

EFFECTIVE DATE: Fall 2016

PROPOSED IMPROVEMENTS

Misc. Course Changes

- ☐ Title
- ☐ Description (attach current & proposed)
- ☐ Deletion (not required by others)
- ☐ Course #, same level
- ☐ Variable credit
- ☐ Credit/no credit
- ☐ Cross-listing
- ☐ COGE reapproval
- ☐ Other (explain**)

**** Other:**

Title of degree, curriculum, major, minor, concentration, or certificate: Embedded Systems Venture Certificate

Existing course prefix and #: **Proposed course prefix and #:** **Credit hours:**

Existing course title:

Proposed course title:

Existing course prerequisite(s):

Proposed course prerequisite(s):

Specifications for University Schedule of Classes:

a. Course title (maximum of 28 spaces):

b. Multi-topic course:

c. Repeatable for credit:

d. Mandatory credit/no credit: No

e. Type of class and contact hours per week (check type and indicate hours as appropriate)

1. ☐ Lecture 3. ☐ Lecture/lab/discussion 5. ☐ Independent study 2. ☐ Lab or discussion
4. ☐ Seminar or ☐ studio 6. ☐ Supervision or practicum

f. Curriculum code:

g. Major code:

Chair/Director

Date 5/2/15

Chair, College Curriculum Committee

Date _____

Dean

Date _____

Catalog editor: Return to dean ☐ Date

Forward to:

Date _____

Chair, COGE/ PEB / FS President

Date _____

FOR NEW DEGREE, MAJOR, CURRICULUM, OR CONCENTRATION

* ☐ Approve ☐ Disapprove

Chair, GSC/USC

Date _____

* ☐ Approve ☐ Disapprove

Provost

Date _____

1. Explain briefly and clearly the proposed improvement.

The following courses will be required for student to participate in the Embedded Systems Venture Certificate:

- CS2230 – Computer Organization and Assembly Language, or ECE 2510 – Introduction to Microprocessors I (3 cr.)
- CS2240 – Systems Programming Concepts (3 cr.)
- ECE 2500 – Digital Logic (3 cr.)
- ECE 3510 – Engineering of Real Time Systems (3 cr.)
- CS 3950 – Venture Project (Total of 6 credits. Three credits for each enrollment; enrollment in two consecutive semesters; a grade of B or better is required in the first enrollment for a student to be eligible for a second enrollment; enforced by the venture advisor as different ventures might have different requirements)

2. Rationale. Give your reason(s) for the proposed improvement. (If your proposal includes prerequisites, justify those, too.)

To serve our students, industry, and the local community through engaging undergraduate students at an early stage in interdisciplinary research that will promote the quality of life and economic development in the local community.

The specific objectives of this venture are as follows:

- Engage undergraduate students from an early stage to gain professional experience with embedded, mobile and real-time system development. Participating students will operate a full-scale consulting and development firm that specializes in embedded, mobile & real-time systems. The firm will offer research, design, development and technical documentation services to real-world clients including for-profit corporations and non-profit organizations.
- To serve our students by providing them with excellent education and practical experience. The venture will also provide our students with hands-on experience, innovative ideas, introduce them to industry trends, and guide them to investigate novel ideas in embedded, mobile and pervasive systems.
- To serve the industry by conducting interdisciplinary research to build innovative solutions that cater to their specific needs (biology, manufacturing, military, etc.).
- To serve the local community by promoting the quality of life and economic development through harnessing the latest development in embedded and mobile technologies.

This program meets all the university guidelines for undergraduate certificates (refer to the attached MOA).

3. Effect on other colleges, departments or programs. If consultation with others is required, attach evidence of consultation and support. If objections have been raised, document the resolution. Demonstrate that the program you propose is not a duplication of an existing one.

There are no effects on other colleges, departments or programs. Other departments in the College of Engineering and Applied Sciences (CEAS) might follow this initiative; therefore, allowing CEAS students to collaborate on interdisciplinary projects.

4. Effect on your department's programs. Show how the proposed change fits with other departmental offerings.

Students enrolled in our CSIJ program would be able to plan their courses so that they receive the certificate by taking the aforementioned courses as electives.

5. Effects on enrolled students: Are program conflicts avoided? Will your proposal make it easier or harder for students to meet graduation requirements? Can students complete the program in a reasonable time? Show that you have considered scheduling needs and demands on students' time. If a required course will be offered during summer only, provide a rationale.

This is a proposed certificate. Computer Science Major (CSIJ) students can count up to 6 credits of CS 3950 towards their electives in the CSIJ degree.

6. Student or external market demand. What is your anticipated student audience? What evidence of student or market demand or need exists? What is the estimated enrollment? What other factors make your proposal beneficial to students?

Since the course will contribute to make our students more job-ready, we estimate 10% of our overall student population to be interested in pursuing this certificate.

7. Effects on resources. Explain how your proposal would affect department and University resources, including faculty, equipment, space, technology, and library holdings. Tell how you will staff additions to the program. If more advising will be needed, how will you provide for it? How often will course(s) be offered? What will be the initial one-time costs and the ongoing base-funding costs for the proposed program? (Attach additional pages, as necessary.)

Stryker management demonstrated interest in the venture option and indicated that they might be contributing \$10K towards the establishment of this certificate option. Once established, this certificate program will be part of the existing CS and ECE courses and the newly introduced CS 3950.

8. General education criteria. For a general education course, indicate how this course will meet the criteria for the area or proficiency. (See the General Education Policy for descriptions of each area and proficiency and of their criteria. Attach additional pages as necessary. Attach a syllabus if (a) proposing a new course, (b) requesting certification for baccalaureate-level writing, or (c) requesting reapproval of an existing course.)

Not applicable.

Catalog Description: Embedded Systems Venture

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From: **Ahmad, Shafer** shaher.ahmad@stryker.com
Subject: RE: Stryker Venture funding
Date: February 23, 2015 at 11:52 PM
To: steve.carr@wmich.edu



Just another quick note. I just set up the time to follow up on the gifting process. Unfortunately, it will not happen until March 4th (academics are not alone)

Shafer

-----Original Message-----

From: steve.carr@wmich.edu [mailto:steve.carr@wmich.edu]
Sent: Monday, February 23, 2015 11:41 AM
To: Ahmad, Shafer
Subject: Stryker Venture funding

Shafer,

The college of engineering met with representatives from Stryker this morning which jogged my memory that we need to finalize support for the Embedded Systems Venture for next year. Ala and I met with about 12 students who were interested in this and we are currently proposing an embedded systems certificate and curriculum that will be approved by January (academics are slow). I propose that to have Alexa Carey from WMU contact you to go through the paperwork necessary for a gift. Is this ok with you? We will then make a formal announcement of the start of the venture and Stryker's support. Note that the folks from Stryker we met this morning talked about adding the skills that this venture will help address.

As another note, CS is currently discussing adding an intro sequence in C/C++ that will lead into our other courses. This will allow us to train CS/CE people in the skills they need to do embedded development. I will keep you up to date on this development. It should be an option beginning next year.

Steve

Dr. Steven M. Carr
Chair and Professor
Department of Computer Science
Western Michigan University
1903 W. Michigan Ave.
Kalamazoo MI 49008-5466
(269) 276-3101