Miami Dade College

Course Competencies Template - Form 112

GENERAL INFORMATION	
Name: Diane King	Phone #: 77021
Course Prefix/Number: EET3158C	Course Title: Linear Integrated Circuits and Devices
Number of Credits: 4	
Degree Type	☐ B.A. ☐ B.S. ☒ B.A.S ☐ A.A. ☐ A.S. ☐ A.A.S. ☐ C.C.C. ☐ A.T.C. ☐ V.C.C
Date Submitted/Revised: 02-26-2008	Effective Year/Term: 2009-2
☒ New Course Competency ☐ Revised Course Competency	
Course to be designated as a General Education course (part of the 36 hours of A.A. Gen. Ed. coursework): ☐ Yes ☒ No	
The above course links to the following Learning Outcomes: ☐ Communication ☒ Numbers / Data ☒ Critical thinking ☐ Information Literacy ☐ Cultural / Global Perspective ☐ Social Responsibility ☐ Ethical Issues ☒ Computer / Technology Usage ☐ Aesthetic / Creative Activities ☐ Environmental Responsibility	
Course Description (limit to 50 words or less, **must correspond with course description on Form 102**): This is an upper division level course for students majoring in electronics engineering technology designed to provide students with practical skills and knowledge needed for the application of operational amplifiers, comparators, phase-locked loops, timers, regulators, other integrated circuits in electronic systems. Students learn to apply these skills towards the design of amplifiers, active filters, oscillators, differentiators, integrators and other miscellaneous integrated circuit based systems. Prerequisite: EET2101C. Laboratory fee. (2 hr. lecture; 4 hr. lab)	
Prerequisite(s): EET2101C	Co requisite(s):

Course Competencies: (for further instruction/guidelines go to:

http://www.mdc.edu/asa/curriculum.asp)

Competency 1: The student will demonstrate the ability to define and apply numbering systems to codes and arithmetic operations by:

1. Applying principles of negative feedback to amplify signals.
2. Defining over sampling-conversion principles, sigma-delta converters, and calculating data conversions.
3. Calculating the effects of dynamic limitations in both the frequency and time domains on the resistive circuits and filters to reduce noise.
4. Using a simulation program (e.g., Workbench, PSpices) to calculate noise.

Revision Date: 02-12-2008

Approved By Academic Dean Date: _____ Reviewed By Director of Academic Programs Date: _____

Competency 2: The student will demonstrate the ability to analyze and minimize logic circuits using Boolean operations by:

1. Comparing and visualizing voltage feedback and current feedback.
2. Analyzing audio filters, second-order filters, KRC, multiple-feedback, and state-variable filters.
3. Designing complex-plane system and filter sensitivities.

Competency 3: The student will demonstrate an understanding of how to analyze and design digital circuits by:

1. Analyzing signal generators, including Wien-bridge and quadrature oscillators, multi-vibrators, timers, functional generators and V-F and F-v converters.
2. Designing a basic amplifier.
3. Creating applications based on the operation amplifier.
4. (We have Workbench) Using PSpice(?) to visualize the effect on different frequency-compensations.

Competency 4: The student will demonstrate an understanding of basic logic circuits by:

1. Identifying different levels of photoconductive modes.
2. Designing frequency-dependent devices, such as capacitors, inductors, and operation amplifiers.
3. Interchanging the components of a low-pass R-C stage.
4. Designing multiple feedback filters with state variable and bi-quad filters.

Competency 5: The student will demonstrate an understanding of integrated circuits (IC) devices by:

1. Implementing the procedure used in coinciding reactive elements present based on Bessel responses.
2. Creating open loop, closed loop, and current feedback amplifiers.
3. Using op amp (e.g. LM308) to design a current feedback amplifier.
4. Applying internal and external frequency composition in amplifiers.
5. Discussing feedback, stability and undesired oscillations.
6. Designing a comparator application, Schmitt trigger, precision rectifier, peak detector, and Sample-and-Hold amplifiers.

Competency 6: The student will demonstrate an understanding of integrated circuit applications to systems by:

1. Designing and demonstrating sine wave generator, multi vibrator, triangle wave generator, saw tooth wave generator, and relaxation oscillator.
2. Applying signals using the voltage-controlled oscillator and designing suitable signal controls.

3. Distinguishing between different types of regulators and selecting the appropriate type for use in specific applications, including voltage regulators, linear regulator, switching regulators, and monolithic switching regulators.

Competency 7: The student will demonstrate the ability to incorporate digital-to-analog (D-A) and analog-to-digital (A-D) converters into systems by:

1. Describing D-A and A-D converters, including their function and application.
2. Applying D-A and A-D conversion techniques to sample-and-hold applications.
7. Designing converters using Analog-to-Digital and Digital-to-Analog converters (e.g. ADC0804 and DAC1458)