

Degree Title	Program	School	Learning Outcomes
Architectural Science and Systems	Minor	College of Arts, Media, and Design	<p>This minor is a four-course curriculum that combines a comprehensive exploration of the full range building systems with a thorough understanding of the physical phenomena to which they respond. Learning outcomes include;</p> <ul style="list-style-type: none"> - Investigate the primary component systems of buildings and their synergistic integration, including site, structure, enclosure, environmental comfort, and passive and active energy systems. - Advances student skills in translating quantitative analysis and reasoning of science and engineering to the built environment. - Thorough knowledge of sustainable and resilient design goals, strategies, and methods.
Architectural Studies	BS	College of Arts, Media, and Design	<p>This program teaches students the rigorous design methods of architecture while also offering a flexible curriculum focused on key contemporary topics related to the built environment. Learning outcomes include;</p> <ul style="list-style-type: none"> - Thorough 2D and 3D representation and modeling skills for deciphering and designing the built environment. - Awareness of how global socio-cultural contexts influence the built environment, and how the built environment influences global communities. - Thorough knowledge of sustainable and resilient design goals, strategies, and methods. - Skills of communication and collaboration necessary for managing complex projects. - Understanding of fundamental construction systems and techniques that shape the built environment. - Critical ability to analyze and decipher complex environments. - Exposure to the diverse range of professional opportunities and avenues for design of the built environment.
Architecture	BS	College of Arts, Media, and Design	<p>This program's curriculum pairs studio courses with relevant architecture history and technology courses to support the comprehensive learning experience of the student. Students engage in intensive studio projects that encourage them to seek prototypical solutions to problems in the modern city. Learning outcomes include;</p> <ul style="list-style-type: none"> - Thorough 2D and 3D representation and modeling skills for deciphering and designing the built environment. - Awareness of how global socio-cultural contexts influence the built environment, and how the built environment influences global communities. - Thorough knowledge of sustainable and resilient design goals, strategies, and methods. - Skills of communication and collaboration necessary for managing complex projects. - Understanding of fundamental construction systems and techniques that shape the built environment. - Critical ability to analyze and decipher complex environments. - Exposure to the diverse range of professional opportunities and avenues for design of the built environment.

Architecture	MS	College of Arts, Media, and Design	<p>This program finds opportunities for design innovation within the realities of the contemporary urban condition, the real estate and construction industries, building preservation and conservations practices, current policy debates, pressing social and political debates, and climate change. Learning outcomes include;</p> <ul style="list-style-type: none"> - Thorough 2D and 3D representation and modeling skills for deciphering and designing the built environment. - Awareness of how global socio-cultural contexts influence the built environment, and how the built environment influences global communities. - Thorough knowledge of sustainable and resilient design goals, strategies, and methods. - Skills of communication and collaboration necessary for managing complex projects. - Understanding of fundamental construction systems and techniques that shape the built environment. - Critical ability to analyze and decipher complex environments. - Exposure to the diverse range of professional opportunities and avenues for design of the built environment.
Civil and Environmental Engineering	PhD	College of Engineering	<p>The Doctor of Philosophy in Civil and Environmental Engineering offers students an opportunity for in-depth study in a broad range of areas in civil and environmental engineering. Learning outcomes include;</p> <ul style="list-style-type: none"> - The ability to use basic engineering concepts flexibly in a variety of contexts. - Ability to formulate a research plan. - Ability to communicate orally a research plan. - Ability to conduct independent research. - Provides depth in a specific area of Civil and Environmental Engineering (the major field) as well as other coursework that provides additional exposure at an advanced level to one or more disciplines.
Civil Engineering	BS	College of Engineering	<p>With this program you can have a vital role in human progress and well-being worldwide. Civil engineers design and construct buildings, bridges, tunnels, dams, and river systems. They also plan, design, construct, and manage highways, railroads, canals, and airports; regulate rivers and control floods; and design and build systems for water distribution and environmental protection. Learning outcomes include;</p> <ul style="list-style-type: none"> - Skills needed for conceptualizing, innovating, designing, and building sustainable infrastructure and environments is fundamental in helping society progress. - Crucial knowledge to face modern challenges, including engineering a resilient and sustainable urban infrastructure; establishing clean water and a clean environment; and advancing technologies in computing, sensing, and human health, are all part of the development of society. - Opportunity to obtain a broad knowledge base in science, engineering, and general studies that allows them flexibility in career development and graduate education. - Prepares undergraduate engineers to excel in their chosen careers, including engineering practice, academia, infrastructure management, land-use planning and development, urban and regional planning, public sector leadership, and many others.
Civil Engineering and Architectural Studies	BS	College of Engineering and College of Arts, Media, and Design	<p>This program combines civil engineering and architecture—two important disciplines that deal with the process of creating the built environment to satisfy societal needs. Both professions have critical functions that are essential in the development of society in terms of planning cities and designing more resilient infrastructure and rely on one-another to accomplish it. Learning outcomes include;</p> <ul style="list-style-type: none"> - Receive a rigorous engineering training education, enabling a high level of engineering knowledge.

