Miami Dade College

Course Competencies Template - Form 112

GENERAL INFORMATION	
Name: Diane King	Phone #: 77021
Course Prefix/Number: CET 3126C	Course Title: Advanced Microprocessors
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: 02-18-2008	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 X 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 that presents an in-depth study of advanced (16-bit and 32-bit) microprocessors as they apply to embedded systems. Students learn standards relating to embedded design, hardware requirements, embedded processors, memory, I/O, and buses and software topics relating to embedded design including device drivers, embedded operating systems, middleware and application Software. Students apply this knowledge to the design, development, and testing of an embedded system. Prerequisite: CET 2123C. Laboratory fee. (2 hr lecture, 4 hr lab)	
Prerequisite(s): CET2123C	Co requisite(s):

Course Competencies:

Competency 1: The student will demonstrate an understanding of embedded systems by:

1. Describing the components of an embedded microprocessor system.
2. Discussing the embedded systems architecture.
3. Analyzing the embedded systems model.

Competency 2: The student will demonstrate an understanding of the standards related to embedded systems by:

1. Comparing the various programming languages used and their associated standards.
2. Describing the general standards and networking protocols.
3. Identifying types of multiple-standards devices (e.g., digital television, HDTV, etc.).

Revision Date: 4/24/2009

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

Competency 3: The student will demonstrate an understanding of the building blocks of embedded hardware and the embedded board by:

1. Interpreting an embedded systems schematic.
2. Describing the embedded board and the Von Neumann model.
3. Powering the embedded hardware.
4. Identifying basic hardware components needed in an embedded system such as conductors, insulator, and semiconductors.
5. Discussing the use of passive components on an embedded board: resistors, capacitors, and inductors.
6. Describing how semiconductor devices are used as the active building blocks of processors and memory.
7. Explaining the concept of integrated circuits and how they are used in embedded applications.

Competency 4: The student will demonstrate knowledge of the embedded processor by:

1. Describing the ISA architecture models.
2. Analyzing the internal processor design.
3. Applying the concept of process performance to embedded systems.
4. Evaluating an embedded processor's data sheet.

Competency 5: The student will obtain an understanding of embedded board memory by:

1. Describing read-only memory and random-access memory and their functions.
2. Explaining the use of auxiliary memory and memory management.
3. Discussing embedded systems' board memory and memory performance.

Competency 6: The student will demonstrate and understanding of I/O interfacing, components, performance, and embedded buses by:

1. Describing parallel and serial I/O.
2. Interfacing I/O components.
3. Evaluating I/O performance.
4. Applying bus arbitration and timing.
5. Integrating the bus with other components on the board.
6. Describing bus performance.

Competency 7: The student will demonstrate an understanding of embedded software by:

1. Explaining the function of device drivers and their applications.
2. Creating software to be executed in an embedded operating system environment.
3. Analyzing and implementing middleware and application software.

Competency 8: The student will demonstrate the ability to perform embedded design and development by:

1. Describing the Architecture Business Cycle (ABC) used to create an embedded design.
2. Gathering the requirements for a system.
3. Defining an embedded system by creating the architecture and documenting the design.
4. Implementing and testing an embedded design.