Cover Sheet: Request 14209

CDA 4630 Embedded Systems

Info

Process	Course|Modify|Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Prabhat Mishra prabhat@ufl.edu
Created	9/8/2019 3:28:31 PM
Updated	11/18/2019 8:19:02 AM
Description of request	Proposing changes in both prerequisites and course description for CDA 4630 (Embedded Systems)

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Computer and Information Science and Engineering 011914001	Arunava Banerjee	Undergrad version of the Grad course modification request.	9/8/2019
No document changes					
College	Conditionally Approved	ENG - College of Engineering	Heidi Dublin	Conditionally Approved by the HWCOE Curriculum Committee. Update the semester plan to 15 weeks and update the request to indicated that a 'C' is needed for the prerequisite if the department intends that.	10/31/2019
No document changes					
Department	Approved	ENG - Computer and Information Science and Engineering 011914001	Arunava Banerjee	Both changes made. Updated the semester plan to 15 weeks and updated the request to indicated that a 'C' is needed for the prerequisite.	10/31/2019
syllabusCDA4630.pdf					10/31/2019
College	Approved	ENG - College of Engineering	Heidi Dublin	Approved by the HWCOE Curriculum Committee	11/18/2019
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			11/18/2019
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					

Step	Status	Group	User	Comment	Updated
College Notified					
No document changes					

Course|Modify for request 14209

Info

Request: CDA 4630 Embedded Systems
Description of request: Proposing changes in both prerequisites and course description for CDA 4630 (Embedded Systems)
Submitter: Prabhat Mishra prabhat@ufl.edu
Created: 10/31/2019 6:18:34 PM
Form version: 4

Responses

Current Prefix CDA
Course Level 4
Number 630
Lab Code None
Course Title Embedded Systems
Effective Term Spring
Effective Year 2020
Requested Action Other (selecting this option opens additional form fields below)
Change Course Prefix? No

Change Course Level? No

Change Course Number? No

Change Lab Code? No

Change Course Title? No

Change Transcript Title? No

Change Credit Hours? No

Change Variable Credit? No

Change S/U Only? No

Change Contact Type? No

Change Rotating Topic Designation? No

Change Repeatable Credit? No

Maximum Repeatable Credits 0
Change Course Description? Yes
Current Course Description Design and verification of embedded systems including system level modeling/specification, design space exploration, hardware-software partitioning, architecture synthesis, compilation for area/power/performance code compression, real-time operating systems/databases, and functional validation of embedded systems.

Proposed Course Description (50 words max) Design of efficient and trustworthy embedded and cyber-physical systems consisting of hardware, software, firmware, sensors and actuators. It covers fundamental issues related to modeling and specification, design space exploration, hardware-software partitioning, synthesis and compilation, real-time operating systems, and application-specific optimizations targeting area, power, performance, temperature, energy, and security.

Change Prerequisites? Yes

Current Prerequisites CDA 3101, COP 3530, and any one programming course (CGS 2414, CGS 3460, or CGS 3464)

Proposed Prerequisites CDA 3101 (C)

Change Co-requisites? No

Rationale The course was proposed almost a decade ago and the content has been changed to reflect the technological advances over the years. The change in course description reflects the current content. The prerequisites need to be changed for two reasons: i) CDA 3101 already has the requirement of programming courses, and ii) it also avoids the discrepancy with its graduate counterpart (CDA 5636: Embedded Systems), which is also going through course change request.

CDA 4630: Embedded Systems

Class Periods: Tuesday 10:40 – 11:30 am and Thursday 10:40 am – 12:35 pm
Location: CSE 118
Academic Term: Spring 2020

Instructor:

Name: Prabhat Mishra
Email Address: prabhat@ufl.edu
Office Phone Number: 352 294 6658
Office Hours: Wednesday, 12:00 – 2:00 pm in CSE 568

Teaching Assistants: *None*

Course Description

Design of efficient and trustworthy embedded and cyber-physical systems consisting of hardware, software, firmware, sensors and actuators. It covers fundamental issues related to modeling and specification, design space exploration, hardware-software partitioning, synthesis and compilation, real-time operating systems, and application-specific optimizations targeting area, power, performance, temperature, energy, and security.
3 credits.

Course Pre-Requisites / Co-Requisites

CDA 3101

Course Objectives

Embedded systems run the computing devices hidden inside a vast array of everyday products and appliances such as cell phones, toys, handheld PDAs, cameras, and microwave ovens. Cars are full of them, as are airplanes, satellites, and advanced military and medical equipments. As applications grow increasingly complex, so do the complexities of the embedded computing devices. The goal of this course is to develop a comprehensive understanding of the technologies behind the embedded systems design. The students develop an appreciation of the existing capabilities and limitations of various steps in overall design methodology including system level specification, design space exploration, hardware-software partitioning, application-specific optimizations, and functional validation of embedded systems.

Materials and Supply Fees: *None*

Required Textbooks and Software: *None*

Recommended Materials

- Embedded System Design
- Peter Marwedel, Springer
- 2017
- ISBN: 978-3319560434

Original file: syllabusCDA4630.pdf

Course Schedule

Week	Topics
1	*Introduction to Embedded Systems*
2	*Modeling and Specification*
3	*Embedded Systems Architecture*
4	*Digital-to-Analog and Analog-to-Digital Converters*
5	*Sensors and Actuators*
6	*System-level Optimizations*
7	*Compression and Decompression*
8	*Real-time Operating Systems*
9	*Hardware-Software Co-Design*
10	*Compilation of Embedded Applications*
11	*Control Systems*
12	*Design Space Exploration*
13	*Energy-aware Computing*
14	*Validation and Verification*
15	*Embedded Systems Security*

Attendance Policy, Class Expectations, and Make-Up Policy

Students are expected to attend the lectures and actively participate in class discussions. Excused absences must be consistent with university policies in the undergraduate catalog and require appropriate documentation (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx).

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homeworks (3)	20 each	15%
Projects (2)	10 each	20%
Pop Quizzes	5	5%
Midterm Exam	100	25%
Final Exam	120	35%
		100%

Grading Policy

Percent	Grade	Grade Points
90.0 - 100.0	A	4.00
86.0 - 89.9	A-	3.67
82.0 - 85.9	B+	3.33
78.0 – 81.9	B	3.00
74.0 - 77.9	B-	2.67
70.0 - 73.9	C+	2.33
66.0 – 69.9	C	2.00
62.0 - 65.9	C-	1.67
58.0 - 61.9	D+	1.33
54.0 - 57.9	D	1.00
50.0 - 53.9	D-	0.67
0 - 49.9	E	0.00

More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations
Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation
Course Evaluation Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Original file: syllabusCDA4630.pdf

University Honesty Policy
UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment
The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:
- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy
There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: https://registrar.ufl.edu/ferpa.html

Campus Resources:

<u>*Health and Wellness*</u>

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U Matter, We Care:

If you or a friend is in distress, please contact <u>umatter@ufl.edu</u> or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <u>http://www.counseling.ufl.edu/cwc</u>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or
<u>http://www.police.ufl.edu/.</u>

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<u>*Academic Resources*</u>

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E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <u>https://lss.at.ufl.edu/help.shtml</u>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.
<u>https://www.crc.ufl.edu/</u>.

Library Support, <u>http://cms.uflib.ufl.edu/ask</u>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<u>https://teachingcenter.ufl.edu/</u>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<u>https://writing.ufl.edu/writing-studio/</u>.

Student Complaints Campus*:* <u>https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf</u>.

On-Line Students Complaints*:* <u>http://www.distance.ufl.edu/student-complaint-process</u>.

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