

NC State College of Design

Graduate Certificate in Disaster Resilient Policy, Engineering and Design

The Department of Landscape Architecture and Environmental Planning is pleased to announce the creation of a new **Graduate Certificate in Disaster Resilient Policy, Engineering and Design**, set to begin in the Fall of 2020.

The imperative motivating the Graduate Certificate in Disaster Resilient Policy, Engineering and Design is to educate the next generation of practitioners and scholars to apply knowledge gained in the classroom and in the field to reduce the rise in disaster losses and assist communities adapt to a changing climate. The aims of the certificate reflect the NC State vision of “Think and Do”, to include using evidence-based information, assessing existing policy constraints and opportunities, and visually depicting examples of policy achieved through good planning, engineering and design. Technical knowledge to be obtained and applied by students in this graduate certificate program include: visualization of varied policy options; the critical assessment of existing and proposed natural hazards, disaster and climate change adaptation policies; the development of scenario-based governance strategies, interdisciplinary problem solving spanning architecture, building sciences, engineering, landscape architecture and land use planning; understanding hazard mitigation (risk reduction) and disaster recovery, to include its connectivity to climate change adaptation; and applying policy, design and engineering concepts to these issues.

The certificate is comprised of thirteen credits, including three core courses (7 credit hours) and one of three optional tracks (6 credit hours per track). Core courses include: **LAR 552: Survey of Natural Hazards and Disasters (3 credits-taught each Fall)**; **LAR 607: Natural Hazards, Disasters and Climate Change Adaptation Lecture Series (1 credit-taught each Spring)**; **LAR 554: Disaster Resilient Policy, Engineering and Design (3 credits-taught each Spring)**.

Certificate tracks include: 1) Policy, 2) Design and 3) Construction, Civil and Environmental Engineering.

Policy Track Course Electives

Electives are drawn from existing courses on campus, to include Public Administration (PA), Landscape Architecture (LAR), Architecture (ARCH), Civil, Construction and Environmental Engineering (CE), Meteorology, Earth and Atmospheric Sciences (MEAS) and Communication (COMM) . The elective courses must be 500 level courses or higher. All required and most elective courses will be delivered in a standard semester (fall and spring) format. Courses beyond those listed below, may be identified as electives, subject to the approval of the certificate coordinator and track coordinator.

Policy Track Course Electives (Public Administration)

PA (Public Administration) 553: Disaster, Crisis and Emergency Management and Policy	3 credits
PA 507: The Public Policy Process	3 credits
PA 511: Public Policy Analysis	3 credits

PA 798: Collaborative Governance and Public Networks (Special Topics in Public Administration and Policy)	3 credits
PA 550: Environmental Policy	3 credits
PA 546: Seminar in Program Evaluation	3 credits
PA 514: Management Systems	3 credits
Other PA courses as identified (including special topics, field study-see, for instance, firechasers program (https://research.cnr.ncsu.edu/blogs/firechasers/) – subject to approval of instructor and track coordinator.	

Design Track Course Electives (Landscape Architecture & Architecture)

ARC 503/LAR 507: Coastal Dynamics Design Lab <i>(subject to topical area and approval by the Certificate Coordinator. Non-ARC/LAR students are subject to approval of studio instructors and these students may seek to take this class as a 3-credit hour course [focused on specific class sub-tasks that do not require design studio training/education]. ARC students are subject to a lottery to get into studios).</i>	6 credits
LAR 545: City Planning and Design	3 credits
LAR 546: The Landscape Imperative	3 credits
LAR 535: Environmental Social Equity and Design	3 credits
LAR: Greenway Planning and Design	3 credits
LAR 520: Landscape and Culture Seminar	3 credits
LAR 582/ARCH 590: Design for Resilient Food Systems	3 credits
LAR 582: Special Topics in Landscape Architecture	1-6 credits
LAR 630: Independent Study	1-3 credits
<i>Other LAR courses as identified – subject to approval of instructor and track coordinator.</i>	

ARC 590: Resilient Thinking	3 credits
ARC 520: Sustainable Architecture	3 credits
ARC 548: Vernacular Architecture	3 credits
ARC 563: Public Interest Design Seminar: Case Studies and Current Issues	3 credits
ARC Resilient Coastal Design and Construction	3 credits
ARC 544: The City of New Orleans	3 credits
ARC 590: Special Topics in Architecture	3 credits
<i>Other ARC courses as identified – subject to approval of instructor and track coordinator.</i>	

Civil, Construction and Environmental Engineering Track Course Electives

CE 746: Soil Dynamics and Earthquake Engineering (Prerequisite: CE 440, or CE 443 or CE 548)	3 credits
CE 581: Fluid Mechanics in Natural Environments	3 credits
CE 596: Coastal Hydrodynamics	3 credits
CE 596: Coastal Modeling	3 credits
CE 567: Risk and Financial Management in Construction	3 credits
CE 578: Energy and Climate	3 credits
CE 583: Engineering Aspects of Coastal Processes	3 credits

CE 725: Earthquake Structural Engineering	3 credits
CE 786: Hydroclimatology	3 credits
CE 790: Advanced Topics in Civil Engineering	1 – 3 credits
<i>Other CE courses as identified – subject to approval of instructor and track coordinator.</i>	

General Electives (may fulfill track requirements based on concurrence with Certificate Coordinator):

MEA 517: Fundamentals of Climate Change Science	3 credits
MEA 593 (MEA 501): Fundamentals of Climate Change Science	3 credits
MEA 593 (MEA 502): Climate Risk Analysis for Adaptation	3 credits
MEA 519: Barriers to Climate Change Literacy	3 credits
COM 538: Risk Communication	3 credits
COM 579: Climate Change Communication	3 credits
COM 566: Seminar in Crisis Communication	3 credits

Admission Requirements:

Applicants must have an overall (or major) GPA of at least 3.0 on a 4-point scale for admission into the Graduate Certificate Program in Disaster Resilient Policy, Engineering and Design. An application for acceptance into the Graduate Certificate Program is required for all new students.

Students must complete the Graduate School application, found at <http://www.ncsu.edu/grad/applygrad.htm>.

Those applicants who are currently enrolled in an NC State graduate degree program must be in good standing; they need only provide the graduate student Certificate Plan Data Entry form, found at <https://grad.ncsu.edu/wp-content/uploads/2015/12/grad-cert-plan-data-entry.pdf>.

New applications will be reviewed by the Department of Landscape Architecture and Environmental Planning. Registration procedures, registration dates, and course availability for each semester can be found on the NCSU Registration and Records webpage at <http://www.ncsu.edu/registrar/>.

Core certificate course offerings (7 credit hours) are taught on an annual basis. The courses identified that comprise the six hours of elective courses are typically offered once per year. Students can petition to fulfill the elective requirements by selecting other courses not identified in this document, subject to the approval of the certificate director and track program coordinator. The certificate course schedule enables students to complete the program requirements in 2 years or less. The length of time needed to complete the certificate program may depend on potential scheduling conflicts with course requirements in their graduate degree program (including PhD students) and as such, students are allowed 4 years to complete the certificate program.

Stay tuned for more information about the certificate, to include how to participate in the program. Questions regarding the certificate can be directed to Professor Gavin Smith at gavin_smith@ncsu.edu.