



PCC Proposal to Establish a Post-Baccalaureate Certificate in Climate Policy and Action (Senate Document #22-23-14)

PRESENTED BY Piotr Swistak, Chair, Senate Programs, Curricula, and Courses Committee

REVIEW DATES SEC – November 16, 2022 | SENATE – December 7, 2022

VOTING METHOD In a single vote

**RELEVANT
POLICY/DOCUMENT**

**NECESSARY
APPROVALS** Senate, President, USM Chancellor, and the Maryland Higher Education Commission

ISSUE

The School of Public Policy proposes to establish a Post-Baccalaureate Certificate in Climate Policy and Action. This graduate certificate program will train professionals to assess, design, and implement effective strategies and actions to address climate change. The program will focus on concepts and skills relevant for mitigating climate change and building resilience to its impacts. The certificate will address policy approaches and actions at all governance levels and by all actors—public and private. Students will gain practical skills related to analysis, effective communication and transdisciplinary and interdisciplinary approaches towards complex climate and sustainability problems.

This twelve-credit program will be offered on campus and through online delivery. The program will have the following course requirements:

PLCYXXX Climate Policy for a 1.5C World - 3 Credits. (This is a new course that will be numbered and put through the course review process after program is approved)

PLCY798W Thriving in a Changing Climate: Policies and Actions for Climate Resilience - 3 Credits

One of the following three-credit courses:

PLCY742 Environmental Ethics

PLCY798K Integrated Human Earth Systems Modeling and Analysis

PLCY798N Energy and Climate Economics

PLCY699B Intersections of Technology and Policy: Modernizing the Energy System

Relevant Elective Course - 3 Credits.

The program is expected to attract a diverse student body – including mid-career professionals from public agencies at the national and state level, multinational organizations, NGOs, and from private sector organizations such as energy and environmental companies. The program may also be attractive to students currently in the graduate degree programs at the School of Public Policy and graduate students in STEM programs at UMD.

The School of Public Policy currently offers a Master of Public Policy, a Master of Public Management, and other graduate certificate programs that are offered both in-person and online.

Tuition revenue will be used to cover administrative costs and the cost of the new courses for the program.

The proposal was approved by the Graduate School PCC committee on October 28, 2022, and the Senate Programs, Curricula, and Courses committee on November 4, 2022.

RECOMMENDATION(S)

The Senate Committee on Programs, Curricula, and Courses recommends that the Senate approve this new academic program.

COMMITTEE WORK

The committee considered this proposal at its meeting on November 4, 2022. Tom Kennedy and Nina Harris, from the School of Public Policy, presented the proposal and answered questions from the committee. The committee unanimously approved the proposal.

ALTERNATIVES

The Senate could decline to approve this new academic program.

RISKS

If the Senate declines to approve this certificate program, the university will lose an opportunity to establish a certificate program that will train students in a needed area of policy expertise.

FINANCIAL IMPLICATIONS

Because this program will be self-supported, there are no significant financial implications for this proposal.

849: CLIMATE POLICY AND ACTION

In Workflow

1. PLCY PCC Chair (nharris@umd.edu; apat@umd.edu)
2. PLCY Dean (rorr1@umd.edu; nharris@umd.edu)
3. Academic Affairs Curriculum Manager (mcolson@umd.edu)
4. Graduate School Curriculum Manager (jfarman@umd.edu)
5. Graduate PCC Chair (jfarman@umd.edu)
6. Dean of the Graduate School (sfetter@umd.edu; jfarman@umd.edu)
7. Senate PCC Chair (mcolson@umd.edu; pswistak@umd.edu)
8. University Senate Chair (mcolson@umd.edu)
9. President (mcolson@umd.edu)
10. Chancellor (mcolson@umd.edu)
11. MHEC (mcolson@umd.edu)
12. Provost Office (mcolson@umd.edu)
13. Graduate Catalog Manager (bhernand@umd.edu; fantsao@umd.edu)

Approval Path

1. Fri, 04 Mar 2022 18:13:23 GMT
Michael Colson (mcolson): Rollback to Initiator
2. Sat, 05 Mar 2022 20:49:19 GMT
Elizabeth Duke (eduke1): Approved for PLCY PCC Chair
3. Mon, 07 Mar 2022 14:54:52 GMT
Robert Orr (rorr1): Approved for PLCY Dean
4. Tue, 08 Mar 2022 22:04:27 GMT
Michael Colson (mcolson): Approved for Academic Affairs Curriculum Manager
5. Tue, 01 Nov 2022 13:42:54 GMT
Jason Farman (jfarman): Approved for Graduate School Curriculum Manager
6. Tue, 01 Nov 2022 18:46:28 GMT
Jason Farman (jfarman): Approved for Graduate PCC Chair
7. Wed, 02 Nov 2022 17:49:47 GMT
Steve Fetter (sfetter): Approved for Dean of the Graduate School
8. Thu, 03 Nov 2022 01:47:18 GMT
Piotr Swistak (pswistak): Approved for Senate PCC Chair

New Program Proposal

Date Submitted: Fri, 04 Mar 2022 18:24:48 GMT

Viewing: 849 : Climate Policy and Action

Last edit: Mon, 07 Nov 2022 21:46:13 GMT

Changes proposed by: Thomas Kennedy (tkennedy)

Program Name

Climate Policy and Action

Program Status

Proposed

Effective Term

Fall 2023

Catalog Year

2023-2024

Program Level

Graduate Program

Program Type

Post-Baccalaureate Certificate

Delivery Method

On Campus

Departments**Department**

Public Policy

Colleges**College**

Public Policy

Proposal Contact

Lucy Qiu, Tom Kennedy

Proposal Summary

The School of Public Policy proposes to create a new Graduate Certificate in Climate Policy and Action. The certificate will be a four-course (twelve credit) program of study. The program is expected to attract a diverse student body – including mid-career professionals from public agencies at the national and state level, multinational organizations, NGOs, and from private sector such as energy and environmental companies; as well as students currently in the graduate degree programs at the School of Public Policy and graduate students in STEM programs at UMD. This certificate is aimed at creating professionals able to assess, design and implement effective strategies and actions to address climate change and lead towards a low-carbon, climate-resilient future. Concepts and skills relevant for mitigating climate change and building resilience to its impacts will be covered - based on foundational values of equity and justice. The certificate will address policy approaches and actions at all governance levels and by all actors - public and private.

(PCC Log Number 21097)

Program and Catalog Information

Provide the catalog description of the proposed program. As part of the description, please indicate any areas of concentration or specializations that will be offered.

The Graduate Certificate in Climate Policy and Action is a four-course (twelve credit) graduate certificate program that is designed to create professionals able to assess, design and implement effective strategies and actions to address climate change and lead towards a low-carbon, climate-resilient future. Concepts and skills relevant for mitigating climate change and building resilience to its impacts will be covered - based on foundational values of equity and justice. The certificate will address policy approaches and actions at all governance levels and by all actors - public and private.

