%
Comprehensive Final examination	15%

VII. Curriculum Checklist

- **Academic General Education Course** (from ACGM – but not in WCJC Core)
No additional documentation needed

- **Academic WCJC Core Course**
Attach the Core Curriculum Checklist, including the following:
 - Basic Intellectual Competencies
 - Perspectives
 - Exemplary Educational Objectives

- **WECM Courses**
If needed, revise the Program SCANS Matrix & Competencies Checklist.