

 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Graduate Programs		UGPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner _____ Catalog _____
	Department CEECS College Engineering and Computer Science		
Current Course Prefix and Number CEN 5035	Current Course Title Software Engineering		
<i>Syllabus must be attached for ANY changes to current course details. See Guidelines. Please consult and list departments that may be affected by the changes; attach documentation.</i>			
Change title to: Change prefix From: _____ To: _____ Change course number From: _____ To: _____ Change credits* From: _____ To: _____ Change grading From: _____ To: _____ Academic Service Learning (ASL) ** Add <input type="checkbox"/> Remove <input type="checkbox"/>		Change description to: Change prerequisites/minimum grades to: Graduate standing Change corequisites to: Change registration controls to:	
* Review Provost Memorandum ** Academic Service Learning statement must be indicated in syllabus and approval attached to this form.		Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade.	
Effective Term/Year for Changes: Spring 2021	Terminate course? Effective Term/Year for Termination:		
Faculty Contact/Email/Phone Hanqi Zhuang/zuang@fau.edu/ 297-3413			
Approved by Department Chair _____ Hanqi Zhuang College Curriculum Chair _____ Francisco Presuel-Moreno College Dean _____ <i>McCardie</i> UGPC Chair _____ UGC Chair _____ Graduate College Dean _____ UFS President _____ Provost _____		Date _____ _____ 10/25/2020 _____ _____ _____ _____	
<small>Digitally signed by Hanqi Zhuang Date: 2020.10.21 15:41:13 -04'00'</small>		<small>Digitally signed by Francisco Presuel-Moreno DN: cn=Francisco Presuel-Moreno, ou=Ocean and Mechanical Engineering, email=fpresuel@fau.edu, c=US Date: 2020.10.22 12:41:34 -04'00'</small>	
<small>Digitally signed by Micaela Cardie DN: cn=Micaela Cardie, ou=Florida Atlantic University, ou. email=mcand@fau.edu, c=US Date: 2020.10.21 10:26:58 -04'00'</small>			

Email this form and syllabus to UGPC@fau.edu 10 days before the UGPC meeting.

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

1. Course title/number, number of credit hours	
Software Engineering/ CEN 5035	3 credit hours
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisites: Graduate standing	
3. Course logistics	
Term: Class Location and Time:	
4. Instructor contact information	
<i>Instructor's name Office address Office Hours Contact telephone number Email address</i>	
5. TA contact information	
<i>TA's name Office address Office Hours Contact telephone number Email address</i>	
6. Course description	
Catalog Description: An introduction to basic principles and practices of software engineering. Emphasis is placed on programming language support for software engineering principles, especially techniques for data abstraction, code reusability, and programming-in-the-large. Other topics include software life cycle models, general design, implementation and testing issues, specification and design methodologies, and model-based approaches to software design.	
7. Course objectives/student learning outcomes/program outcomes	
<i>Course objectives (based on ABET criteria)</i>	2. Proficiency in the areas of software design and development, data structures, and operating systems 3. An ability to plan and execute an engineering design to meet an identified need 6. An understanding of the overall human context in which engineering and computing activities take place
<i>Student learning outcomes & relationship to ABET a-k objectives</i>	(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability (e) an ability to identify, formulate, and solve engineering problems (f) an understanding of professional and ethical responsibility

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	(g) an ability to communicate effectively (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
8. Course evaluation method	
Course projects (Divided by different milestones)	80%
Quizzes	20%
<i>Note: The minimum grade required to pass the course is C.</i>	
Grading Scale: "A": 90 and above; "A-": 87-89; "B+": 83-86; "B": 80-82; "B-": 77-79; "C+": 73-76; "C": 70-72; "C-": 67-69; "D+": 63-66; "D": 60-62; "D-": 51-59; "F": 50 and below	
10. Policy on makeup tests, late work, and incompletes	
Need proper university accepted documents to have permissions on makeup tests, late work and incompletes	
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. Attendance policy statement	
Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.	
14. Disability policy statement	
In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/	

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15. Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

16. Code of Academic Integrity Policy Statement

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 an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

17. Required texts/reading

Reading material will be posted on Canvas

18. Supplementary/recommended readings

Lecture notes, working environments, tooling, and other references will be posted on Canvas

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

Tentative course topic outline (subject to change depending on lecture progresses):