Civil Engineering with Concentration in Geotechnical/Geoenvironmental Engineering	MS	College of Engineering	The MS programs' student learning outcome is the ability to use basic engineering concepts flexibly in a variety of contexts. Other learning outcomes include; <ul style="list-style-type: none"> - soil mechanics/foundations and geoenvironmental engineering - earth materials - oil mechanics - fate/transport in subsurfaces - subsurface remediation
Civil Engineering with Concentration in Water, Environmental, and Coastal Systems	MA	College of Engineering	The MS programs' student learning outcome is the ability to use basic engineering concepts flexibly in a variety of contexts. Other learning outcomes include; <ul style="list-style-type: none"> - hydrology; hydraulics; engineering for coastal areas; - numerical modeling; remote sensing; spatial and temporal data analysis; - physical, chemical, and biological processes that impact the water and air quality - knowledge and tools for developing and managing sustainable, resilient water resources and infrastructure.
Climate and Engineering	Graduate Certificate	College of Engineering	This three-course certificate in climate and engineering provides students with the foundational knowledge of how climate change will impact engineered systems and approaches for adaptation at multiple scales. Other learning outcomes include; <ul style="list-style-type: none"> - Analytical skills needed to evaluate designs that are climate-effective, safe, and minimize other environmental and social impacts. - Deep technical understanding of how climate change will impact engineered systems.
Computer Science and Environmental Science	BS	College of Science and Khoury College of Computer Sciences	This program focuses on the major environmental challenges facing our planet and provides broad training to understand how these challenges can be met through advances in computer science and artificial intelligence. Learning outcomes include; <ul style="list-style-type: none"> - Develop skills in the acquisition and computational analysis of large amounts of data—underscoring the synergistic relationship between computer science and environmental and sustainability sciences. - Gain an in-depth understanding of geological and atmospheric processes, data and spatial analysis, earth history, and more - Apply design principles in the construction of software systems of varying complexity. Use current techniques, skills, and tools necessary for effective & secure computing practice. <ul style="list-style-type: none"> - Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
Data Science and Environmental Sciences	BS	College of Science and Khoury College of Computer Sciences	This program focuses on major environmental challenges facing our planet and provides broad training to understand how these challenges can be met through advances in data science. Learning outcomes include; <ul style="list-style-type: none"> - Develop an integrative understanding of how data can be used to understand and solve problems big and small within environmental science. - Apply design principles in the construction of software systems of varying complexity. - Use current techniques, skills, and tools necessary for effective & secure computing practice. - Apply data science theory, methods, and tools to translate data into clear, actionable insights.

Data Science/Ecology and Evolutionary Biology	BS	College of Science and Khoury College of Computer Sciences	<p>This program provides a strong foundation in the fundamentals of ecology and evolutionary biology. Data science allows students to study the collection, manipulation, storage, retrieval, and computational analysis of data in its various forms. Learning outcomes include;</p> <ul style="list-style-type: none"> - Critical thinking and creativity in scientific problem solving. - Ability to apply design principles in the construction of software systems of varying complexity. - Use current techniques, skills, and tools necessary for effective & secure computing practice. - Ability to apply data science theory, methods, and tools to translate data into clear, actionable insights.
Design for Sustainable Urban Environments - One-Year Program	MA	College of Arts, Media, and Design	<p>This program offers a core skills earthworks, water, and plants systems as well as the principles of landscape and urban ecology. Some other learning outcomes are;</p> <ul style="list-style-type: none"> - Awareness of how global socio-cultural contexts influence the built environment, and how the built environment influences global communities. - Thorough knowledge of sustainable and resilient design goals, strategies, and methods. - Understanding of fundamental construction systems and techniques that shape the built environment. - Understanding of ethical responsibilities for designing the built environment.
Ecology and Evolutionary Biology	BS	College of Science	<p>This program is designed to provide a strong foundation in the fundamentals of ecology and evolutionary biology. This major provides unique experiential learning opportunities for students interested in the fundamentals of evolution; the ecology of terrestrial, marine, and freshwater systems; and the application of both of these in the pursuit of the conservation and restoration of natural systems. Learning outcomes include;</p> <ul style="list-style-type: none"> - Describe the foundational concepts of biology and apply them to new situations. - Apply the process of science to understanding experimental observations and predicting outcomes. - Access and analyze the scientific literature. - Effectively communicate scientific data and ideas to a diversity of audiences. - Apply quantitative reasoning to biological questions. - Design and carry out experiments to investigate biological questions using current approaches. - Apply physicochemical principles to biological phenomena. - Appreciate the intersection between biological science and society.
Ecology and Evolutionary Biology	Minor	College of Science	<p>This minor is designed to provide students a foundation in the principles of ecology and evolutionary biology, as well as to provide concrete skills that will help students achieve their career goals. Learning outcomes include;</p> <ul style="list-style-type: none"> - Apply the process of science to understanding experimental observations and predicting outcomes. - Access and analyze the scientific literature. - Provide students a foundation in the principles of ecology and evolutionary biology. - Appreciate the intersection between biological science and society. - Introduce a set of generalizable concepts that are of fundamental importance to plant and animal life on the land and in the sea and provide hands-on experiential learning .

