## OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use. Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor.

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<td>COURSE NAME/NUMBER</td>
<td>FACULTY/DEPARTMENT</td>
<td>UFV CREDITS</td>
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<td>Micro-Processors and Embedded Systems</td>
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### CALENDAR DESCRIPTION:
This course covers basic microcomputer architecture; design and analysis of address decoders and memory systems; design and analysis of assembly language programs; and microcomputer system design.

### PREREQUISITES:
- ENPH 320, ENPH 310, COMP 150, or COMP 152

### COREQUISITES:

### PRE or COREQUISITES:

### SYNONYMOUS COURSE(S):

- (a) Replaces: 
- (b) Cross-listed with: 
- (c) Cannot take: for further credit.

### SERVICE COURSE TO:
(department/program)

### TOTAL HOURS PER TERM: 75

| Lecture: | 45 Hrs |
| Seminar: | |
| Laboratory: | 30 Hrs |
| Field experience: | |
| Student directed learning: | |
| Other (specify): | |

### TRAINING DAY-BASED INSTRUCTION:
- Length of course: 
- Hours per day: 

### OTHER:
- Maximum enrolment: 18
- Expected frequency of course offerings: Annually (every semester, annually, every other year, etc.)

### WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)
- Yes ☐ No ☒

### WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)
- ☒ Yes ☐ No

### TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:
- ☒ Yes ☐ No

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Course designer(s): **Xiaolin Long**

Department Head: **Derek Harnett**

Campus-Wide Consultation (CWC): 

Curriculum Committee chair: **David Fenske**

Dean/Associate VP: **Lucy Lee**

Undergraduate Education Committee (UEC) approval: 

Date approved: **August 26, 2013**

Date of meeting: **June 28, 2013**

Date approved: **September 20, 2013**

Date of meeting: **September 20, 2013**

Date approved: **October 25, 2013**

Date of meeting: **October 25, 2013**
LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Analyze the architecture of the HCS12 microcontroller.
- Write code using assembly language.
- Design address decoders and memory systems.
- Design parallel and serial interfaces.
- Design D/A and A/D converters.
- Translate from high-level programming languages (e.g., C) to assembly and machine language.
- Design simple embedded systems.

METHODS:

- (Guest lecturers, presentations, online instruction, field trips, etc.)
- Lectures and labs

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

- Examination(s)
- Portfolio assessment
- Interview(s)

TEXTBOOKS, REFERENCES, MATERIALS:

- Textbook selection varies by instructor. An example of texts for this course might be:
  HCS12 Microcontroller and Embedded Systems (Ed. 1), M. Mazidi and D. Causey, Prentice Hall 2008

SUPPLIES / MATERIALS:

- The necessary laboratory equipment will be provided to the students.

STUDENT EVALUATION:

- An example of student evaluation for this course might be:
  Assignments: 15%
  Quizzes: 10%
  Midterm exam: 20%
  Final Exam: 35%
  Labs (including write ups): 20%

COURSE CONTENT:

- Course content varies by instructor. An example of course content might be:
  1. Basic microcomputer architecture and memory maps
  2. Address decoders and memory systems
  3. Addressing modes
  4. Instruction sets
  5. Assembly language
  6. Parallel and serial interfaces
  7. A/D and D/A converter systems
  8. Microcomputer system design
  10. Introduction to embedded systems programming using high level languages (e.g., C).

Laboratory sessions include experiments on microprocessor-based hardware design; assembly and C language program development; programming and interfacing with I/O device; and sessions dedicated to the design and completion of a major laboratory project.