1. Overview principles of software engineering
2. Agile software development
3. Modeling software structure and behavior (UML 2.0 and metamodeling)
4. Business Modeling (Business Model Canvas, Value Proposition)
5. BPMN
6. ArchiMate 3.0 Modeling
7. General principles of Model driven development (MDD)
8. Use case modeling
9. System architecture and design
10. Platform-based development: IBM Cloud
11. Cognitive Services/AI – Watson Services, Node-RED, IoT
12. Service Oriented Architecture (SOA)
13. Micro-services
14. DevOps
15. New OMG standard – *Essence – Kernel and Language for Software Engineering Methods*

Project Assignments with tentative dates (subject to change depending on schedule):

- Project 1: Project proposals
Project 2: Business Model Canvas (Upwave)

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Project 3: Architecture modeling (archimatetool.com)

Project 4: Use case modeling

Project 5: IoT development by IBM Cloud, Watson Services using Node RED, first prototype

Project 6: Final Project demo and delivery

Exams (tentative dates):

1. Two quizzes will be announcement in class

From:Hanqi Zhuang <zhuang@fau.edu>
Sent:Monday, November 30, 2020 10:03 AM
To:Tamara Dinev <tdinev@fau.edu>; Mihaela Cardei <mcardei@fau.edu>
Cc:Christopher Beetle <cbeetle@fau.edu>
Subject:Re: CEECS - Course Prerequisite Changes

Thank you!

From:Tamara Dinev <tdinev@fau.edu>
Sent:Monday, November 30, 2020 10:02 AM
To:Hanqi Zhuang <zhuang@fau.edu>; Mihaela Cardei <mcardei@fau.edu>
Cc:Christopher Beetle <cbeetle@fau.edu>
Subject:RE: CEECS - Course Prerequisite Changes

Dear Dr. Zhuang:

Thank you so much for the clarification. Please attach my memo as it is written. The UGPC and UGC will take a note and I am sure they will vote your items into the consent agenda. As you say, these are most minor changes so they should not affect our program anyway.

Thank you.

Best Regards:

Tamara

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Tamara Dinev, Ph.D., Department Chair and Professor
Dean's Distinguished Research Fellow
Department of Information Technology and Operations Management, FL 219
College of Business, Florida Atlantic University
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tel. (561) 297-3181, email: tdinev@fau.edu
Google Scholar:<https://scholar.google.com/citations?user=YH8QZ-YAAAAJ&hl=en>

From:Hanqi Zhuang <zhuang@fau.edu>
Sent:Monday, November 30, 2020 9:31 AM
To:Tamara Dinev <tdinev@fau.edu>; Mihaela Cardei <mcardei@fau.edu>
Cc:Christopher Beetle <cbeetle@fau.edu>
Subject:Re: CEECS - Course Prerequisite Changes

Hello Tamara,

Thank you for taking time to review the proposals. Regarding the 10 items on the agenda, these are CS courses that have been in our catalog for a long time. The only proposed change is a change of prerequisites to "Graduate Standing" or "None", that honestly, I never thought it would need that much discussion. We do not change the "registration control" field, therefore, the pool of students that can take the courses stay the same. ITOM students in our joint programs (MSITM program and Big Data Certificate) were always able to select these courses as electives and will always be.

Please note that we are not proposing a new course, so let's keep the conversation focused to the change of prerequisites.

The extract that you provided as a memo is incomplete. Here is the full memo for your information (<http://www.fau.edu/uupc/documents/materials/2020/october-12-2020/ai-math-approval.pdf>).

Of course, CEECS will not object to any change or elimination by ITOM to the prerequisites of the ITOM courses that are listed in our joint MSITM program and Big Data Certificate.

Thanks,

Hanqi

From:Tamara Dinev <tdinev@fau.edu>
Sent:Monday, November 30, 2020 9:14 AM
To:Hanqi Zhuang <zhuang@fau.edu>; Mihaela Cardei <mcardei@fau.edu>
Cc:Christopher Beetle <cbeetle@fau.edu>
Subject:RE: CEECS - Course Perquisite Changes

Dear Dr. Zhuang:

ITOM is not the only department that writes conditions in the supporting memo for your curriculum items. For example, the Math department from College of Science wrote the following in their support memo:

“Proposed CAP 4612: Within the SUS, Applied Machine Learning is already taught under an STA prefix (see STA 4634/5635 at FSU), **so we would seek confirmation that this course will not be used to block mathematics/statistics courses in (applied) machine learning. If CAP 4612 will not be used to block mathematics/statistics courses in (applied) machine learning, we have no concerns.**”

ITOM and your department has a very complicated interdisciplinary curriculum for their MSITM program. It is then understandable that the prerequisite change of your 20 courses may affect the program.