Catalog Program Requirements:

| Course | Title | Credits |
|--|--|---------|
| PLCYXXX | Course PLCYXXX Not Found (Climate Policy for a 1.5C World) | 3 |
| PLCY798 | Readings in Public Policy (PLCY798W Thriving in a changing climate: Policies and actions for climate resilience) | 3 |
| One of the following courses: | | 3 |
| PLCY742 | Environmental Ethics | |
| PLCY798 | Readings in Public Policy (PLCY798K Integrated Human Earth Systems Modeling and Analysis) | |
| PLCY798 | Readings in Public Policy (PLCY798N Energy and Climate Economics) | |
| PLCY699 | Selected Topics Public Policy (PLCY699B Intersections of Technology and Policy: Modernizing the Energy System) | |
| Elective course requirement (choose one of the following): | | 3 |
| PLCY689 | Public Policy Topics (PLCY689I Social-Ecological Systems, Climate, and Development in Indonesia) | |
| PLCY689 | Public Policy Topics (PLCY689L Influence of Science on Policy, and of Policy on Science) | |
| PLCY699 | Selected Topics Public Policy (PLCY699Z Energy Policy) | |
| PLCY740 | Public Policy and the Environment | |
| PLCY741 | Global Environmental Problems | |
| PLCY744 | Environment and Development | |

| | |
|--|--|
| PLCY745 | Human Health and Environmental Policy |
| PLCY798 | Readings in Public Policy (PLCY798F Climate Finance) |
| PLCY798 | Readings in Public Policy (PLCY798T Climate Change, Human Community, and Ecological Loss in the Peruvian Amazon and Andes) |
| Any other climate policy course approved by specialization advisor | |

Total Credits**12**

*****The material below is for proposal purposes and will not appear in the Graduate Catalog*****

Core Course Requirements (Three: Two + Choice of One from a Limited List)

- **Required: (New) Climate Policy for a 1.5C World** - Covers climate mitigation policy and actions at both the national and international levels, and across different sectors; policies and actions (such as clean energy transitions, stopping deforestation, and restoring natural habitats) aim at avoiding and reducing emissions of heat-trapping greenhouse gases into the atmosphere to prevent the planet from warming to more extreme temperatures; basic climate science related to radiative forcing, carbon cycle, and carbon budgets.
- **Required: PLCY 798W Thriving in a changing climate: Policies and actions for climate resilience** - Covers adaptation policies and actions from the local to international levels, and across different sectors for protecting our families, our economies, and the environment in which we live from the impacts of climate change; basic climate science related to climate modeling and future climate projections.

Third required course to come from the following limited list --

- **PLCY 742 - Environmental Ethics and Justice** - Analysis of fundamental questions of environmental value, ethical considerability of and obligations regarding the environment, and environmental justice for current and future human communities.
- **PLCY 798K - Integrated Human Earth Systems Modeling and Analysis** - Provides an interdisciplinary introduction to integrated assessment (IA) modeling of the human and Earth systems and its wide application in policy analysis.
- **PLCY 798N- Energy and Climate Economics** - Provides strength in the core economic concepts needed to address energy and climate issues.
- **PLCY 699B - Intersections of Technology and Policy: Modernizing the Energy System** - Evaluation of economic, policy and technology issues in modernizing the energy system to address climate change, with a key focus on innovation in creating new energy opportunities.

Elective Course Requirement (Choose One)

- **PLCY 798F - Climate Finance** - Understand the connection between public policy at the global, national, and state/local levels and the flows of capital to sustainable purposes such as clean energy and climate change.
- **PLCY 699Z - Energy Policy**- Covers energy and policy at both the national and international levels.
- **PLCY 741 - Global Environmental Problems** - Covering the major international environmental issues and the policy approaches to address them; survey of global collective action problems, including climate, biodiversity, fisheries management.
- **PLCY 745 - Human Health and Environmental Policy** – Exploring human health and the environment from scientific, policy, and ethical perspectives; linking major human physiological systems with the natural environment and ecological systems.
- **PLCY 740 - Public Policy and the Environment** - A deep dive on U.S. environmental policy and regulation; covering U.S. environmental and resource policy, but also some international trends in domestic environmental policy.
- **PLCY 744 - Environment and Development** – Taking a broad perspective on the linkages between sustainability, ecological systems, development, and justice.
- **PLCY 689L - Influence of Science on Policy, and of Policy on Science** - how scientific and technical information gets used (or not used) in the formation of public policy, and how public policy influences science and technology development.
- **PLCY 798T - Climate Change, Human Community, and Ecological Loss in the Peruvian Amazon and Andes** - Application style course - taking an issue apart from multiple dimensions.
- **PLCY 689I - Social-Ecological Systems, Climate, and Development in Indonesia** - Application style course - taking an issue apart from multiple dimensions.

Any other climate policy course approved by the specialization advisor

Sample plan. Provide a term by term sample plan that shows how a hypothetical student would progress through the program to completion. It should be clear the length of time it will take for a typical student to graduate. For undergraduate programs, this should be the four-year plan.

The Certificate will be offered in a traditional semester format. Students will have the option to study full-time or part-time. Full-time students will mostly take two courses per Fall and Spring term and part-time students will mostly take one course per Fall and Spring term. The certificate may be offered in non-traditional format if desired by a partner organization.

Full-Time Track

Fall (Year 1)

PLCY XXX - Climate Policy for a 1.5C World

PLCY 798W - Thriving in a Changing Climate: Policies and Actions for Climate Resilience

Spring (Year 1)

PLCY 742 - Environmental Ethics and Justice

PLCY 798N - Energy and Climate Economics

Part-Time Track

Fall (Year 1)

PLCY XXX - Climate Policy for a 1.5C World

Spring (Year 1)

PLCY 798W - Thriving in a Changing Climate: Policies and Actions for Climate Resilience

Fall (Year 2)

PLCY 742 - Environmental Ethics and Justice

Spring (Year 2)

PLCY 798N - Energy and Climate Economics

List the intended student learning outcomes. In an attachment, provide the plan for assessing these outcomes.

Learning Outcomes

Students will understand the principles and practices of climate policy and action; they will be able to articulate the justifications for various climate interventions and apply the most suitable interventions to tackle climate change related issues in various settings.

Students will be able to understand the design and implementation of policies targeting climate mitigation and adaptation outcomes – and how these outcomes can advance broader policy goals; they will be able to evaluate and compare the effectiveness and efficiency of each intervention using evidence-based approach

Students will gain practical skills related to analysis, effective communication and transdisciplinary and interdisciplinary approaches towards complex climate and sustainability problems; they will be able to apply policy analysis, systems modeling, data analytics, and economic analysis to assess climate issues, policies, and actions.

New Program Information

Mission and Purpose

Describe the program and explain how it fits the institutional mission statement and planning priorities.

The world's shared challenges—improving well-being for all, ensuring human security in all its forms, creating broadly shared prosperity, and creating healthier and vibrant economies—are critically and fundamentally intertwined with climate change. Improving lives and livelihoods across all development contexts depends on a healthy environment, a reduction of the risks of climate change, managing resources and energy effectively, and the job and economic opportunities of the 21st Century that will flow from a rapid transition to a new, green economy. But successfully addressing these issues will require creativity to create new policy and societal strategies rooted in an integrated understanding of values, natural and climate systems, political institutions, policy context, economic opportunities, values, and technology.

The Sustainability Pillar at the University of Maryland School of Public Policy equips students to contribute to this process, providing a platform that not only enables them to better understand these issues but also to develop the experience and confidence to apply their own creativity and leadership toward implementing new climate solutions. The School of Public Policy already has a strong and nationally and internationally visible group of faculty and researchers working in climate policy areas and leading globally in this area.

This certificate is aimed at creating professionals able to assess, design and implement effective strategies and actions to address climate change and lead towards a low-carbon, climate-resilient future. Concepts and skills relevant for mitigating climate change and building resilience to its impacts will be covered - based on foundational values of equity and justice. The certificate will address policy approaches and actions at all governance levels and by all actors - public and private.

Program Characteristics

What are the educational objectives of the program?

