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|  FLORIDA ATLANTIC UNIVERSITY | NEW/CHANGE PROGRAM REQUEST Graduate Programs | UGPC Approval _____ UFS Approval _____ Banner _____ Catalog _____ |
| | Department Engineering and Computer Science College Engineering and Computer Science | |
| Program Name Energy Resilience Certificate | <input type="checkbox"/> New Program* <input checked="" type="checkbox"/> Change Program* | Effective Date <i>(TERM & YEAR)</i> Spring 2021 |
| Please explain the requested change(s) and offer rationale below or on an attachment. This program proposal adds more course options to the curriculum of the certificate, including two new courses EEL 6284 and EML 6446. | | |
| *All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes. | | |
| Faculty Contact/Email/Phone James VanZwieten / jvanzwi@fau.edu / 561-297-0955 | Consult and list departments that may be affected by the change(s) and attach documentation Ocean and Mechanical Engineering (OME); Civil, Environmental, & Geomatics Engineering (CEGE); Comp. and Electrical Eng. and Comp. Science (CEECS) | |
| Approved by Department Chair <u>Mihaela Cardei</u> College Curriculum Chair <u>Ramesh Teegavarapu</u> College Dean <u>Mihaela Cardei</u> UGPC Chair _____ UGC Chair _____ Graduate College Dean _____ UFS President _____ Provost _____ | <small>Digitally signed by Mihaela Cardei DN: cn=Mihaela Cardei, o=Florida Atlantic University, ou, email=mcardei@fau.edu, c=US Date: 2020.05.14 08:18:01 -0400</small> <small>Digitally signed by Ramesh Teegavarapu DN: cn=Ramesh Teegavarapu, o=Florida Atlantic University, ou=Civil, Environmental and Geomatics Engineering, email=rteegava@fau.edu, c=US Date: 2020.05.14 09:01:38 -0400</small> | Date <u>5/14/2020</u> <u>5/14/2020</u> <u>6/7/2020</u> _____ _____ _____ _____ |

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

Energy Resilience Certificate

The availability of reliable electric power is foundational to the health and safety of citizens as well as the economy. Technology is rapidly providing solutions that increase the efficiency and resiliency of the electrical grid, while renewable energy technologies are providing cleaner sources of electric power. These technological advances are made possible by engineers and scientists with advanced knowledge of the power grid, data analysis techniques and renewable energy extraction. By specializing in these areas, graduate students will be well prepared to contribute to the efficiency and resiliency of the electrical grid as well as renewable power generation.

This 12-credit certificate provides graduate students with knowledge and skills in the concepts and technologies necessary to improve the efficiency and resiliency of energy generation, transmission and distribution.

Admission

This certificate program is open to students with a bachelor's degree in engineering or science and a GPA of at least 3.0. Students must satisfy the prerequisites for each course in the program. The average GPA of all four courses counted in the program must be 3.0 or better. ~~All course materials are in English; all international students must demonstrate proficiency in English to enter the program.~~

Curriculum

Select four courses from the list below. Additional graduate courses in energy and power systems may be counted in the certificate with prior permission of the advisor.

| Core Courses | | |
|--|-----------------|----------|
| Smart Grid | EEL 6291 | 3 |
| Energy Engineering | EGN 5735 | 3 |
| Elective Courses (choose two) | - | - |
| Power System Analysis and Control | EEL 5256 | 3 |
| <u>Advanced Photovoltaic Power Systems</u> | <u>EEL 6284</u> | <u>3</u> |
| Solar Energy Engineering | EML 6417C | 3 |
| Advanced Energy Conversion Processes and Systems | EML 6451 | 3 |
| Wind Turbine Systems | EML 6456 | 3 |
| <u>Wind and Ocean Energy Turbines</u> | <u>EML 6446</u> | <u>3</u> |
| Marine Renewable Energy | EOC 6145 | 3 |

From: Francisco Presuel-Moreno <fpresuel@fau.edu>
Sent: Thursday, May 14, 2020 9:07 AM
To: Mihaela Cardei <mcardei@fau.edu>
Subject: Re: Energy Resilience certificate, revisions

Mihaela,

I confirm that the OME department approved via e-mail vote.

Regards,

Francisco

From: Mihaela Cardei <mcardei@fau.edu>
Sent: Thursday, May 14, 2020 7:49 AM
To: Francisco Presuel-Moreno <fpresuel@fau.edu>
Subject: Energy Resilience certificate, revisions

Hello Dr. Presuel,

could you please confirm that OME department approves the Energy Resilience certificate revisions, attached.

Best regards,
Mihaela

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From: Waseem Asghar <wasghar@fau.edu>
Sent: Thursday, May 14, 2020 10:56 AM
To: Mihaela Cardei <mcardei@fau.edu>
Subject: Re: Energy Resilience certificate, revisions

Yes, CEECS GPC approved it.

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Regards,
Waseem Asghar, Ph.D.,
Assistant Professor,
Department of Computer & Electrical Engineering and Computer Science,
Department of Biological Sciences (Courtesy Appointment),
Florida Atlantic University,
777 Glades Road, EE 96/Rm 435, Boca Raton, FL 33431
Ph: 561.297.3728
Fax: 561.297.2800

<http://faculty.eng.fau.edu/asghar/>

From: Mihaela Cardei <mcardei@fau.edu>
Sent: Thursday, May 14, 2020 7:48 AM
To: Waseem Asghar <wasghar@fau.edu>
Subject: Energy Resilience certificate, revisions

Hello Waseem,

could you please confirm that CEECS department approves the Energy Resilience certificate revisions, attached.

Best regards,
Mihaela

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From: Ramesh Teegavarapu <rteegava@fau.edu>
Sent: Friday, May 15, 2020 10:24 AM
To: Mihaela Cardei <mcardei@fau.edu>
Subject: Re: Energy Resilience certificate, revisions

Dear Dr. Cardei,
Based on the feedback from the faculty members of CECE, I can say CECE fully supports the Energy Resilience Certificate program as revised.

Thank you,
Best regards
Dr. T.

Ramesh S. V. Teegavarapu, Ph.D., P.E. (Dr. T.)
Professor, <http://faculty.eng.fau.edu/ramesh>
Director, Hydrosystems Research Laboratory (HRL), <http://hrl.fau.edu>
Department of Civil Environmental and Geomatics Engineering (CEGE)
Graduate Program Director/Coordinator, CECE
Associate Editor, Journal of Hydrologic Engineering, ASCE

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Please be advised that under Florida law, e-mail addresses are public records. If you do not want your e-

mail address released in response to a public records request, please do not send electronic mail to this address. Instead, please contact me by phone or in writing.

From: Mihaela Cardei <mcardei@fau.edu>
Sent: Tuesday, May 5, 2020 2:26 PM
To: Ramesh Teegavarapu <rteegava@fau.edu>
Cc: James VanZwieten <jvanzwi@fau.edu>
Subject: Energy Resilience certificate, revisions

Dr T,

attached are some revisions for the Energy Resilience certificate. Please share with CEGE, and let me know if there are comments. In this way we open the certificate to both GR and UG students.

I am waiting for 2 new GR course proposals, then I will send all of these to you for College GPC approval.

Regards,
Mihaela