Ecology, Evolution, and Marine Biology	PhD	College of Science	<p>This program trains independent scientists whose research addresses fundamental and applied questions at local, regional, national, and global scales. General and specialized coursework in ecology, evolution, and marine science, with curricular programs including both core and specialized options tailored to each student’s research interests. Other learning outcomes include;</p> <ul style="list-style-type: none"> - To train researchers who can independently pursue the process of science and effectively apply their research to solve both basic questions in ecology, evolution, and marine biology. - To apply their work to issues of relevance to society and the environment, especially in this era of global change.
Electrical and Computer Engineering with Concentration in Power Systems	MS	College of Engineering	<p>This program offers the flexibility to specialize in an area of interest with eight concentration, research areas, and experiential learning options. The learning outcomes are;</p> <ul style="list-style-type: none"> - Gain the ability to use basic engineering concepts flexibly in a variety of contexts. - Gain experience in research that ranges from the design, analysis, and optimization of high-performance computing systems, to the fabrication of cutting-edge microelectromechanical actuators, to new research frontiers on smart power grids, metamaterials, biomedical signal processing, and communication systems.
Energy Systems	Certificate	College of Engineering	<p>This graduate certificate seeks to provide students opportunities to apply the fundamentals of engineering knowledge and skills to analyze energy systems to propose effective and efficient technology solutions based on data-driven and economic-based decisions. Learning outcomes include;</p> <ul style="list-style-type: none"> - Develop skills to apply the fundamentals of engineering knowledge and skills to analyze energy systems to propose effective and efficient technology solutions based on data-driven and economic-based decisions. - Knowledge on the combination of analysis and integration of energy systems engineering technology with financial planning and attention to business aspects and effective implementation.
Energy Systems	MS	College of Engineering	<p>The program’s mission is to educate students in current and future energy systems technologies, to integrate energy-related technologies with the economics and financial considerations required to implement them, and to develop leadership and decision-making skills to implement energy systems in either the private or public sectors of the global market. Learning outcomes include;</p> <ul style="list-style-type: none"> - Exposure to a combination of academic and corporate experience in energy systems. - Knowledge about how to leverage business skills and public policy knowledge to accomplish their engineering goals.
Energy Systems - Academic Link Program	MS	College of Engineering	<p>The program is meant to provide students of non–STEM disciplines (such as English, sociology, business, etc.) with the foundation skills necessary to gain the skills needed to create and implement energy solutions. Learning outcomes include;</p> <ul style="list-style-type: none"> - Providing students the foundation skills necessary to gain the skills needed to create and implement energy solutions. - Prepare students to lead the efforts to implement energy systems solutions that have a long-term positive effect on businesses and communities. - Introduction to the fundamentals that are necessary to be successful in the energy system program.

Energy Systems Management	Certificate	College of Engineering	<p>This graduate certificate seeks to provide students with opportunities to apply the fundamentals of engineering knowledge and skills in a management setting to analyze energy systems and to propose effective and efficient technology solutions based on data-driven and economic-based decisions. Learning outcomes include;</p> <ul style="list-style-type: none"> - Develop skills to apply the fundamentals of engineering knowledge and skills in a management setting to analyze energy systems and to propose effective and efficient technology solutions based on data-driven and economic-based decisions. - Knowledge of the combination of analysis and integration on energy systems engineering technology with a focus on the art and the science of planning, organizing, allocating, directing, and controlling the activities and resources of organizations engaged in engineering activities and technology development.
Engineering and Public Policy	MS	College of Engineering	<p>This program provides the knowledge and tools needed to combine engineering analysis with public policy and decision-making. This program covers the core skills necessary to link engineering design and analysis research with the economic and policy contexts needed for decisions that affect society at large. Other learning outcomes include;</p> <ul style="list-style-type: none"> - The ability to use basic engineering concepts flexibly in a variety of contexts. - Provide students with a background in engineering with the tools necessary to conduct robust policy analysis. - Learn topics about environmental change, urbanization, and technological progress that will profoundly reshape how we live and work. - Prepare engineering professionals with both technical and policy expertise to be the key decision-makers and leaders of the future.
Environmental and Sustainability Science and Chemistry	BS	College of Science	<p>This program provides education in basic environmental and sustainability sciences (ESS) and chemistry-related disciplines. The overall objective of this combined major is to provide the fundamental scientific background and practical training for students as they prepare for environmental and chemically related careers or advanced study in fields. Other learning outcomes include;</p> <ul style="list-style-type: none"> - Development of conceptual understanding and problem-solving abilities in the fundamental dynamics between the environment and its chemistry, be it analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, and physical chemistry. - Gain experience in quantitative measurements. - Learn proper laboratory practices and safety. - Develop proficiency with modern instruments and computers for data acquisition and analysis. - Learn the relevance of chemistry within the context of the abiotic and biotic environments. - Gain knowledge in topics such as toxicology, pollution, bioremediation, environmental protection, education, law, and other endeavors that may draw upon an understanding of the chemical basis of the environment and the changes that will likely result from global environmental change.

Environmental and Sustainability Sciences	BS	College of Science	<p>This program provides students comprehensive and transdisciplinary skills needed to tackle the pressing environmental problems we face. Our core curriculum is grounded in a solid foundation in Earth systems, ecology, sustainable development, and required skills courses in data management and geographic information systems. Learning outcomes include;</p> <ul style="list-style-type: none"> - Explain how to apply the scientific method as it relates to the environment and its inhabitants, including anthropogenic effects. - Communicate research results to both scientific and non-scientific audiences. - Learn how to critically read and interpret the scientific literature. - Collect, analyze and interpret data. - Describe how societal actions impact the environment. - Explain the processes that form and shape the Earth’s physical environment.
Environmental and Sustainability Sciences	Minor	College of Science	<p>This minor provides undergraduates with a strong foundation in a variety of scientific, technical, institutional, economic, behavioral, and conservation-oriented solutions to environmental problems caused by either natural phenomena and/or human activity. Learning outcomes include;</p> <ul style="list-style-type: none"> - Learn how to critically read and interpret the scientific literature. - Collect, analyze and interpret data. - Describe how societal actions impact the environment. - Explain the processes that form and shape the Earth’s physical environment
Environmental and Sustainability Studies and Economics	BS	College of Science and College of Social Sciences and Humanities	<p>Through this combined major, successful undergraduates will develop an awareness of the intrinsic connection between the environment and economics and understand how long-run economic growth is crucially dependent on policies that account for the sustainability and well-being of the environment and that are grounded on environmental science. Learning outcomes include;</p> <ul style="list-style-type: none"> - Apply the scientific method as it relates to the intersection between the environment and its potential economic costs and impacts. - Learn how to read and critically interpret peer-reviewed literature. - Collect, analyze and interpret economic policies and environmental data to better understand the dynamics between these two disciplines. - Describe how social actions have environmental and economic consequences at the local, national, and international level. - Apply statistical analysis to evaluate everyday economic-environmental problems and specific policy proposals