- Acquire a well-informed working knowledge of the science behind climate change, including drivers, impacts, and sources and sinks of emissions
- Anticipate and understand the likely social aspects of climate change, climate policies, and reactions by residents, corporations, and institutions
- Become well versed with the economic considerations such as risk analysis, benefit-cost analysis, cost-effectiveness analysis, emission cost, utilities cost, financing, and other economical implications of climate policy and energy transitions, appreciate the relevant trade-offs faced by policymakers, and form a sensible and justifiable view on the relevant importance of each parties' interest and welfare
- Formulate potential long-term strategies that can lead to effective and implementable policies which can ensure fair transitions and reasonable division of the extra surplus to be generated by sensible climate policy
- Evaluate the successes and failures of past national and international efforts to address climate change, and evaluate prospects for future management of climate change
- Understand the linkages between individual policies, programs, and actions, and broader climate and sustainable development goals
- Learn to optimally utilize diverse strategies to achieve sustainability via policies at multiple governance levels and also via multinational agreements and collaboration from the local to global

- Assess the communication of science and policy for climate change, as a successful or unsuccessful example of how science and policy can and should inform one another
- Understand the potential impacts by diverse institutions and actors including businesses and investors, community organizations, universities, and others.

Describe any selective admissions policy or special criteria for students interested in this program.

Admission policies will be those of the Graduate School of the University of Maryland. There will be no special criteria for students interested in the program. The admission criteria of the Graduate School include:

- Applicants should have earned a four-year baccalaureate degree or equivalent from an accredited institution.
- Applicants should have a minimum cumulative 3.0GPA (on a 4.0 scale). Official transcripts of a post-secondary degree and a resume are required along with the application.
- International applicants must meet all requirements for international admission, which have specific standards for academic credentials, language proficiency, financial support, visa requirements, etc. Refer to <http://gradschool.umd.edu/admissions/international-admissions> for process and requirements.

As required by the Graduate School, all application materials are to be submitted electronically:

- Graduate Application
- College or University Transcripts
- Statement of Purpose
- Letters of Recommendation
- Program Supporting Documents
- Non-refundable Application Fee

Completed applications will be reviewed by a School admissions committee. The recommendations of the committee will be submitted to the Dean of the Graduate School who will make the final admission decision.

Summarize the factors that were considered in developing the proposed curriculum (such as recommendations of advisory or other groups, articulated workforce needs, standards set by disciplinary associations or specialized-accrediting groups, etc.).

The program has been developed through an intensive consultative process involving the School's faculty. The School faculty includes tenured, tenure-track, and professional track faculty, characterized by a combination of extensive research credentials combined with practical experience at the highest leadership levels in government. The proposed program is well aligned with the mission and activities of the Center for Global Sustainability (CGS) with the School.

In addition, program development has had the benefit of inputs from the School's Office of Executive Programs that has extensive experience with addressing the needs of career professionals at the national, state and local levels and private organizations.

Select the academic calendar type for this program (calendar types with dates can be found on the [Academic Calendar](https://www.provost.umd.edu/calendar) page)

Traditional Semester

Identify specific actions and strategies that will be utilized to recruit and retain a diverse student body.

The Certificate in Climate Policy and Action will seek to recruit and retain a diverse student body in largely the same manner that the School of Public Policy currently utilizes for its existing graduate degree and certificate programs. Specific strategies and actions are included as Attachment D.

Relationship to Other Units or Institutions

If a required or recommended course is offered by another department, discuss how the additional students will not unduly burden that department's faculty and resources. Discuss any other potential impacts on another department, such as academic content that may significantly overlap with existing programs. Use space below for any comments. Otherwise, attach supporting correspondence.

No required or recommended course is offered by another department and there is anticipated to be no significant overlap in academic content with any existing programs.

Accreditation and Licensure. Will the program need to be accredited? If so, indicate the accrediting agency. Also, indicate if students will expect to be licensed or certified in order to engage in or be successful in the program's target occupation.

The program is not subject to accreditation. The Certificate will, however, meet the same standards and adhere to the same principles as the other certificate programs run by the Graduate School and the School of Public Policy. Students will not be expected to be licensed or certified in order to engage in or be successful in the program's targeted occupations.

Describe any cooperative arrangements with other institutions or organizations that will be important for the success of this program.

Cooperative agreements with other institutions or organizations will not be necessary for the success of this program. Such agreements, however, may be struck in order to grow the size of the program over time.

Faculty and Organization

Who will provide academic direction and oversight for the program? In an attachment, please indicate the faculty involved in the program. Include their titles, credentials, and courses they may teach for the program.

Associate Professor Lucy Qiu will serve as the Certificate Director and will provide academic coordination of the certificate as one of the offerings of the School's Sustainability Pillar. An Advisory/Oversight committee will be established consisting of members of the School's permanent faculty including Professor Nathan Hultman, Professor Anand Patwardhan, Research Professor Rosina Bierbaum, and Director of Executive Programs Thomas Kennedy.

Indicate who will provide the administrative coordination for the program

The program will be administered and managed by the Office of Executive Programs (OEP) at the School of Public Policy. The program will also form a Certificate Advisory Committee that will provide guidance on the running of the program as well as strategic advice regarding future opportunities for the program.

Resource Needs and Sources

Each new program is required to have a library assessment prepared by the University Libraries in order to determine any new library resources that may be required. This assessment must be done by the University Libraries. Add as an attachment.

See attached.

Discuss the adequacy of physical facilities, infrastructure and instructional equipment.

The use of physical facilities, infrastructure and instructional equipment for the Certificate will be the same as for the School's other certificate and degree programs; no new space or equipment will be needed (although a contingency amount for equipment has been provided for in the program budget).

Discuss the instructional resources (faculty, staff, and teaching assistants) that will be needed to cover new courses or needed additional sections of existing courses to be taught. Indicate the source of resources for covering these costs.

The program will utilize a cadre of both full-time MSPP faculty and lecturers and adjunct lecturers for the classes. In most cases, faculty utilized will have taught within the School's traditional degree and/or executive programs. Tuition revenue will be used to cover all instructional needs and all other program expenses (including salaries, benefits, program materials). All students will pay all associated mandatory fees and the graduate application fee. If a cohort were to run an unplanned loss, we would cover it with net revenues from our many other successful entrepreneurial programs. This self-support program will have no impact on the School's traditional programs.

Discuss the administrative and advising resources that will be needed for the program. Indicate the source of resources for covering these costs.

The SPP Associate Dean and the Certificate Program Director, along with the leadership of the School's OEP, will play the major management roles for the program. The School's OEP has many years of experience supporting the School's MPS in Public Administration, Executive Master of Public Management, Graduate Certificate programs, and noncredit trainings. Advising will be supervised by the MSPP Associate Dean and the Certificate Program Director. Tuition revenue will cover the cost of these resources.

Use the Maryland Higher Education Commission (MHEC) commission financial tables to describe the program's financial plan for the next five years. See help bubble for financial table template. Use space below for any additional comments on program funding.

The financial plan is attached. We anticipate the program will draw 20 students into the program annually. The program, however, breaks even financially at 9 students.

Implications for the State (Additional Information Required by MHEC and the Board of Regents)

Explain how there is a compelling regional or statewide need for the program. Argument for need may be based on the need for the advancement of knowledge and/or societal needs, including the need for "expanding educational opportunities and choices for minority and educationally disadvantaged students at institutions of higher education." Also, explain how need is consistent with the [Maryland State Plan for Postsecondary Education](https://mhec.state.md.us/About/Documents/2017.2021%20Maryland%20State%20Plan%20for%20Higher%20Education.pdf).

Maryland's 2030 Greenhouse Gas (GHG) Emissions Reduction Act Plan calls for a goal of 50% reductions by 2030. The certificate program helps train professionals with adequate knowledge, critical thinking, and analytical tools to help the state reduce GHG emissions while creating jobs, benefiting the economy, and ensuring an equitable outcome especially for the disadvantaged communities during the transitions.

Is the proposed Post-Baccalaureate Certificate derived entirely from the core requirements of an existing master's degree program?

