

University Senate

Proposed: October 25, 2013

Adopted: October 25, 2013, without dissent
with one abstention

**RESOLUTION TO APPROVE A MASTER OF SCIENCE
IN CARBON MANAGEMENT (SEAS)**

WHEREAS, one of the most difficult global challenges of the 21st century is to enable economic growth for the increasing populations in developing nations, while simultaneously reducing global greenhouse gas emissions to avoid dangerous impacts on the climate, and

WHEREAS, Europe and the United States have proposed reductions in CO₂ emissions of 85% by the year 2050, and

WHEREAS, to build a low-carbon economy will require a new workforce of engineers, auditors of forest growth and atmospheric carbon levels, economists, lawyers and financial experts, and

WHEREAS, job growth is projected in carbon management, in programs increasing carbon capture through natural systems, and in capacity building, planning, monitoring, reporting and verification, and

WHEREAS, the proposed Master of Science in Carbon Management program is an interdisciplinary systems approach to studying the management of carbon with key emphasis in engineering, natural sciences, policy and law, business and economics, and decision science, and

WHEREAS, the proposed program will be the first of its kind in the United States, and

WHEREAS, the vast majority of course credits to be earned for the proposed program, including all seven required courses, are new and designed specifically for the program, and

WHEREAS, the proposed program builds on existing concentrations of faculty and institutional strength in both SEAS and the Earth Institute,

NOW, THEREFORE, BE IT RESOLVED that the Senate approve the program leading to a Master of Science in Carbon Management.

BE IT FURTHER RESOLVED that the resolution be forwarded to the Trustees of Columbia University for their approval.

Proponent
Committee on Education

Master of Science in Carbon Management

Overview

The Master of Science in Carbon Management (MCM) program is an interdisciplinary systems approach to studying the management of carbon.

A sustainable development framework requires two interconnecting considerations: managing the flows of carbon from energy and land use through technological innovation, and keeping in mind the latest research on decision making. The proposed program seeks to enable graduates from the program to make decisions on carbon management informed by the latest knowledge in science, engineering, policy and law, business and economics, and decision science.

Thus, it bridges the gap between innovating solutions and managing their implementation.

Curriculum

Carbon management is a new area with considerable demand. To our knowledge there are only three comparable programs worldwide. All of these are in the United Kingdom. This will be the first of its kind in the U.S.

The program is designed to be completed in one year of full-time study with a total of 10 courses (30 credits) minimum required to complete the program. This is consistent with the course load and requirements of many other master's programs throughout the University in general and with those offered through SEAS in particular. There are no stand-alone labs. However, individual courses may offer lab work as part of their curriculum.

Of these credits 21 (7 courses) are required with the remaining 9 credits (3 courses) to be fulfilled with electives from a preapproved list of courses. The seven new required courses are unique to the proposed program and have already been developed by teams of faculty and researchers from throughout Columbia University with the generous support of a private donor.

Faculty

The core faculty responsible for designing the program will commit to teaching in the new program. In addition to this, the program has identified highly qualified researchers and adjuncts both at Columbia and in relevant industries to offset some of the teaching load and to add perspectives from practitioners.

Once the MCM program is approved, the MCM director will constitute an executive committee (EC) comprising a selective representation of faculty teaching core or elective courses for the program. Several leaders in their fields and recognized top-notch educators

have been tapped. The EC will share responsibility for the program's day-to-day success by reviewing program applications, advising students and lending intellectual depth to the program's activities outside the classroom as well. The EC will also serve as a network to the various fields of relevance to students in the MCM program including potential internship opportunities. A full-time assistant director (to be hired pending Senate approval of this program) will have 100% effort on the MCM program, providing additional student support, program design, and completion review.

Career options for graduates

The program expects to enroll 25-35 students in its first year with the size of each cohort eventually stabilizing around 35-55 students in the next few years.

The need for experts in all aspects of carbon management is expected to grow. Job growth is also projected for programs increasing carbon capture through natural systems, in capacity building, planning, monitoring, reporting and verification.

Graduates may serve as, for example, consultants, carbon market specialists, REDD program developers, financial planners, and policy staff. Potential employers include UN agencies, government at multiple levels (national, state, or community), foundations, private companies advancing new technologies, bilateral and multilateral financial institutions, national and international non-government organizations, and any entity seeking to reduce its carbon footprint or that of its products.

No overlap with existing Columbia programs

There are a few distantly related programs at Columbia University: M.A. in Climate and Society, the Energy and Environment Concentration of the M.I.A./M.P.A., the M.P.A. in Environmental Science and Policy, the M.S. in Sustainability Management, and the Sustainable Energy Concentration of the M.S. in Earth Resources Engineering. The objectives and target audience of this proposed MCM program do not duplicate any of these, evidenced by the lack of overlap between the core courses of the programs in question.

The Education Committee supports this program.