Environmental Chemistry	Minor	College of Science	<p>This minor offers an opportunity for students of any background interested in environmental sciences to better understand the chemistry of the environment. Learning outcomes include;</p> <ul style="list-style-type: none"> - Learn a broad set of chemical knowledge concerning fundamentals in the basic areas of chemistry. - Learn about the chemical processes of natural systems and environmental pollutants. - Critically read and interpret the scientific literature. - Collect, analyze and interpret data. - Describe how societal actions and its underlying chemical principles impact the environment. - Explain the processes that form and shape the Earth’s physical environment. - Demonstrate an understanding of good laboratory practice and the proper handling of chemical waste.
Environmental Engineering	BS	College of Engineering	<p>Students learn how to tackle interconnected challenges as they relate to water, energy, air quality, and related fields. Learning outcomes include;</p> <ul style="list-style-type: none"> - Skills necessary to practice environmental engineering and work with other engineers and urban and regional planners in an interdisciplinary environment. - Knowledge in planning, designing and monitoring public and private facilities to minimize the impact of anthropogenic activities on the environment. - Practice ensuring regulatory compliance while mitigating the impact of contaminated soil, groundwater and surface water on human health.
Environmental Engineering	MS	College of Engineering	<p>The MS programs’ student learning outcome is the ability to use basic engineering concepts flexibly in a variety of contexts. Learning outcomes include;</p> <ul style="list-style-type: none"> - Knowledge of physical, chemical, and biological processes and fundamental principles for water and wastewater treatment and disposal, hazardous waste management, surface water and groundwater quality, water resources management, and air quality management. - Skills need to develop and implement technologies for various environmental applications with the goal to improve and protect the environment and human health.
Environmental Engineering and Health Science	BS	College of Engineering and Bouve College of Health Sciences	<p>The combined major reflects the respective departmental thrusts in environmental health and sustainable resource engineering to create awareness about the complex relationship between the environment and human health. Learning outcomes include;</p> <ul style="list-style-type: none"> - engineering solutions to current and emerging topics related to environmental engineering and health sciences - maintaining healthy environmental systems by applying and developing techniques to reduce exposure to health hazards.

Environmental Engineering and Landscape Architecture	BS	College of Engineering and College of Arts, Media, and Design	<p>Environmental engineering and landscape architecture are two important disciplines that deal with the complex interaction between the natural and the built environment. Both professions have critical functions that are essential in the development of society in terms of planning and designing more sustainable cities. Learning outcomes include;</p> <ul style="list-style-type: none"> - conceptual and practical content of landscape planning. - preparedness for imagining and creating projects that can be translated into reality and providing solutions to address the world’s growing challenges by designing clean and sustainable environments and green infrastructure. - - Awareness of how global socio-cultural contexts influence the built environment, and how the built environment influences global communities. - Thorough knowledge of sustainable and resilient design goals, strategies, and methods.
Environmental Geology and Chemistry	BS	college of science	<p>This program offers an opportunity for students interested in environmental sciences to better understand the chemistry and geology of the environment. Learning outcomes include;</p> <ul style="list-style-type: none"> - Master a broad set of chemical knowledge concerning fundamentals in the basic areas of chemistry. - Communicate research results and/or chemical principles to both scientific and non-scientific audiences. - Critically read and interpret the scientific literature. - Collect, analyze and interpret data. - Describe how societal actions and its underlying chemical principles impact the environment. - Explain the processes that form and shape the Earth’s physical environment. - Demonstrate an understanding of good laboratory practice and the proper handling of chemical waste.
Environmental Science	Minor	College of Professional Studies	<p>The minor in environmental science introduces students to the science of the environment along with the social and political issues that impact environmental policy. Learning outcomes include;</p> <ul style="list-style-type: none"> - Develop an awareness of the scientific, cultural, and political aspects of the world’s environmental problems. - Prepare students for careers in the expanding field of environmental professions and further study.
Environmental Science	BS	College of Science	<p>This program provides students comprehensive and transdisciplinary skills needed to tackle the pressing environmental problems we face. Our core curriculum is grounded in a solid foundation in Earth systems, ecology, sustainable development, and required skills courses in data management and geographic information systems. Learning outcomes include;</p> <ul style="list-style-type: none"> - Explain how to apply the scientific method as it relates to the environment and its inhabitants, including anthropogenic effects. - Communicate research results to both scientific and non-scientific audiences. - Learn how to critically read and interpret the scientific literature. - Collect, analyze and interpret data. - Describe how societal actions impact the environment. - Explain the processes that form and shape the Earth’s physical environment.

