

FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL¹

UGPC APPROVAL _____
 UFS APPROVAL _____
 SCNS SUBMITTAL _____
 CONFIRMED _____
 BANNER POSTED _____
 CATALOG _____

DEPARTMENT: DEPT. OF COMPUTER & ELECTRICAL
ENGINEERING AND COMPUTER SCIENCE

COLLEGE: COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

RECOMMENDED COURSE IDENTIFICATION:

PREFIX CAP COURSE NUMBER 6888 LAB CODE (L or C)

(TO OBTAIN A COURSE NUMBER, CONTACT NMALDONADO@FAU.EDU)

COMPLETE COURSE TITLE: COMPUTATIONAL ADVERTISING & REAL-TIME DATA ANALYTICS

EFFECTIVE DATE

(first term course will be offered)

FALL 2016

CREDITS²:
3

TEXTBOOK INFORMATION:

Computational Advertising: Techniques for Targeting Relevant Ads, Kushal Dave (Author), Vasudeva Varma (Author), Now Publishers Inc (October 31, 2014). ISBN: 978-1-60198-832-4

GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR X SATISFACTORY/UNSATISFACTORY

COURSE DESCRIPTION, NO MORE THAN THREE LINES:

This course teaches students basic concepts of computational advertising, with a focus on real-time data analytics for displaying advertisement. The class will introduce different key aspects of building platforms for online advertising, the computational requirement, tools, and solutions.

PREREQUISITES*:

Graduate standing or permission of instructor

COREQUISITES*:

REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*:

GRADUATES IN COMPUTER ENGINEERING, COMPUTER SCIENCE, AND ELECTRICAL ENGINEERING.

* PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE:

MEMBER OF THE GRADUATE FACULTY OF FAU AND HAS A TERMINAL DEGREE IN THE SUBJECT AREA (OR A CLOSELY RELATED FIELD)

Faculty contact, email and complete phone number:
Xingquan Zhu, xzhu3@fau.edu
561-297-3452

Please consult and list departments that might be affected by the new course and attach comments.³
N/A

Approved by:

Department Chair: *Durgun Erolat*
 College Curriculum Chair: *[Signature]*
 College Dean: *[Signature]*
 UGPC Chair: *Wm J McDaniel*
 Graduate College Dean: *[Signature]*
 UFS President: _____
 Provost: _____

Date:

1/28/2016
2/11/16
2/12/2016
3-2-16
3-2-16

1. Syllabus must be attached; see guidelines for requirements: www.fau.edu/provost/files/course_syllabus.2011.pdf
2. Review Provost Memorandum: **Definition of a Credit Hour** www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf
3. Consent from affected departments (attach if necessary)

Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

**Department of Computer and Electrical Engineering and Computer Science
Florida Atlantic University
Course Syllabus**

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|---|--|
| 1. Course title/number, number of credit hours | |
| Computational Advertising & Real-Time Data Analytics – CAP 6888 | 3 credit hours |
| 2. Course prerequisites, corequisites, and where the course fits in the program of study | |
| Prerequisites: <i>Graduate standing or permission of instructor</i> | |
| 3. Course logistics | |
| Term: Fall 2016 | |
| Class location and time: TBD | |
| 4. Instructor contact information | |
| <i>Instructor's name</i> | Dr. Xingquan Zhu |
| <i>Office address</i> | Engineering East (EE-96) Bldg., Room 509 |
| <i>Office Hours</i> | TBD |
| <i>Contact telephone number</i> | 561-297-3452 |
| <i>Email address</i> | xzhu3@fau.edu |
| 5. TA contact information | |
| <i>TA's name</i> | N/A |
| <i>Office address</i> | N/A |
| <i>Office Hours</i> | N/A |
| <i>Contact telephone number</i> | N/A |
| <i>Email address</i> | N/A |
| 6. Course description | |
| <p>This course teaches students basic concepts of computational advertising, with a focus on real-time data analytics for displaying advertisement. The class will introduce different key aspects of building platforms for online advertising, the computational requirement, tools, and solutions. The class will cover three major topics including (1) basic statistical machine learning and data analytics skills, (2) Display advertising platforms, tools, and domain knowledge; and (3) Real-time analytics challenges and algorithms. The lectures will include a term project dedicated to the implementation of computational solutions to solve an analytics task, using selected programming language and tools.</p> | |
| 7. Course objectives/student learning outcomes/program outcomes | |
| <i>Course objectives</i> | The goal of this class is for students to gain hands-on experiences on computational advertising and real-time data analytics. At the end of the class, students should be able to understand the whole process of building a computational advertising platform. We will use real-world |