No

Present data and analysis projecting market demand and the availability of openings in a job market to be served by the new program. Possible sources of information include industry or disciplinary studies on job market, the [USBLS Occupational Outlook Handbook](https://www.bls.gov/ooh/), or Maryland state [Occupational and Industry Projections](http://www.dlr.state.md.us/lmi/iandoproj/) over the next five years. Also, provide information on the existing supply of graduates in similar programs in the state (use MHEC's Office of Research and Policy Analysis [webpage](http://mhec.maryland.gov/publications/Pages/research/index.aspx) for Annual Reports on Enrollment by Program) and discuss how future demand for graduates will exceed the existing supply. As part of this analysis, indicate the anticipated number of students your program will graduate per year at steady state.

According to the USBLS Occupational Outlook Handbook, there are close to 100,000 jobs in the field, with jobs growing as fast as average (at 8-9%) in job categories of political scientist and environmental scientist and specialist. According to the Maryland Occupational and Industry Projections there are over 4,000 jobs, with the same growth rates cited above. There do not appear to be graduates of similar programs in the state currently. At steady state, this program will graduate 20 students per year. Please see attachment for additional detail.

Identify similar programs in the state. Discuss any differences between the proposed program and existing programs. Explain how your program will not result in an unreasonable duplication of an existing program (you can base this argument on program differences or market demand for graduates). The MHEC website can be used to find academic programs operating in the state: http://mhec.maryland.gov/institutions_training/pages/HEPrograms.aspx

Johns Hopkins University (JHU) has a graduate certificate in Climate Change, Energy, and Environmental Sustainability. The scope of the JHU certificate is much broader than our climate certificate. The JHU certificate also includes energy and environmental sustainability, while ours is specifically focused on climate change, with two required courses on climate mitigation and adaptation policies and several other courses on climate finance, modeling, and economics. Our program will offer much deeper knowledge and skills on climate policy and actions.

Discuss the possible impact on Historically Black Institutions (HBIs) in the state. Will the program affect any existing programs at Maryland HBIs? Will the program impact the uniqueness or identity of a Maryland HBI?

There are no existing similar programs at Maryland HBIs and there should be no impact on HBIs in the state.

Supporting Documents

Attachments

Climate Policy and Action Certificate Appendix A-D.docx
 Climate_Policy_Action_Budget.xls
 Climate_Policy_Benchmark_Study.xlsx
 Climate_Policy_Employment_Projections.xlsx
 Attachment 5 CollectionAssessmentClimateChange.pdf
 Attachment 6 Updated Faculty Listing.pdf
 Attachment 7 LO Assessment.pdf

Reviewer Comments

Michael Colson (mcolson) (Fri, 04 Mar 2022 18:13:23 GMT): Rollback: Rolling back so that more information can be added.

Key: 849

Appendix A

Course Catalog Information

These two courses in the certificate program would be required:

PLCY ____ Climate Policy for a 1.5C World - Covers climate mitigation policy and actions at both the national and international levels, and across different sectors; policies and actions (such as clean energy transitions, stopping deforestation, and restoring natural habitats) aim at avoiding and reducing emissions of heat-trapping greenhouse gases into the atmosphere to prevent the planet from warming to more extreme temperatures; basic climate science related to radiative forcing, carbon cycle, and carbon budgets.

PLCY 798W Thriving in a Changing Climate: Policies and Actions for Climate Resilience - Covers adaptation policies and actions from the local to international levels, and across different sectors for protecting our families, our economies, and the environment in which we live from the impacts of climate change; basic climate science related to climate modeling and future climate projections.

The third required course would be chosen from the following four courses:

PLCY 742 Environmental Ethics and Justice - Analysis of fundamental questions of environmental value, ethical considerability of and obligations regarding the environment, and environmental justice for current and future human communities.

PLCY 798K Integrated Human Earth Systems Modeling and Analysis - Provides an interdisciplinary introduction to integrated assessment (IA) modeling of the human and Earth systems and its wide application in policy analysis

PLCY 798N Energy and Climate Economics - Provides strength in the core economic concepts needed to address energy and climate issues

PLCY 699B Intersections of Technology and Policy: Modernizing the Energy System - Evaluation of economic, policy and technology issues in modernizing the energy system to address climate change, with a key focus on innovation in creating new energy opportunities.

The fourth elective course would be chosen from among the courses indicated below (or other new courses that may be approved):

PLCY 798F Climate Finance - Understand the connection between public policy at the global, national, and state/local levels and the flows of capital to sustainable purposes such as clean energy and climate change.

PLCY 699Z Energy Policy - Covers energy and policy at both the national and international levels.

PLCY 741 Global Environmental Problems - Covering the major international environmental issues and the policy approaches to address them; survey of global collective action problems, including climate, biodiversity, fisheries management

PLCY 745 - Human Health and Environmental Policy – Exploring human health and the environment from scientific, policy, and ethical perspectives; linking major human physiological systems with the natural environment and ecological systems.

PLCY 740 - Public Policy and the Environment - A deep dive on U.S. environmental policy and regulation; covering U.S. environmental and resource policy, but also some international trends in domestic environmental policy.

PLCY 744 - Environment and Development – Taking a broad perspective on the linkages between sustainability, ecological systems, development, and justice.

PLCY 689L - Influence of Science on Policy, and of Policy on Science - How scientific and technical information gets used (or not used) in the formation of public policy, and how public policy influences science and technology development.

PLCY 798T - Climate Change, Human Community, and Ecological Loss in the Peruvian Amazon and Andes - Application style course; taking an issue apart from multiple dimensions.

PLCY 689I - Social-Ecological Systems, Climate, and Development in Indonesia - Application style course; taking an issue apart from multiple dimensions.

Appendix C

Faculty and Courses

The program will utilize SPP's nationally renowned, resident practitioner scholars as well as adjunct practitioners who are preeminent in the field. Permanent faculty member may teach these courses either as part of their regular teaching load or on an overload basis, depending on whether the students are in traditional classes or part of an entrepreneurial cohort. Given the broad scope of STI policy, some of the elective course options are drawn from non-SPP departments and colleges in UMD. All faculty will be members of the Graduate Faculty and approved by the Dean of the Graduate School to teach.

SPP faculty who will likely teach courses in the certificate program include:

- Rosina Bierbaum, Research Professor; Roy F. Westin Chair in Natural Economics
- Anna Broughel, Adjunct
- Ryna Cui, Assistant Research Professor, School of Public Policy
- Nathan Hultman, Professor; Director of Center for Global Sustainability
- Thomas Hilde, Research Professor, School of Public Policy
- Anand Patwardhan, Professor, School of Public Policy
- Yeuming Lucy Qiu, Associate Professor, School of Public Policy
- Robert Sprinkle, Associate Professor, School of Public Policy

| Course | Faculty |
|---|------------|
| PLCY __Climate Policy for a 1.5C World | Hultman |
| PLCY 798W Thriving in a Changing Climate: Policies and Actions for Climate Resilience | Patwardhan |
| PLCY 742 Environmental Ethics and Justice | Hilde |
| PLCY 798K Integrated Human Earth Systems Modeling and Analysis | Cui |
| PLCY 798N Energy and Climate Economics | Qiu |
| PLCY 699B Intersections of Technology and Policy: Modernizing the Energy System | TBD |
| PLCY 798F Climate Finance | TBD |
| PLCY 699Z Energy Policy | Broughel |
| PLCY 741 Global Environmental Problems | Patwardhan |
| PLCY 745 - Human Health and Environmental Policy | Sprinkle |
| PLCY 740 - Public Policy and the Environment | TBD |
| PLCY 744 - Environment and Development | Hilde |
| PLCY 689L - Influence of Science on Policy, and of Policy on Science | Bierbaum |
| PLCY 798T - Climate Change, Community, and Ecological Loss in Amazon and Andes | Hilde |
| PLCY 689I - Social-Ecological Systems, Climate, and Development in Indonesia | Hilde |

Appendix D

Actions and Strategies to Recruit and Retain a Diverse Student Body

The Certificate in Climate Policy and Action is proposed to be offered on-campus and online. Both versions of the proposed Certificate will seek to recruit and retain a diverse student body in largely the same manner that the School of Public Policy (SPP) currently utilizes for its existing graduate degree and certificate programs. Below is an overview of the School diversity recruiting plan and specific actions to be taken.