Environmental Science and Landscape Architecture	BS	College of Science and College of Art, Design, and Media	<p>This program provides an education in basic environmental and sustainability sciences and landscape-architecture-related disciplines. This combined major provides students the opportunity to obtain the fundamental scientific background and practical training to tackle environmental and landscape-related issues. Learning outcomes include;</p> <ul style="list-style-type: none"> - Thorough 2D and 3D representation and modeling skills for deciphering and designing the built environment. - Awareness of how global socio-cultural contexts influence the built environment, and how the built environment influences global communities. - Thorough knowledge of sustainable and resilient design goals, strategies, and methods. - Skills of communication and collaboration necessary for managing complex projects. - Understanding of fundamental construction systems and techniques that shape the built environment. - Critical ability to analyze and decipher complex environments. - Exposure to the diverse range of professional opportunities and avenues for design of the built environment. - Understanding of ethical responsibilities for designing the built environment. - Gain knowledge in urban planning, urban design, sustainable development, environmental consulting, and/or other topics focusing on the interactions among landscapes, the built environment, human societies, and overall climate impacts.
Environmental Science and Policy	MS	College of Science and College of Social Sciences and Humanities	<p>This program emphasizes a broadly interdisciplinary and synthetic approach that integrates knowledge in the environmental sciences with the social sciences and humanities. Learning outcomes include;</p> <ul style="list-style-type: none"> - Equip professionals with substantive breadth in knowledge and skills at the intersection of environmental science and policy. - Train students to think critically about the underlying causes of environmental problems and understanding the reciprocal relationships between coupled human-natural ecosystems and the interconnections between social and technological innovations. - Exploration of the practical approaches and potential solutions that decision makers need to evaluate in policy debates related to promoting environmental sustainability.
Environmental Studies	Minor	College of Science	<p>This minor is a blend of courses that bridge the scientific foundations and human dimensions of environmental systems. Learning outcomes include;</p> <ul style="list-style-type: none"> - Understanding of the science and policy of the Earth’s environmental challenges. - Develop an awareness of the scientific, cultural, and political aspects of the world’s environmental problems. - Prepare students for careers in the expanding field of environmental professions. - Prepare students for further study at the graduate or professional school level.

Environmental Studies	BA	College of Science	<p>This program provides students with a critical foundation in both the scientific and human foundation of environmental systems. It also prioritizes mastery of skills that will position students for future success as environmental professionals. Learning outcomes include;</p> <ul style="list-style-type: none"> - Learn how to apply the scientific method to the intersection between the environments, its inhabitants and policy. - Enhance their scientific communication skills to reach and educate non-scientific audiences. - Read and interpret scientifically gathered data in a critical fashion by recognizing if the data are reliable, robust and truly representative. - Describe how societal actions impact the environment and how the environment impacts society — at local, national and international levels <p>Communicate environmental policies to diverse audiences.</p> <ul style="list-style-type: none"> - Describe global ethical issues in human-environment interactions.
Environmental Studies and History	BS	College of Science and College of Social Sciences and Humanities	<p>Through this combined major, successful undergraduates will develop an awareness of the scientific, cultural, and political aspects of the world’s environmental problems through historical perspectives and backgrounds. Learning outcomes include;</p> <ul style="list-style-type: none"> - Apply the scientific method. - Communicate interdisciplinary science to non-scientific audiences. - Critically read and interpret peer-reviewed literature. - Collect, analyze and interpret data. - Describe how societal actions impact the environment and how the environment impacts society — at local, national and international levels. - Communicate environmental policies to diverse audiences. - Describe ethical issues in human-environment interactions globally. - Apply historical methodologies and analytical tools to construct evidence-based and/or data-based understandings of past interactions between society and its environment, in order to contextualize present and future changes. - Connect a regional or thematic focus to the larger global historical context.

Environmental Studies and International Affairs	BA	College of Science and College of Social Sciences and Humanities	<p>Through this combined major, successful undergraduates will develop an awareness of the international issues that influence the scientific, cultural, societal, political, and economic aspects of the world’s environmental problems and the ways in which such environmental challenges can be ameliorated and/or solved. Learning outcomes include;</p> <ul style="list-style-type: none"> - Apply the scientific method to the intersection between the environment and international affairs. - Communicate interdisciplinary science and environmental policies to audiences with little or no scientific background. - Learn how to read and critically interpret peer-reviewed literature. - Collect, analyze and interpret data. - Describe how societal actions impact the environment and how the environment impacts society — at local, national and international levels. - Describe global issues in human-environment interactions and apply historical methodologies and analytical tools to construct evidence-based and/or data-based understandings of interactions, in order to contextualize present and future changes. - Connect experiential education (e.g., Dialogues of Civilization, co-ops, internships, and/or study abroad) to global environment issues by improving language proficiency while becoming acquainted with cultural, regional and practical knowledge of the local and global historical contexts.
Environmental Studies and Philosophy	BA	College of Science and College of Social Sciences and Humanities	<p>Through this combined major, successful undergraduates will develop an awareness of the scientific, cultural, and political aspects of the world’s environmental problems while considering the philosophical, moral, and ethical impacts that such decisions have on human-environment interactions. Learning outcomes include;</p> <ul style="list-style-type: none"> - Apply the scientific method as it relates to philosophical aspects of environmental issues. - Communicate the dynamics between environmental and philosophical issues to audiences with little or no scientific background. - Learn how to read and critically interpret peer-reviewed literature. - Collect, analyze and interpret philosophical and environmental data to better understand the dynamics between these two disciplines. - Describe how societal actions impact the environment and how the environment impacts society — at local, national and international levels. - Describe global ethical issues in human-environment interactions. - Interpret complex philosophical texts from sources across a range of historical periods. - Explain the philosophical theories associated with one of the following areas: epistemology, metaphysics, natural, or moral philosophy. - Ability to speak and to write logically and persuasively about philosophical theories, epistemology, metaphysics, natural or moral philosophy and environmental matters. - Demonstrate written fluency in formal logic including logical proofs.

