

Master of Science Degree - Global Environmental Studies Bryant University – Department of Science & Technology

Brief Description of the Proposal: M.S. Degree and Integrated/5-Year Program

The Master of Science Degree in Global Environmental Studies is intended for graduate students interested in professional careers in environmental management, policy making, NGO development, site assessment, toxics mitigation, renewable energy implementation, energy efficiency improvements, green building technologies, coastal planning, land use assessment, and wetlands protection. The program features a high degree of flexibility for selecting courses best fitted to a student's career plans, an emphasis on research, data analysis, and publication, opportunities for international collaboration, direct interaction with faculty scholars, and development of technical skills and certification. It includes collaboration with professors and students at the China University of Geosciences (CUG) at Wuhan, along with study abroad opportunities for U.S. students and a student exchange program for Chinese students. Other international experiences will be developed in conjunction with Bryant University's emphasis on international collaboration, for example, potential programs in Brazil are currently envisioned. The Integrated 5-year program offers undergraduate students at Bryant the potential to complete a B.S. and M.S. degree at Bryant, with a specialty focus that will prove advantageous for careers in the applied environmental fields or as preparation for further graduate studies or certification programs.

The integrated knowledge, skills, attitude, and judgment expected of the practitioner who completes the M.S. Degree in Global Environmental Studies will include the ability to use systems thinking for incorporating different types of technology and information when making environmental decisions, the capability of analyzing cost/benefit factors involved in complex environmental problems, a commitment to seeking sustainable solutions, the ability to conduct basic or applied research that can provide a meaningful contribution to the scientific community and to society as a whole, along with the development of skill sets and technical expertise that will enable the graduate to be competitive in environmental professions.

Rationale for the M.S. Degree in Global Environmental Studies

Given that global environmental challenges are legendary, with climate change implications, dwindling energy resources, worldwide distribution of toxic compounds, biodiversity threats, urban decline, and accumulating wastes, greater expertise is needed, matched with broadening business opportunities for developing new technologies to address assessment and mitigation of pollution and to better manage resources worldwide. Concurrently, in keeping with the university's efforts to expand its global reach, this program is designed to prepare international students to address their nations' challenges and to prepare U.S. students to work in any international setting, from multinational corporations to international organizations dedicated to grappling with global environmental challenges. The flexibility of this program will allow graduate students with business backgrounds to acquaint themselves with environmental management problems and at the same time permit science majors to understand and prepare for addressing international challenges from a systems point of view. In summary, this program should serve Bryant University's mission very well.

Implementation Plan

The M.S. degree in Global Environmental Studies was designed to take advantage of existing faculty expertise, focusing on faculty strengths, research commitments and experience. The faculty is committed to preparing graduate students for successful careers in an environment-related field or enrollment in further graduate study by accomplishing the following learning objectives: encounter interdisciplinary perspectives, develop analytical skills, design and conduct experimental research (laboratory and field studies), grapple with societal problems, expand international experience and broaden global outlooks, experience dedicated advising and mentorship, deepen understanding of complex systems, and encounter environmental professionals and decision makers.

The Department emphasizes a personalized educational experience with a global perspective and has developed a strategic plan focusing on a long-term commitment to building quality programs that will address societal needs, foster sustainable solutions, provide opportunities, meet market realities, and provide students with sufficient flexibility to satisfy their career goals.

Integrated 400/500 level undergraduate and graduate courses will enable effective utilization of faculty expertise, laboratory space, and will allow for greater flexibility for students as they initiate a technical career path. The Department's model for research clusters (e.g., climate change studies, environmental toxicological studies, terrestrial environmental studies, and biomedical/health studies) will provide opportunities for students to participate in significant research programs, working with a variety of scientists. The SciTech Department utilizes this approach in order to effectively share equipment, supplies, instrumentation and laboratory space and to develop cross-disciplinary research collaborations. We presently have available six faculty research laboratories equipped with high quality instrumentation associated with each faculty member's expertise and training.

Internship opportunities for applying technical expertise for solving campus and community problems will be another strategy for enriching the skills development of graduate students and providing an outreach program for the university at large. The M.S. degree in Global Environmental Studies will improve the university's image in academic circles as a result of increases in scientific publications, acceptance of graduates into advanced study programs, and placement in environmental firms that are industry leaders. The program also provides an area of applied studies available to College of Business students interested in non-profit organizations, public sector economics, environmental auditing, and resource management, as well as other interdisciplinary applications.

We envision interest in the program from environmental professionals, program directors from other institutions, NGO leaders, and governmental agency staff. Targeted markets include graduates who have matriculated as Environmental Science Minors, staff members of local and statewide NGO's with an interest in updating their training by completing an M.S. degree in environmental science, and employees of statewide and regional environmental management firms who have not yet attained a Master's degree. Working with the U.S./China Institute and the Chafee International Business Center, we will target international students and industry groups likely to have an interest in the environmental management field, as well as other interested international students.

The M.S. in Global Environmental Studies will prepare students for professional careers in a variety of business, government, and academic settings. The Bureau of Labor Statistics indicates that a Master's degree is often preferred for environmental science jobs in government and private sector companies and that laboratory research experience related to environmental science is often required. Employment in this sector is expected to grow "much faster than the average" for environmental occupations, and job prospects are expected to be "favorable." Employment of environmental scientists and specialists is expected to increase by 28% between 2008 and 2018, much faster than for all other occupations, with job growth strongest in private-sector consulting firms.

Proposed Curriculum and Program Structure:

The program can accommodate students wishing to complete an Integrated 5-year program for both the B.S./M.S. degree, as well as serving as the Second Year Curriculum for students pursuing the Joint MS in Global Environmental Studies with China University of Geosciences (CUG)-Wuhan, with program completion possible in 15 months if so desired. The typical matriculation time for graduate students is expected to be two years. Each prospective student will be assigned a faculty member as a coordinating professor and thesis advisor, based upon mutual agreement. A thesis committee, composed of three faculty members, including the coordinating professor, will be responsible for approving the thesis. Fourteen graduate courses are included, reflecting various disciplines, for example, energy studies, geochemistry, toxicology, mapping, green technology, instrumentation, and global health issues.