Overview

1. SPP will show a commitment to diversity and inclusion in curriculum, faculty, and programming and use these activities in promotional materials.
2. SPP will recruit from diverse groups and networks.
3. SPP will encourage diverse current students and alumni to refer friends and colleagues.

Recruitment Actions

1. Utilize UMD and SPP organizational relationships for program and application invitations. These include the McNair Post-Baccalaureate Achievement program; network and recruitment events of The Public Policy and International Affairs Program (PPIA), a not-for-profit that has been supporting efforts to increase diversity in public service for 39 years; the Association of Professional Schools of International Affairs (APSIA) Diversity Initiatives, and The Network of Schools of Public Policy, Affairs, and Administration (NASPAA) Diversity Initiatives.
2. Dedicated Historically Black Colleges and Universities (HBCU) informational events that include application fee waivers for attendees and outreach to faculty at minority serving institutions.
3. Leverage diverse current students, alumni, faculty and staff by keeping them apprised of student recruiting events and asking that they share announcements with their networks. These include general events as well as events targeting specific underrepresented populations.

Retention

Both the online and on-campus versions of the proposed Certificate in Climate Policy and Action will be managed in the same manner as the School's entrepreneurial degree programs – the Master of Professional Studies in Public Administration and the Executive Master of Public Management – that draw domestic and international students. These programs are 'high touch' programs, with customer service provision that allows staff to individually interact with students to forestall any problems that may hinder completion. In this way, retention is thus high for the professional programs overall (over 90%) and equally high for traditionally under represented student populations.

School of Public Policy

Climate Policy and Action, GC, Fall 2023

[This program is self-support. Instructors may not teach on-load and administrators must be paid through revenue generated by the program]

| Estimated Tuition Revenue | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|------------------|------------------|------------------|------------------|------------------|
| A. Total # of students per year | 9 | 10 | 11 | 12 | 13 |
| B. Total Courses per year | 4 | 4 | 4 | 4 | 4 |
| C. Graduate Tuition Per Course; Assumes 5% increase | \$3,500 | \$3,675 | \$3,859 | \$4,052 | \$4,254 |
| Total Estimated Tuition Revenue | \$126,000 | \$147,000 | \$169,785 | \$194,481 | \$221,222 |
| Estimated Instructional Expenses | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| A. Instructor Salaries and Benefits Total | \$46,548 | \$47,479 | \$48,429 | \$49,397 | \$50,385 |
| 1. Subtotal: 4-course salaries (assumes 2% annual increase) | \$36,000 | \$36,720 | \$37,454 | \$38,203 | \$38,968 |
| a. Average instructor salary per course | 9,000 | 9,180 | 9,364 | 9,551 | 9,742 |
| b. Total # of courses taught per year | 4 | 4 | 4 | 4 | 4 |
| 2. Benefits: 29.3% | \$10,548 | \$10,759 | \$10,974 | \$11,194 | \$11,417 |
| B. Grader Salaries and Benefits | \$14,916 | \$15,214 | \$15,519 | \$15,829 | \$16,146 |
| 1. Subtotal: Salary (assumes 2% annual increase) | \$12,000 | \$12,240 | \$12,485 | \$12,734 | \$12,989 |
| a. Average grader stipended per course | 3,000 | 3,060 | 3,121 | 3,184 | 3,247 |
| b. Total # of courses | 4 | 4 | 4 | 4 | 4 |
| 2. Benefits: 24.3% | \$2,916 | \$2,974 | \$3,034 | \$3,094 | \$3,156 |
| Total Instructional Expenses | \$61,464 | \$62,693 | \$63,947 | \$65,226 | \$66,531 |

| | | | | | |
|---|-----------------|-----------------|-----------------|------------------|------------------|
| Total Estimated Tuition Revenue | \$126,000 | \$147,000 | \$169,785 | \$194,481 | \$221,222 |
| Total Instructional Expenses | \$61,464 | \$62,693 | \$63,947 | \$65,226 | \$66,531 |
| Total OES Administrative Fee (10% Tuition Revenue) | \$12,600 | \$14,700 | \$16,979 | \$19,448 | \$22,122 |
| Total Distributable Revenue | \$51,936 | \$69,607 | \$88,859 | \$109,807 | \$132,569 |

Other Program Expenses to Be Covered by Net Revenue Distribution

| Categories of Other Program Expenses (estimated) | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| Academic Administration Totals | \$40,620 | \$41,432 | \$42,261 | \$43,106 | \$43,968 |
| 1. Total Academic Admin Salary (assumes 2% increase) | 30,000 | 30,600 | 31,212 | 31,836 | 32,473 |
| a. Academic Director | 30,000 | 30,600 | 31,212 | 31,836 | 32,473 |
| 2. Benefits: Total (35.4%) | 10,620 | 10,832 | 11,049 | 11,270 | 11,495 |
| Materials & Supplies | \$0 | \$0 | \$0 | \$0 | \$0 |
| 1. Cost per course (estimated) | \$0 | \$0 | \$0 | \$0 | \$0 |
| 2. Total number of courses | 0 | 0 | 0 | 0 | 0 |
| 3. Total number of students | 0 | 0 | 0 | 0 | 0 |
| Marketing & Website | \$0 | \$0 | \$0 | \$0 | \$0 |
| 1. Marketing | 0 | 0 | 0 | 0 | 0 |
| 2. Website | 0 | 0 | 0 | 0 | 0 |
| Equipment | \$1,200 | \$0 | \$0 | \$1,200 | \$0 |
| 1. Laptops / Monitors | 1,000 | 0 | 0 | 1,000 | 0 |
| 2. Printers | 200 | 0 | 0 | 200 | 0 |
| 3. Other Devices | 0 | 0 | 0 | 0 | 0 |
| Other Operational Expenses | \$4,000 | \$4,000 | \$4,000 | \$4,000 | \$4,000 |
| 1. Travel (for recruitment) | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| 2. Graduation-related | 500 | 500 | 500 | 500 | 500 |
| 3. Other | 500 | 500 | 500 | 500 | 500 |
| Courses: Development & Design | \$0 | \$0 | \$0 | \$0 | \$0 |
| 1. New Course: Per course instructor stipend | 0 | 0 | 0 | 0 | 0 |
| 2. Ttl # of new courses | 0 | 0 | 0 | 0 | 0 |
| Total Other Estimated Program Expenses | \$45,820 | \$45,432 | \$46,261 | \$48,306 | \$47,968 |

| Net Revenue & Non-Instructional Expenses | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--|-----------------|-----------------|-----------------|------------------|------------------|
| Net Revenue for Distribution | \$51,936 | \$69,607 | \$88,859 | \$109,807 | \$132,569 |
| Other Program Expenses | \$45,820 | \$45,432 | \$46,261 | \$48,306 | \$47,968 |
| Difference | \$6,116 | \$24,174 | \$42,598 | \$61,501 | \$84,601 |