Environmental Studies and Political Science	BA	College of Science and College of Social Sciences and Humanities	<p>In this combined major, successful undergraduates will develop an awareness of the scientific, cultural, societal, and political aspects of the world’s environmental problems through the lens of geopolitical decisions, public policy, and environmental regulations. Learning outcomes include;</p> <ul style="list-style-type: none"> - Describe how societal actions impact the environment and how the environment impacts society, with special relevance to human behavior, public policy, and regulation of the environment. - Articulate the history of environmental policy in the US, and how it complements, conflicts and/or contributes to international public policies. - Apply quantitative methods and critical tools to theoretical questions related to managing and resolving political-environmental problems and challenges in the geopolitical sphere. - Explain how political institutions, processes, and actors operate within national, international, and global frameworks. - Communicate principles of social and environmental science to nonscientific policy makers.
Food systems sustainability, Health, and Equity	Minor	College of Social Sciences and Humanities	<p>This minor is an interdisciplinary exploration of the contemporary food system, with particular attention to how the system evolved; its diverse societal, health, and environmental impacts; and ideas for making the food system more sustainable, healthy, and equitable for all. Learning outcomes are;</p> <ul style="list-style-type: none"> - Learn how the law influences and is influenced by policy <p>participate in cutting-edge courses with the opportunity to focus on international, domestic, and justice issues.</p>
Geosciences	Minor	College of Science	<p>This minor is designed to provide students with a comprehensive understanding of the breadth of topics in the geosciences. Core foundational classes in Earth science are followed by student-directed electives across a range of course options. Learning outcomes include;</p> <ul style="list-style-type: none"> - Develop a comprehensive understanding of the breadth of topics in the geosciences. - Explain the processes that form and shape the Earth’s physical environment. - Learn how to read and interpret the scientific literature. <p>Collect, analyze and interpret data.</p>
Landscape Architecture	BA	College of Arts, Media, and Design	<p>This major reflects a growing public interest in making our cities more sustainable and in bringing the insights of landscape architects to join those of urban designers and architects. The learning outcomes are;</p> <ul style="list-style-type: none"> - Awareness of how global socio-cultural contexts influence the built environment, and how the built environment influences global communities. - Thorough knowledge of sustainable and resilient design goals, strategies, and methods. - Understanding of fundamental construction systems and techniques that shape the built environment. - Understanding of ethical responsibilities for designing the built environment.

Marine and Environmental Sciences	MS	College of Science	<p>This program seeks to prepare future generations of climatologists, ecologists, and marine biologists for the front lines of climate change — to reclaim our coral reefs, and oceans, our biodiversity, our air, and certainty for our future. Learning outcomes include;</p> <ul style="list-style-type: none"> - Design and execute field experiments and laboratory investigations involving advanced scientific diving, and use of state-of-the-art instrumentation. - Communicate the commonalities and differences in the three ecosystems they intensively studied to both scientific peers, and to a lay audience. - Articulate how their interdisciplinary masters course of study has prepared them to contribute to the advancement of knowledge useful for understanding the oceans either through further study and research at the graduate level, or through identification of organizations where their training can be used to advance management of the oceans in a sustainable manner.
Marine and Environmental Sciences	PhD	College of Science	<p>This program trains high-caliber and independent scientists whose research addresses fundamental and applied marine and environmental science questions at local, regional, national, and global scales. Learning outcomes include;</p> <ul style="list-style-type: none"> - Knowledge in advanced course work and training in the concentration areas of marine sciences, geosciences, sustainability sciences, and ecology and evolutionary biology. - Experience applying their research to address issues of relevance to society and the environment. - Ability to effectively communicate their findings broadly. - Develop teaching skills and communicate knowledge through outreach programs locally and internationally.
Marine Biology	BS	College of Science	<p>This program provides students with a solid foundation in marine biology, with flexibility to explore ocean and coastal processes, marine biogeochemistry, the ecology and evolution of marine organisms, and the ocean’s role and responses in global change. Learning outcomes include;</p> <ul style="list-style-type: none"> - Develop a solid foundation in marine biology <p>Examine contemporary issues facing marine organisms and ecosystems.</p> <ul style="list-style-type: none"> - Apply the process of science to understanding experimental observations and predicting outcomes. - Access and analyze the scientific literature. - Effectively communicate scientific data and ideas to a diversity of audiences. - Apply quantitative reasoning to biological questions. - Design and carry out experiments to investigate biological questions using current approaches.
Marine Sciences	Minor	College of Science	<p>This minor provides Northeastern undergraduates with a strong foundation in the marine sciences, while offering the opportunity to obtain concrete skills that will enhance employability. Other learning outcomes include;</p> <ul style="list-style-type: none"> - Access and analyze the scientific literature. - Effectively communicate scientific data and ideas to a diversity of audiences. - Develop a strong foundation in the marine sciences.