We support your curriculum changes. We just want be sure that the changes you bring will not cause you blocking our future changes for our courses.

If the Math memo is good and has gone through, then our is written in the same spirit and should be attached to your documentation for the courses changes below.

Best Regards:

Tamara

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Tamara Dinev, Ph.D., Department Chair and Professor
Dean's Distinguished Research Fellow
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Boca Raton, Florida 33431

tel. (561) 297-3181, email:tdinev@fau.edu
Google Scholar:<https://scholar.google.com/citations?user=YH8QZ-YAAAAJ&hl=en>

From:Hanqi Zhuang <zhuang@fau.edu>
Sent:Monday, November 30, 2020 8:53 AM
To:Tamara Dinev <tdinev@fau.edu>; Mihaela Cardei <mcardei@fau.edu>
Cc:Christopher Beetle <cbeetle@fau.edu>
Subject:Re: CEECS - Course Perquisite Changes

Dear Tamara,

Thank you very much for kindly sending the second time your response. The ITOM memo, though support the suggestions of the University Steering Committee to remove the prerequisites of the listed courses for graduate courses, attached many conditions, which we think are premature at the best.**Please simple state either ITOM support or do not support the changes.**

If you do not support changes, we will revise the statement to exclude ITOM students from the blank waive of prerequisites of these courses.

"Graduate Standing, excluding students from ITOM."

Thanks,
Hanqi

From:Tamara Dinev <tdinev@fau.edu>
Sent:Monday, November 30, 2020 8:38 AM
To:Mihaela Cardei <mcardei@fau.edu>; Hanqi Zhuang <zhuang@fau.edu>
Cc:Christopher Beetle <cbeetle@fau.edu>
Subject:FW: CEECS - Course Perquisite Changes

Dear Dr. Cardei, Dr. Zhuang:

I sent you the ITOM memo, I am resending it just in case you have not received it. I am also cc-ing Chris Beetle.

Best Regards:
Tamara

=====
Tamara Dinev, Ph.D., Department Chair and Professor
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Google Scholar:<https://scholar.google.com/citations?user=YH8QZ-YAAAAJ&hl=en>

From:Tamara Dinev
Sent:Monday, November 23, 2020 11:04 AM
To:Mihaela Cardei <mcardei@fau.edu>
Cc:Hanqi Zhuang <zhuang@fau.edu>; Daniel Gropper <dgropper@fau.edu>; Paul Hart <hart@fau.edu>
Subject:RE: CEECS - Course Perquisite Changes
Importance:High

Dear Dr. Cardei, Dr. Zhuang:

Removal of prerequisites may seem a small change to you, as you stated in the UGC meeting on November 13. However, the Course change form, in its current format, has a field that needs to be filled regardless how big or small the change you think is (the word ANY is highlighted in the form). This is at least the interpretation of the current form at the College of Business Undergraduate and Graduate Councils. For that reason, they always ask ITOM to consult you, regardless how small change we want.

*Syllabus must be attached for **ANY** changes to current course details. See [Guidelines](#). Please consult and list departments that may be affected by the changes; attach documentation.*

We believe that it is CEECS decision how they will provide the rigor in their curriculum just as we will make our own decisions on ISM courses.

Removing of the prerequisites of your courses should not be interpreted as giving you the authority to teach these courses to Business students in all programs, and thus block our future attempts to develop our curriculum.