OES In-House Market Research: Other Institution Comparison

| Program Name = Climate Action and Policy, GC | | | | | | | | |
|--|---|-------------------------|---|--------------|----------------------------|-------------------|--|--|
| Institution | Website | Delivery Method | Degree Name & Type (MPS, MA, MS, MPH, etc.) | # of Credits | Tuition (course or credit) | | Target Population | Prior Education/ Pre-Requisites |
| | | | | | Resident | Non-Resident | | |
| Big Ten Institutions | | | | | | | | |
| Indiana University Bloomington | https://www.iun.edu/spea/graduate/certificate-in-environmental-affairs.htm | F2F | Environmental Affairs, GC | 15 credits | \$412.87/credit | \$1,330.51/credit | The program is flexible enough to adapt to the needs of pre-career or in-service students and to individuals with varying degrees of experience in such fields as human resource administration, criminal justice, health, public or non-profit management. Students may also participate in a public affairs internship through the School of Public and Environmental Affairs. | Baccalaureate degree from an accredited institution with a minimum cumulative undergraduate GPA of 3.0. |
| University of Michigan Ann Arbor | https://clasp.engin.umich.edu/academics/graduate-studies/climate-change-solutions-certificate/ | F2F | Climate Change Solutions, GC | 12 credits | \$1,926/credit | \$3,286/credit | Any student with a bachelor's degree who has been admitted to one of the University's science (natural or social), engineering, or professional graduate degree programs or who is currently enrolled in one of these graduate programs is eligible to submit an application to the Climate Change Solutions Graduate Certificate Program. | Currently enrolled students must be carrying a B average or better. Students must have at least one semester of grades at U-M before being admitted to a Rackham graduate certificate programs; for students who apply in their first semester, we will hold their applications and evaluate them once their first semester grades have been posted. |
| Michigan State University | https://environment.msu.edu/education/graduate-specialization.html | F2F | Environmental Policy, Graduate Specialization | 15 credits | \$817.25/credit | \$1,605.75/credit | The graduate specialization is available as an elective to students who are enrolled in master's degree programs at Michigan State University. With the approval of the department and college that administer the student's degree program, the courses that are used to satisfy the specialization may also be used to satisfy the requirements for the master's or doctoral degree. | Baccalaureate degree from an accredited institution and enrollment in a Michigan State University graduate program. |
| University of Nebraska Lincoln | https://snr.unl.edu/gradstudent/specialclimate/#intro | F2F | Climate Assessment and Impacts Specialization, Natural Resource Sciences Graduate Program | 12 credits | \$341/credit | \$996/credit | This specialization is for students interested in focusing on learning the methodologies to assess climate variability and longer-term climate change and their impacts on society and natural resource systems. | Proficiency in quantitative methods at a level appropriate for the student's research and degree as approved by the supervisory committee (for the M.S., this will normally be at the level of multivariate statistics or equivalent). |
| Ohio State University | https://gradmissions.osu.edu/programs/program.aspx?prog=0301&&tab=about | F2F, Online, or Blended | Environmental Assessment, GC | 12 credits | \$722.6/credit | | Designed to prepare current and future professionals in the fundamentals of environmental assessment, which is the assessment of the environmental consequences of a plan, policy, program, or actual projects prior to the decision to move forward with the proposed action. | Baccalaureate degree from an accredited institution with a minimum cumulative undergraduate GPA of 3.0. |
| Penn State World Campus | https://www.ems.psu.edu/graduate/online-programs/graduate-certificate-sustainability-management-and-policy | Online | Sustainability Management and Policy, GC | 12 credits | \$950/credit | | designed specifically for current and aspiring practitioners who seek advanced skills for advancing sustainability practice. The program is offered by the Department of Energy and Mineral Engineering through Penn State's World Campus. | Baccalaureate degree from an accredited institution. |
| Purdue University | https://cla.purdue.edu/academic/polsci/gradprog/certs/envcert.html?_ga=2.18725561.1478326476.1646247716.1062897552.1646247716 | F2F | Environmental Policy, GC | 12 credits | \$347.85/credit | \$600.45/credit | Program only available to current Purdue graduate students who wish to add an interdisciplinary credential in environmental policy to their degree. Professionals and researchers working on environmental challenges often must work closely with policymakers or the policy process. Because of this, various public and private employers often seek scientists and researchers with some familiarity with the policy-making process. | Baccalaureate degree from an accredited institution with a minimum cumulative undergraduate GPA of 3.0. |
| Rutgers University New Brunswick | https://humaneecology.rutgers.edu/grndcert.html | F2F | Human Dimensions of Environmental Change, GC | 12 credits | \$757/credit | \$1,287/credit | The program is open to any student enrolled in a Rutgers University graduate program. The program is designed to allow students to examine the political, cultural, economic, historical, and other human dimensions of environmental change while carrying out studies in an existing graduate program. | Baccalaureate degree from an accredited institution and enrollment in a Rutgers University graduate program. |

State of Maryland System Institutions: Overseen by MHEC (<http://mhec.maryland.gov/publications/Pages/research/index.aspx>)

| | | | | | | | |
|--|--|------------|---|-------------------|-----------------------|--|--|
| <p>Johns Hopkins University</p> | <p>https://catalogue.jhu.edu/engineering/engineering-professionals/environmental-engineering-science-management-programs/climate-change-energy-environmental-sustainability-graduate-certificate/</p> | <p>F2F</p> | <p>Climate Change, Energy, and Environmental Sustainability, GC</p> | <p>15 credits</p> | <p>\$4,755/course</p> | <p>Provides valuable knowledge to engineers, scientists, and managers to design and implement solutions to environmental, social, and economic challenges.</p> | <p>(1) an undergraduate degree from a regionally accredited four-year college or university and (2) successful completion of one year of college-level calculus. Successful completion of college-level courses in physics, chemistry, biology, geology, and statistics is strongly recommended.</p> |
|--|--|------------|---|-------------------|-----------------------|--|--|

Colleges & Universities in the Washington DC - Baltimore MD area

| | | | | | | | | |
|---|---|---------------|--|---------------|-----------------|------------------|--|---|
| American University | https://catalog.american.edu/preview_program.php?catoid=16&poid=7763 | | Global Environmental Policy, GC | 15 credits | \$1,812/credit | | Designed for students interested in an introduction to environmental politics and policy, with emphasis on the international, transnational and global dimensions. | Baccalaureate degree from an accredited institution. |
| George Mason | https://catalog.gmu.edu/colleges-schools/science/environmental-policy/environmental-sustainability-management-graduate-certificate/ | F2F | Environmental and Sustainability Management, GC | 12-13 credits | \$543/credit | \$1,431/credit | Upon completion of the certificate program, graduates will be able to: 1) Identify environmental and sustainability management challenges in the private and public sector; 2) Recognize the mechanisms of public policy making that influence environmental and sustainability management decisions; and 3) Apply fundamental concepts in management science, environmental science, public administration, and management to craft and execute sustainability solutions. | Baccalaureate degree from an accredited institution with a minimum cumulative undergraduate GPA of 3.0. |
| George Washington University | https://spppa.gwu.edu/certificate-environmental-resource-policy | F2F | Environmental Resource Policy, GC | 12 credits | \$1,825/credit | | Prepares students to enter environmental policy careers in government, nonprofit organizations, the private sector, and environmental advocacy groups. | Baccalaureate degree from an accredited institution. In order to satisfactorily complete several of the ENRP core courses, including applied statistics (PPPA 6002), Microeconomics for Public Policy (PPPA 6007), and environmental science (ENRP 6101/2), students must have math skills equivalent to that provided by a college course in algebra, pre-calculus, analytic geometry, or introductory statistics. Suitable applicants who lack such skills will be admitted with a stated deficiency in mathematics that must be fulfilled in the first semester of the program. |
| Virginia Tech | https://liberalarts.vt.edu/departments-and-schools/departments-of-political-science/academic-programs/graduate-certificate-environmental-politics-and-policy.html | Online or F2F | Environmental Politics and Policy, GC | 12 credits | \$783.25/credit | \$1,578.5/credit | This graduate certificate in Environmental Politics and Policy is designed for non-degree-seeking students and graduate students at Virginia Tech who wish to demonstrate special competence in the research area of environmental politics and policy. | Baccalaureate degree from an accredited institution with a minimum cumulative undergraduate GPA of 3.0. |
| Other Major Institutions Offering Similar Programs | | | | | | | | |
| Harvard | https://extension.harvard.edu/academic-programs/environmental-policy-and-international-development-certificate/ | Online | Environmental Policy and International Development, GC | 12 credits | \$745/credit | | Designed for change agents who hold roles like sustainability manager, consultant, or analyst at NGOs, Fortune 500 companies, and government agencies. | No application required. |
| Northeastern University | https://catalog.northeastern.edu/graduate/social-sciences-humanities/public-policy/urban-affairs/sustainability-climate-change-policy-graduate-certificate/ | F2F | Sustainability and Climate Change Policy, GC | 12 credits | \$946/credit | | This graduate certificate, a collaboration between the School of Public Policy (SPPUA) and the School of Law (NUSL), is designed to prepare students for the dynamic, evolving landscape of climate and sustainability policy. This certificate is open to JD, master's and PhD students throughout the university. This certificate is also available to professionals who have not yet been admitted to one of Northeastern's graduate programs. | Baccalaureate degree from an accredited institution. |
| University of Massachusetts | https://www.umassd.edu/programs/environmental-policy-grad-cert-online/ | Online | Environmental Policy, GC | 12 credits | \$637/credit | | Provides students who have earned a bachelor's degree with the essential principles of environmental policy within the context of public policy. | Baccalaureate degree from an accredited institution. |