MBA Sustainability and Business Concentration	MBA	D'Amore-McKin School of Business	<p>This program will help you develop the knowledge and skills you need to create long-term strategies that increase shareholder value—while reducing your organization's environmental footprint, respecting norms of social justice, and promoting transparent governance. Learning outcomes include;</p> <ul style="list-style-type: none"> - Gaining the foundation for you to work toward a sustainability-specific role in business, such as a sustainability consultant or an environmental portfolio manager, or add a vital set of tools to prepare for an eventual leadership role such as operations manager or business development manager. - Cultivate a global mindset and a profound understanding of the role of data and technology in decision-making. - Develop the knowledge and skills you need to create long-term strategies that increase shareholder value—while reducing your organization's environmental footprint, respecting norms of social justice, and promoting transparent governance.
Politics, Philosophy, and Economics, Concentration in Environmental and Energy Policy	BA	College of Social Sciences and Humanities	<p>This program provides an interdisciplinary perspective and set of skills are indispensable in our increasingly interconnected world and are essential in addressing the kinds of complex global problems future leaders will need to tackle. Other learning outcomes include;</p> <ul style="list-style-type: none"> - Identify and describe key points of moral and philosophical theories as these intersect with or affect the domains of politics and economics. - Develop policy recommendations, including attention to how systemic racism, gender, and other power structures shape policymaking and outcomes, and communicate these clearly orally and in writing. - Recognize the functions and effects of economic institutions such as markets, and describe key ways, that racism, sexism, and structural inequality affect access to these institutions. <p>Form and communicate original arguments about complex philosophical, moral and political ideas.</p> <ul style="list-style-type: none"> - Draw upon and combine theoretical approaches including those of feminist, post-colonial, and anti-racist lenses in order to analyze specific social, economic, and political issues at the global, national, or local levels.
Public Policy, Concentration in Sustainability and Resilience	PhD	College of Social Sciences and Humanities	<p>This program engages doctoral students to conduct cutting-edge, impactful research pertaining to climate resilience and climate policy at multiple scales. Examples of topical areas include energy systems, food systems, community resilience, green innovation, resilient infrastructure, environmental justice and equity, and urban sustainability. Learning outcomes include;</p> <ul style="list-style-type: none"> - Become versed in the foundational knowledge in public policy as a field of inquiry sufficient to contribute to its continued evolution and relevance. - Obtain deep and nuanced expertise in a specified subject area. - Develop the methodological tools to enable policy-relevant research in high-level professional settings. - Understand and reveal structural and historical inequities in the particular area of focus. - Identify issues of pressing concern to society at local, national, and international levels.

Renewable Energy	Certificate	College of Engineering	<p>This graduate certificate focuses on the combination of analysis and integration of energy systems engineering technology with key renewable engineering technology, including solar and wind generation, with environmental protection and manufacturing considerations. Learning outcomes include;</p> <ul style="list-style-type: none"> - Knowledge in the fundamentals of engineering. - Develop skills to analyze energy systems with a specific focus on renewable energy technologies along with EPA regulatory structure, including the LEED certification program, as well as industrial ecology, including life-cycle analysis and technical cost modeling.
Security and Resilience Studies	Certificate	College of Social Sciences and Humanities	<p>The goal of this Certificate is to prepare students to manage contemporary transnational risks by offering them an opportunity to gain a comprehensive understanding of the principles and policies for security and resilience of critical systems. Other learning outcomes include;</p> <ul style="list-style-type: none"> - Passing a core course in security and resilience policy that introduces students to a comprehensive approach to managing transnational risks. - Passing recommended foundation courses for cyberspace policy, security administration, and counterterrorism specializations that provide a broad perspective on transnational threats and the means states use to address them. - Learning how to work with others in groups and exercise leadership in teams by completing group assignments and projects.
Security and Resilience Studies	MS	College of Social Sciences and Humanities	<p>This program is an emerging field of inquiry that focuses on how global, national, and subnational actors manage a range of chronic transnational challenges—such as terrorism, organized crime, weapons proliferation, cyberattacks, bioterrorism, climate change and catastrophic disasters, migration, and radicalization—that can be destabilizing to societies. Learning outcomes include;</p> <ul style="list-style-type: none"> - Speak cogently about contemporary issues in security and resilience studies. - Communicate effectively in written formats relevant to the study of security and resilience. - Synthesize, analyze, and critically evaluate major arguments in contemporary debates involving security and resilience. - Design and complete a policy memo, independent research paper or applied project in the field of security and resilience.

Sociology and Environmental Studies	BA	College of Science and College of Social Sciences and Humanities	<p>This program will lead to undergraduates that have a broad awareness of the sociological and scientific foundations of environmental problem solving. Learning outcomes include;</p> <ul style="list-style-type: none"> - Develop concrete skills in GIS and scientific communication that will facilitate student success. - Identify and describe key features of sociology as a discipline and a practice. - Define theory and describe its role in building sociological knowledge. - Compare and contrast basic theoretical orientations, including the historical context of the times and cultures in which they were developed. - Identify and describe key features of inequality in several contemporary societies, such as structural and intersectional inequalities in the United States; uneven power relations between the global North and the global South; and legacies of colonialism and imperialism. - Describe and apply the most commonly used research approaches, both qualitative and quantitative. - Describe the procedures sociologists follow to ensure ethical treatment of participants in social research. - Communicate sociological claims and arguments effectively, including showing an appreciation of culturally diverse audiences.
Sustainability and Business	Certificate	D'Amore-McKin School of Business	<p>This certificate emphasizes learning the fundamentals of sustainable business strategy. Sustainability isn't just another buzzword—it's a new way of doing business that requires organizations to make a positive impact on surrounding communities. Learning outcomes include;</p> <ul style="list-style-type: none"> - Develop a foundation of skills for creating sustainable business strategies that can make you a more well-rounded leader. - Learn strategies for addressing climate change, social justice, community impact, and governing transparency that give your organization a competitive edge in the marketplace.
Sustainability and Climate Change Policy	Certificate	College of Social Sciences and Humanities	<p>This certificate provides students from multiple backgrounds an option for gaining interdisciplinary skills and perspectives in climate and sustainability policy. Learning outcomes include;</p> <ul style="list-style-type: none"> - Prepare students for the dynamic, evolving landscape of climate and sustainability policy. - Knowledge and training in how to respond to the rapidly changing policy and regulatory frameworks in climate and sustainability.
Sustainability Engineering	Certificate	College of Engineering	<p>This certificate is geared at providing those who have computational literacy but do not have an engineering background with knowledge and skills to collaborate effectively with engineers. Learning outcomes include;</p> <ul style="list-style-type: none"> - Foundational knowledge of sustainability engineering, including sustainability challenges from an engineering perspective, environmental chemistry as a key aspect of sustainability challenges and solutions, engineering tools for understanding and addressing sustainability challenges, and data methods applicable to all of the preceding. - Technical expertise and an ability to conceive of and participate in multidisciplinary solution development in the area of sustainability.