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Course Syllabus**

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| | data as the testbed and apply the framework for validation. Class will teach theorems, tools, and algorithms for computational advertising data analytics, with a term project for hands-on training. |
| 8. Course evaluation method | |
| Home Work - | 35% |
| Test 1 - | 15% |
| Test 2 - | 15% |
| Project - | 35% |
| 9. Course grading scale | |
| Grading Scale: 90 and above: "A", 85-89: "A-", 76-84: "B+", 70-75: "B", 66-74: "C+", 60-65: "C", 50-59: "D", 49 and below: "F." | |
| 10. Policy on makeup tests, late work, and incompletes | |
| <p><i>Makeup tests</i> are possible, and are given only if there is solid evidence of medical or otherwise family/personal emergency issues that prevent the student from participating in the exam. Makeup exam should be administered and proctored by department personnel unless there are other pre-approved arrangements</p> <p><i>Late work</i> is not acceptable.</p> <p>A <i>grade of incomplete</i> will be assigned only in the case of solid evidence of medical or otherwise serious emergency situation. .</p> | |
| 11. Special course requirements | |
| N/A | |
| 12. Classroom etiquette policy | |
| University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions. | |
| 13. Disability policy statement | |
| In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students Accessibility Services (SAS) located in Boca Raton campus, SU 133 (561) 297-3880 and follow all SAS procedures. | |
| 14. Honor code policy | |
| Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf | |

**Department of Computer and Electrical Engineering and Computer Science
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15. Required texts/reading

1. Computational Advertising: Techniques for Targeting Relevant Ads, Kushal Dave (Author), Vasudeva Varma (Author), Now Publishers Inc (October 31, 2014).

16. Supplementary/recommended readings

1. Stanford University: Introduction to Computational Advertising
2. Research papers

17. Course topical outline, including dates for exams/quizzes, papers, completion of reading

Weekly course topics

| Weekly schedule | Topic |
|-----------------|---|
| Week 1 | Introduction, computational advertising |
| Week 2 | Computational advertising platforms and marketplace |
| Week 3 | Displaying advertisement, sponsored search (homework 1) |
| Week 4 | Demanding site platforms, supply side platforms, Exchange |
| Week 5 | Native advertisement |
| Week 6 | Statistical machine learning algorithms: Part I: Theorems (<i>homework 2</i>) |
| Week 7 | Data analytics & machine learning algorithms: Part II: Applications |
| Week 8 | Statistical machine learning algorithms: Part III: Tools (R programming (<i>homework 3</i>)) Term project announcement |
| Week 9 | Real-time analytics algorithms: Click through rate prediction (Test 1) |
| Week 10 | Real-time bidding algorithms: Click fraud detection (homework 4) |
| Week 11 | Real-time bidding algorithms: Bidding curve adjustment |
| Week 12 | Real-time bidding algorithms: Advertisement recommendation for displaying advertisement (Homework 5) |
| Week 13 | Real-time bidding algorithms: Customer profiling and retargeting |
| Week 14 | Term project report |
| Week 15 | Test 2 |

Project: The goal of the term project is to practice analytical skills learned from the class to solve real-world computational advertising and real-time data analytics challenges.

The instructor will help each student identify a suitable topic (a set of tentative topics, such as click through rate prediction, will be distributed in the class). Students are required to apply knowledge learned from the class to solve the identify task, implement and validate the design, and collect experimental results for reporting.

The final outcomes of the project will be turned into a 6-8 page double column technical report.

RE: Request for approval - "Computational Advertising & Real-time Data Analytics"

Tamara Dinev



To: Mihaela Cardei
Cc: Nurgun Erdol; Xingquan Zhu

Wednesday, February 24, 2016 4:39 PM

Hi, yes, I approve and have no objections

Best Regards:

Tamara

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Tamara Dinev, Ph.D.
Department Chair and Professor
Department of Information Technology and Operations Management
College of Business
Florida Atlantic University
Boca Raton, Florida 33431
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From: Mihaela Cardei
Sent: Wednesday, February 24, 2016 8:15 AM
To: Tamara Dinev
Cc: Nurgun Erdol; Xingquan Zhu; Mihaela Cardei
Subject: Request for approval - "Computational Advertising & Real-time Data Analytics"

Dear Dr. Dinev,

CEECS department is proposing a new graduate course "CAP6888 Computational Advertising & Real-Time Data Analytics". Please find attached the syllabus and course form.

We need your approval that the College of Business supports this new course proposal and that there is no conflict with the current curriculum. Could you please review the material and email me your approval decision?

Thank you,

Mihaela Cardei, PhD
Professor
Computer & Electrical Engineering and Computer Science Department (CEECS)
College of Engineering and Computer Science
Florida Atlantic University
<http://www.cse.fau.edu/~mihaela>