OES In-House Market Research: Projected Enrollment Information

Program Name = Climate Action and Policy, GC

| Occupation | # of Jobs in the Field | Where Professionals are Employed | Professional Salary Information | Projected Job Growth |
|--|------------------------|--|---------------------------------|-------------------------|
| Information from U.S. Bureau of Labor Statistics' Occupational Outlook Handbook | | | | |
| Political Scientists | 7000 | Federal government, excluding postal service- 50% Professional, scientific, and technical services- 21% Religious, grantmaking, civic, professional, and similar organizations- 9% Self-employed workers- 7% Educational services; state, local, and private- 6% | \$125,350 | 9% (as fast as average) |
| Environmental Scientists and Specialists | 87,100 | Management, scientific, and technical consulting services- 25% State government, excluding education and hospitals- 24% Local government, excluding education and hospitals- 12% Engineering services- 10% Federal government, excluding postal service- 6% | \$73,230/year | 8% (as fast as average) |
| Information from State of Maryland's Occupational and Industry Projections | | | | |
| Environmental Scientists and Specialists | 2,000 | Maryland is the top paying state for political scientists. The Washington Metropolitan area has the highest employment level in Political Scientists. | \$151,660 | As fast as average. |
| Environmental Scientists and Specialists | 2,090 | The District of Columbia is the second highest state with the highest concentration of jobs and location quotients in Environmental Scientists and Specialists. | \$84,680/year | As fast as average. |

DATE: March 10, 2022

TO: Rosina Bierbaum, Research Professor; Roy F. Westin Chair in Natural Economics
Nathan Hultman, Professor; Director, CGS
Thomas Kennedy, Director, Executive & Cohort Programs
Anand Patwardhan, Professor
Lucy Qiu, Associate Professor; Director of Strategic Research Initiatives

FROM: On behalf of the University of Maryland Libraries:

Judy Markowitz, Librarian for Government and Politics, Public Policy, Women, Gender,
and Sexuality Studies.

Maggie Saponaro, Director of Collection Development Strategies

Daniel Mack, Associate Dean, Collection Strategies & Services

RE: Library Collection Assessment

We are providing this assessment in response to a proposal by The School of Public Policy to create an on-campus Post-Baccalaureate Certificate in Climate Policy and Action. The School of Public Policy asked that we at the University of Maryland Libraries assess our collection resources to determine how well the Libraries support the curriculum of this proposed program.

Serial Publications

The University of Maryland Libraries currently subscribe to many scholarly journals—almost all in online format--that publish articles in the areas of Climate Policy and Action.

Because there are several aspects of the proposed program listed in the program description, there are several categories in the Social Sciences Edition of *Journal Citation Reports** used to assess our subscriptions. The Libraries subscribe to many of the top ranked journals that are listed in the following categories:

Environmental Studies

Environmental Sciences

Meteorology & Atmospheric Sciences

Public Administration

Economics

Those categories are being used for this assessment since they were noted in the program description: (“is designed to create professionals able to assess, design and implement effective strategies and actions to address climate change and lead towards a low-carbon, climate-resilient future. Concepts and skills relevant for mitigating climate change and building resilience to its impacts will be covered - based on foundational values of equity and justice. The certificate will address policy approaches and actions at all governance levels and by all actors - public and private.”)

Categories:

Environmental Studies – top 10

Nature Climate Change

Nature Sustainability

Annual Review of Environment and Resources

Tourism Management

Business Strategy and the Environment

Environmental Innovation and Societal Transitions

Global Environmental Change – Human and Policy Dimensions

Corporate Responsibility and Environmental Management

Wiley Interdisciplinary Reviews – Climate Change

Energy Research and Social Science

Environmental Politics

Environmental Sciences – top 10

Energy and Environmental Science

Nature Climate Change

Nature Sustainability

Lancet Planetary Health

Critical Reviews in Environmental Science and Technology – only to 2017

Water Research

Frontiers in Ecology and the Environment

Annual Review of Environment and Resources

Global Change Biology

Journal of Hazardous Materials

Meteorology & Atmospheric Sciences – top 10

Nature Climate Change

Earth System Science Data

Current Climate Change Reports (6 month embargo – use ILL)

Bulletin of the American Meteorological Society

npj Climate and Atmospheric Science (We do not own – use ILL)

Earths Future

Wiley Interdisciplinary Reviews – Climate Change

Environmental Research Letters

Journal of Advances in Modeling Earth Systems

Atmospheric Chemistry and Physics

Public Administration – top 10

Journal of European Public Policy

Journal of Public Administration Research and Theory

Public Management Review

Regulation & Governance

Review of Public Personnel Administration

Policy Studies Journal
Climate Policy
Journal of Policy Analysis and Management
Policy and Society
Policy Sciences

Economics – top 10

Quarterly Journal of Economics
Economic Geography
American Economic Review
Journal of Political Economy
Journal of Economic Literature
Cambridge Journal of Regions Economy and Society (#5 – we do not own – use ILL)
Small Business Economics
Journal of Economic Perspectives
Review of International Organizations
Journal of Finance

Additional Journals

Administrative Science Quarterly
Advances in Climate Change Research
Climate Change Economics (3-year embargo = use ILL)
Environmental Justice
Environmental Science and Policy
International Journal of Climate Change Strategies and Management
Journal of Climate change (6 months embargo)
Public Administration Review
Stanford Social Innovation Review

*Note: *Journal Citation Reports* is a tool for evaluating scholarly journals. It computes these evaluations from the relative number of citations compiled in the *Science Citation Index* and *Social Sciences Citation Index* database tools.

Databases

The Libraries' *Database Finder* (<https://lib.guides.umd.edu/az.php>) resource offers online access to databases that provide indexing and access to scholarly journal articles and other information sources. Many of these databases would be useful for Climate Policy and Action.

BioOne
Business Source Complete
Communication and Mass Media Complete
Congressional Publications

EconLit
Environmental Studies in Video
Ethnic Newswatch
Garden, Landscape & Horticulture Index
GreenFile
Greenwire (includes ClimateWire, E & E Daily, EnergyWire, E & E News PM)
Health Source Consumer Edition
Health Source Nursing/Academic Edition
HeinOnline Law Journal Library
International Political Science Abstracts
Medline
Military and Government Collection
Nexis Uni (legal and news)
PAIS
Public Health
Regional Business News
SocINDEX
Web of Science Core Collection
Worldwide Political Science Abstracts

The following general/multidisciplinary databases are also good sources of articles relevant to this topic: *Academic Search Ultimate*, *MasterFILE Premier*, *JSTOR*, and *ProjectMUSE*.