Sustainable Building Systems	MS	College of Engineering	<p>The MS programs' student learning outcome is the ability to use basic engineering concepts flexibly in a variety of contexts. Learning outcomes include;</p> <ul style="list-style-type: none"> - Knowledge of the design and operation of buildings to provide a comfortable, healthy, and productive indoor environment with minimal energy and environmental impact. - Developing leadership and decision-making skills to implement sustainable building practices in either the private or public sectors in the global market.
Sustainable Business Practices	Minor	D'Amore-McKin School of Business	<p>The learning outcome of this minor is to provides students with a deeper understanding of sustainability issues and the tools to address these issues in a business environment.</p>
Sustainable Energy Systems	Minor	College of Engineering	<p>An interdisciplinary selection of courses designed to offer flexibility and exposure to the principles and applications of sustainable energy systems that are needed to meet the challenges of the world's growing energy needs. Learning outcomes include;</p> <ul style="list-style-type: none"> - Learning technical skills, analysis techniques, design strategies - Knowledge in the principles of economics and energy policy in topic areas including traditional (fossil fuel), alternative, renewable, and sustainable energy sources and energy system applications.
Sustainable Energy Systems	Certificate	College of Engineering	<p>This graduate certificate focuses on the integration of energy systems engineering technology with sustainable building systems, including the design and operation of buildings with minimal energy and environmental impact. Learning outcomes include;</p> <ul style="list-style-type: none"> - Knowledge in the fundamentals of engineering. - Develop skills to analyze energy systems as they relate to sustainable engineering building design with a focus on renewable energy with LEED certification or with a focus on industrial ecology, including life-cycle analysis and technical cost modeling.
Urban Informatics, Concentration in Climate and Resilience	MS	College of Social Sciences and Humanities	<p>This program is designed for MSUI students who want to specialize in the policy challenges that arise from climate change and the methodological tools designed to respond to them, especially those that help us understand and instill resilience in communities that are vulnerable to disruption. Learning outcomes include;</p> <ul style="list-style-type: none"> - Learn skills in data analytics with a specialized sequence of courses that addresses how data and technology are used to confront key social, infrastructural, and environmental challenges. - Understand the city as a system of systems and the developing role of urban informatics in managing the associated complexities. - Access, analyze, and model data from multiple sources to develop efficient urban systems. - Effectively communicate the potential of emerging technologies to a wide audience. - Present large-scale urban data, including spatial and non-spatial datasets, in order to visualize patterns as a means for formulating effective policy and plans.

Urban Landscapes Studies	Minor	College of Arts, Media, and Design	<p>The minor introduces fundamental design and management of sustainable urban environments, as well as an overview of historical and contemporary issues in urban landscape. Other learning outcomes are;</p> <ul style="list-style-type: none"> - Awareness of how global socio-cultural contexts influence the built environment, and how the built environment influences global communities. - Thorough knowledge of sustainable and resilient design goals, strategies, and methods. - Understanding of fundamental construction systems and techniques that shape the built environment. - Understanding of ethical responsibilities for designing the built environment.
Urban Planning and Policy	MS	College of Social Sciences and Humanities	<p>This program trains leaders interested in building just and sustainable solutions to today’s critical urban problems. Students in the program develop the theoretical and analytical tools to understand contemporary challenges of social and environmental injustice in cities and urban regions. Learning outcomes include;</p> <ul style="list-style-type: none"> - Develop professional tools to work effectively in the realms of planning, policy, politics, and advocacy to impact urban challenges, including affordable housing provision, equitable and sustainable economic growth, sustainable transportation, and climate change adaptation and mitigation. - Learn a solid foundation in research design and statistics, economic analysis, legal foundations planning, and the history of urban development and urban planning. - Gain knowledge in urban analytics, urban sustainability and resilience, urban design and physical planning, and urban development policy and planning.
Urban Studies Minor	Minor	College of Social Sciences and Humanities	<p>This minor offers students interested in cities an opportunity to take advantage of the resources of an urban university situated in a major metropolitan area. Learning outcomes include;</p> <ul style="list-style-type: none"> - Develop an understanding of the dynamics of urban growth and development and includes the study of urban social and political institutions. Many courses cover climate change, sustainability, housing, and the urban economy. - Provide a solid background for graduate study and professional careers in urban planning and policy, social work, and related fields. - Knowledge about the historical development of cities, and gain an interdisciplinary understanding of the social, cultural, political, and ecological forces that shape urban life.