Miami Dade College

GENERAL INFORMATION	
Name: Dr. Diane King	Phone #: 77021
Course Prefix/Number: EET 4732	Course Title: Signals and Systems
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 course is designed to cover the use of Fourier analysis in electrical and electric systems, and introduction to probability theory, linear algebra, and complex variables. Students will learn how to apply convolution, Fourier transforms, Laplace, and z transforms towards electrical signals and systems. Prerequisite: MAC2311. Laboratory fee. (2 hr lecture, 4 hr lab)	
Prerequisite(s): MAC2311	Co requisite(s):

Course Competencies:

Competency 1: The student will demonstrate an understanding of signals, systems, and their classification and operations by:

1. Defining a signal and describing its characteristics.
2. Defining a system and describing characteristics of systems.
3. Describing the classification of signals.
4. Performing basic operations on signals.
5. Using block diagrams to represent systems and their properties.

Competency 2: The student will demonstrate knowledge of the time domain representations of linear time-invariant systems (LTI) by:

1. Describing the properties of LTI systems and their differential and difference equation representations.
2. Explaining and applying the theory of convolution and impulse response representation of LTI systems.
3. Interpreting block diagrams and mathematically modeling the individual blocks.

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4. Modeling state-variable representations of LTI systems.

Competency 3: The student will demonstrate an understanding of the Fourier representations for signals of linear time-invariant systems by:

1. Applying the discrete-time Fourier series representation to discrete-time periodic signals.
2. Applying the Fourier series representation to continuous-time periodic signals.
3. Applying the discrete-time Fourier Transform to discrete-time aperiodic signals.
4. Applying the Fourier Transform to continuous-time aperiodic signals.

Competency 4: The student will apply the various Fourier representations by:

1. Applying the frequency response of LTI systems.
2. Applying the Fourier transform representation for periodic signals.
3. Applying convolution and modulation with mixed signal classes.
4. Applying the concepts behind the Fourier transform representation to discrete-time signals.
5. Applying correct sampling techniques, by avoiding aliasing to signals.
6. Reconstructing continuous-time signals from discrete samples.
7. Naming and discussing the basic concepts of a discrete-time signal processing system.
8. Applying computational applications and efficient algorithms of and for the discrete-time Fourier series.

Competency 4: The student will understand the Fourier Representation as applied to communication systems by:

1. Naming and stating the types, applications and benefits of modulation.
2. Identifying and discussing the spectra produced by: full amplitude modulation, double sideband-suppressed Carrier modulation, quadrature-carrier multiplexing, amplitude and pulse-amplitude modulation, and multiplexing.

Competency 5: The student will understand the representation of signals in continuous and discrete time complex exponentials by:

1. Explaining and applying the Laplace Transform.
2. Explaining and applying the Z-transform.

Competency 6: The student will demonstrate how to apply systems and signals theory to filters, equalizer, and feedback systems by:

1. Analyzing the conditions needed for distortion-less transmission.
2. Constructing an Ideal low-pass filter and various filter designs.
3. Reviewing the various implementations of filters, i.e. passive filters, digital filters, FIR filters IIR filters.
4. Discussing the concepts of equalization and linear distortion.

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