With this understanding, we have no concerns about each of the courses **provided** that not any of them will be used to block and object to an existing/potential ISM course in the same domain, per the table below:

Current CEECS courses	Potential existing/hypothetical ITOM courses
CEN 5035 Software Engineering	A graduate course in Business Software Development, corresponding to the same title of 4 ISM undergraduate courses
CAP 5615 Introduction to Neural Networks	NA
CAP 6315 Social Networks and Big Data Analytics	ISM 6555 Social Media and Web Analytics
CAP 6619 Deep Learning	Deep Learning for Business with IBM Watson
CAP 6640 Natural Language Processing	NA
CAP 6673 Data Mining and Machine Learning	ISM 6136 Data Mining and Predictive Analytics
CAP 6776 Information Retrieval	NA
CAP 6777 Web Mining	ISM 6555 Social Media and Web Analytics ISM 6136 Data Mining and Predictive Analytics
CEN 6405 Computer Performance Modeling	Information Systems Performance Modeling for IT Managers
CEN 5086 Cloud Computing	Organizational aspects of Cloud Computing

Best Regards:
 Tamara

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Tamara Dinev, Ph.D., Department Chair and Professor

Dean's Distinguished Research Fellow
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tel. (561) 297-3181, email:tdinev@fau.edu
Google Scholar:<https://scholar.google.com/citations?user=YH8QZ-YAAAAI&hl=en>

From: Mihaela Cardei <mcardei@fau.edu>
Sent: Wednesday, November 11, 2020 7:31 AM
To: Tamara Dinev <tdinev@fau.edu>
Cc: Hanqi Zhuang <zhuang@fau.edu>
Subject: RE: CEECS - Course Prerequisite Changes

Hello Dr. Dinev,

I am following up on the emails regarding the prerequisite changes. As noted in my original email, these items (prerequisite changes) will be discussed next in the UGC meeting on Friday November 13th from 10:00 AM.

As mentioned previously by Dr. Zhuang, the decision on which courses will change the prerequisites went through a rigorous process in the department. Taking the Business students in the MSITM program as an example, our program coordinator must manually overwrite the prerequisites every time a student registers for a CS class.

In the UGPC meeting on November 4th it was acknowledged that changing the prerequisites is the responsibility and decision of the department, and we were asked to notify other departments with joint programs in case that their students are affected in any way by this change.

With regards to our joint programs, these prerequisite changes will facilitate the registration of the ITOM students in the CS classes. ITOM students decide their CS courses in close consultation with the program advisor. On our side, we believe that these prerequisite changes do not affect the Business students taking CS courses in any way, but of course we would like to confirm with you.

We are looking forward to your reply, please let us know if you have any objections to these prerequisite changes from the prospect of the ITOM students taking CS courses for our joint programs.

I will have to submit this email communication to UGC tomorrow the latest, in preparation for the meeting on Friday.

Best regards,
Mihaela

From:Tamara Dinev <tdinev@fau.edu>
Sent:Monday, November 9, 2020 11:14 AM
To:Mihaela Cardei <mcardei@fau.edu>
Subject:RE: CEECS - Course Prerequisite Changes

Thank you, Mihaela

Best Regards:
Tamara

=====

Tamara Dinev, Ph.D., Department Chair and Professor
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Google Scholar:<https://scholar.google.com/citations?user=YH8QZ-YAAAAJ&hl=en>

From:Mihaela Cardei <mcardei@fau.edu>
Sent:Monday, November 9, 2020 11:11 AM
To:Tamara Dinev <tdinev@fau.edu>
Cc:Hanqi Zhuang <zhuang@fau.edu>
Subject:Re: CEECS - Course Prerequisite Changes

Syllabi are attached.

From:Hanqi Zhuang <zhuang@fau.edu>
Sent:Monday, November 9, 2020 11:00 AM
To:Mihaela Cardei <mcardei@fau.edu>; Tamara Dinev <tdinev@fau.edu>
Subject:Re: CEECS - Course Prerequisite Changes

Dear Tamara,

Thank you very much for quickly getting back to us. Due to a variety of reasons, mainly the inconsistency of the course names/numbers (of the related prerequisite courses) used all over the world, our graduate students have had difficulties to register courses. Our graduate advisor must override many cases due to outdated prerequisites. The last month, the department's graduate programs committee asked the faculty to give their inputs about prerequisites of their graduate courses. Our approach was that we kept the prerequisites intact if these courses did need other prerequisites beyond CEECS graduate Standing. For the rest, we changed the prerequires to a general statement as follows:

Graduate standing for CEECS graduate students and instructor's approval for others.