In many-and likely in most--cases, these databases offer full text copies of the relevant journal articles. In those instances, in which the journal articles are not available or available only in print format, the Libraries can make copies available through the Libraries' Interlibrary Loan service (<https://www.lib.umd.edu/access/ill-article-request>). (Note: see below.)

Monographs

The Libraries regularly acquire scholarly monographs in Climate Change and Policy and allied subject disciplines. Monographs not already part of the collection can usually be added upon request.

Fortunately, more and more monographs are available as e-books. Even in instances when the books are only available in print, students will be able to request specific chapters for online delivery through the Interlibrary Loan program (<https://www.lib.umd.edu/access/ill-article-request>). (Note: see below).

A search of the University of Maryland Libraries' WorldCat UMD catalog was conducted, using a variety of relevant subject and keyword terms. This investigation yielded sizable lists of citations of books that we own in print and ebook and published in the last 10 years:

climatic changes = subject = 1965
 climate change = subject = 2081
 clean energy = subject = 244
 environmental policy = subject = 1664

energy policy = subject = 1036

global warming = subject = 337

political science public policy environmental policy = subject = 291

renewable energy = subject = 1180

“environmental justice” = keyword = 417

“climate change” and “public policy” = keywords = 537

Any of the following keywords may be added to the subjects:

law and legislation

government policy

United States Congress

health aspects

economic aspects

mitigation

social aspects

specific countries

A further search revealed that the Libraries’ membership in the Big Ten Academic Alliance (BTAA) dramatically increases these holdings and citations.

As with our own materials, students can request that chapters be copied from these BTAA books if the books are not available electronically.

Interlibrary Loan Services

Interlibrary Loan services (<https://www.lib.umd.edu/access/ill>) provide online delivery of bibliographic materials that otherwise would not be available online. Interlibrary Loan services are available free of charge.

The article/chapter request service scans and delivers journal articles and book chapters within three business days of the request--provided that the items are available in print on the UM Libraries' shelves or in microform. In the event that the requested article or chapter is not available on campus, the request will be automatically forwarded to the Interlibrary Loan service (ILL). Interlibrary Loan is a service that enables borrowers to obtain online articles and book chapters from materials not held in the University System of Maryland.

Additional Materials and Resources

In addition to journals, monographs and databases available through the University Libraries, students in the proposed program will have access to media, datasets, software, and technology.

Media in a variety of formats that can be utilized both on-site and via ELMS course media is available at McKeldin Library.

GIS Datasets are available through the GIS Data Repository (<http://www.lib.umd.edu/gis/dataset>).

Statistical consulting, workshops and additional research support is available through the Research Commons (<http://www.lib.umd.edu/rc>).

Technology support and services are available through the Terrapin Learning Commons (<http://www.lib.umd.edu/tlc>).

Research Data Services (Data Archiving, Data Management Plans, Managing Data, Open Data) lib-research-data@umd.edu

The subject specialist librarian for Public Policy, Judy Markowitz (judym@umd.edu) also serves as an important resource to programs such as the one proposed. Subject librarians for Business, Economics and Environmental Science can be called upon to help as needed. Through departmental partnerships, subject specialists actively develop innovative services and materials that support the University's evolving academic programs and changing research interests. Subject specialists provide one-on-one research assistance online, in-person, or via the phone. They also provide information literacy instruction and can provide answers to questions regarding publishing, copyright and preserving digital works.

Other Research Collections

Because of the University's unique physical location near Washington D.C., Baltimore and Annapolis, University of Maryland students and faculty have access to some of the finest libraries, archives and research centers in the country vitally important for researchers in Public Policy. These include the Library of Congress and the National Archives.

Conclusion

With our journals holdings, monographs and databases, as well as additional support services and resources, at this point in time, our assessment is that the University of Maryland Libraries are able to meet the curricular and research needs of the proposed Post-Baccalaureate Certificate in Climate Policy and Action. Every year we are faced with resource inflation costs and a finite budget allocation. The Libraries cannot guarantee that we will continue to have access to these resources in the near future. Although journal articles, books and book chapters can be requested and received via Interlibrary Loan (ILL), access to databases cannot be fulfilled this way.

Faculty Information

The following faculty members are projected to teach in the program. All faculty are full-time unless otherwise indicated.

| Name | Highest Degree Earned, Program, and Institution | UMD Title (indicate if part-time) | Courses |
|------------------|--|-----------------------------------|---|
| Anand Patwardan | Ph.D., Department of Engineering and Public Policy, Carnegie Mellon University | Professor | PLCY 798W, 741 |
| Nathan Hultman | Ph.D., Energy & Resources Group, University of California at Berkeley | Professor | PLCY XXX(Climate Policy for a 1.5C World) |
| Tom Hilde | PhD, Pennsylvania State University | Associate Research Professor | PLCY 742, 744, 798T, 689I |
| Ryna Cui | PhD, School of Public Policy, University of Maryland College Park | Assistant Research Professor | PLCY 798K, 699Z |
| Jiehong Lou | PhD, School of Public Policy, University of Maryland College Park | Assistant Research Professor | PLCY 798N, 798F |
| Robert Sprinkle | PhD, Princeton School of Public and International Affairs | Associate Professor | PLCY 745 |
| Rosina Bierbaum | PhD, State University of New York, Stony Brook | Research Professor | PLCY 689L |
| Kathleen Kennedy | PhD, California Institute of Technology | Postdoctoral researcher | PLCY699B |
| Khalil Shahyd | PhD (ABD), University of Delaware | Adjunct lecturer, part-time | PLCY 740 |

Learning Outcomes Assessment

- Learning Outcome 1: Students will understand the principles and practices of climate policy and action; they will be able to articulate the justifications for various climate interventions and apply the most suitable interventions to tackle climate change related issues in various settings.
- Learning Outcome 2: Students will be able to understand the design and implementation of policies targeting climate mitigation and adaptation outcomes – and how these outcomes can advance broader policy goals; they will be able to evaluate and compare the effectiveness and efficiency of each intervention using evidence-based approach;
- Learning Outcome 3: Students will gain practical skills related to analysis, effective communication and transdisciplinary and interdisciplinary approaches towards complex climate and sustainability problems; they will be able to apply policy analysis, systems modeling, data analytics, and economic analysis to assess climate issues, policies, and actions.

Assessment plans:

- Quizzes, exams, and tests: We will use these tools to measure students' ability to understand the fundamentals of climate policies and actions, select the most appropriate policies and actions that can maximize social welfare and ensure equitable outcomes, and apply adequately various analytical tools.
- Presentations, negotiations, and debates: We will use these tools to measure students' ability to explain the rationales for various climate policies and actions, evaluate the pros and cons of each policy and action, critique the various approaches that may lead to inefficient and inequitable societal outcomes, and effectively communicate the importance of policy elements to essential stakeholders.
- Group projects: Students will work in group settings on real-world climate policy and action projects in order to assess their ability to identify and adopt the correct and suitable analytical approach, as well as design effective and efficient interventions to address climate change at various levels.

Formal program review is carried out according to the University of Maryland's policy for Periodic Review of Academic Units, which includes a review of the academic programs offered by, and the research and administration of, the academic unit (<http://www.president.umd.edu/policies/2014-i-600a.html>). Program Review is also monitored following the guidelines of the campus-wide cycle of Learning Outcomes Assessment (<https://www.irpa.umd.edu/Assessment/LOA.html>). Faculty within the department are reviewed according to the University's Policy on Periodic Evaluation of Faculty Performance (<http://www.president.umd.edu/policies/2014-ii-120a.html>). Since 2005, the University has used an online course evaluation instrument that standardizes course evaluations across campus. The course evaluation has standard, university-wide questions and also allows for supplemental, specialized questions from the academic unit offering the course.