The UGPC discussed this and recommended that it would make more sense to remove "CEECS" and "instructor's approval for other majors." They also stated that graduate standing was implicitly required for 6000 level courses. They specifically pointed out those courses which were related to interdisciplinary data science programs. Their rationale was that those graduate students in the data science programs should have sufficient background to take the listed courses. They advised us to go back to get your opinions, and that is the story.

Your opinion on how to move forward with this is important to us.

Meanwhile, have a wonderful week!

Hanqi

Hanqi Zhuang, Ph.D.
Professor and Chair
EE 403A
Department of Computer & Electrical Engineering & Computer Science
Florida Atlantic University
Boca Raton, FL 33431
561-297-3413
<http://www.ceecs.fau.edu/>

From: Tamara Dinev <tdinev@fau.edu>
Sent: Monday, November 9, 2020 11:00 AM
To: Mihaela Cardei <mcardei@fau.edu>
Cc: Hanqi Zhuang <zhuang@fau.edu>
Subject: RE: CEECS - Course Prerequisite Changes

Thank you, Mihaela:

I will wait for the syllabi of these courses and the rationale

Best Regards:
Tamara

=====
Tamara Dinev, Ph.D., Department Chair and Professor
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tel. (561) 297-3181, email: tdinev@fau.edu
Google Scholar: <https://scholar.google.com/citations?user=YH8QZ-YAAAAI&hl=en>

From:Mihaela Cardei <mcardei@fau.edu>
Sent:Monday, November 9, 2020 10:32 AM
To:Tamara Dinev <tdinev@fau.edu>
Cc:Hanqi Zhuang <zhuang@fau.edu>
Subject:Re: CEECS - Course Prerequisite Changes

Hi Tamara,

here are the course titles. Hanqi will follow up on the rationale for prerequisite change.

CEN 5035 Software Engineering
CAP 5615 Introduction to Neural Networks
CAP 6315 Social Networks and Big Data Analytics
CAP 6619 Deep Learning
CAP 6640 Natural Language Processing
CAP 6673 Data Mining and Machine Learning
CAP 6776 Information Retrieval
CAP 6777 Web Mining
CEN 6405 Computer Performance Modeling
CEN 5086 Cloud Computing

Best,
Mihaela

From:Tamara Dinev <tdinev@fau.edu>
Sent:Monday, November 9, 2020 10:18 AM
To:Mihaela Cardei <mcardei@fau.edu>
Cc:Hanqi Zhuang <zhuang@fau.edu>
Subject:RE: CEECS - Course Prerequisite Changes

Dear Dr. Cardei:

The ITOM department would like to see the list of the courses below with their titles (otherwise I have to go personally and retrieve each one of them from the catalog and create my own table) as well as their syllabi attached. Please also provide a rationale for your requested changes as they seem to compromise the rigor of your program which is supposed to be very technical as it prepares the future engineers of this nation.

Best Regards:
Tamara

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Tamara Dinev, Ph.D., Department Chair and Professor
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tel. (561) 297-3181, email:tdinev@fau.edu

Google Scholar:<https://scholar.google.com/citations?user=YH8QZ-YAAAAI&hl=en>

From: Mihaela Cardei <mcardei@fau.edu>
Sent: Thursday, November 5, 2020 10:35 AM
To: Tamara Dinev <tdinev@fau.edu>
Cc: Hanqi Zhuang <zhuang@fau.edu>
Subject: CEECS - Course Prerequisite Changes

Hello Dr. Dinev,

CEECS department is changing prerequisites of the following graduate courses which are listed in the MS ITM and/or Big Data Analytics Certificate.

MS ITM:

CEN 5035 is a core in CEECS concentrations only.

Electives: CAP 5615, CAP 6315, CAP 6619, CAP 6640, CAP 6673, CAP 6776, CAP 6777, CEN 6405, CEN 5086

Big Data Certificate:

CAP 5615, CAP 6315, CAP 6619, CAP 6640, CAP 6673, CAP 6776, CAP 6777, CEN 6405.

The prerequisites are changed as follows:

6000 level courses - change to no prerequisites

5000 level courses - change to Graduate Standing

These courses were discussed in UGPC yesterday November 4th, and the UGPC committee asked us to check with the other colleges where we have joint interdisciplinary programs. The next meeting, UGC, is on November 13 from 10:00 AM.

Please let us know if ITOM has any objections to these prerequisite changes.

Best regards,
Mihaela Cardei