GEORGE MASON UNIVERSITY
Graduate Council MODIFIED/DELETED Certificate, Concentration, Track, or Degree Program
Coordination/Approval Form

(Please complete this form and attach any related materials. Forward it as an email attachment to the Secretary of the Graduate Council. A printed copy of the form with signatures should be brought to the Graduate Council Meeting. If no coordination with other units is requires, simply indicate “None” on the form.

Title of Program/Certificate, etc: Environmental Science and Policy

Level (Masters/Ph.D.): MS

Please Indicate: _____ Program ______ Certificate _____ X ___ Concentration _______ Track

Description of the change in the certificate, concentration or degree program:

Proposal for two new concentrations within the degree: Environmental Biocomplexity and Earth Surface Processes & Environmental Geochemistry. See memo and catalog copy attached.

Approval from other units:

Please list those units outside of your own who may be affected by these. Each of these units must approve this change prior to its being submitted to the Graduate Council for approval.

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Submitted by: ________________________________ Email: ____________

Graduate Council approval: ________________________________ Date: ____________

Graduate Council representative: __________________________ Date: ____________

Provost Office representative: ____________________________ Date: ____________
TO: CAS Curriculum Committee via
Dee Holisky, Senior Associate Dean
College of Arts and Sciences

FROM: R. Christian Jones, Chair
Environmental Science and Policy

RE: Proposed addition of 2 new concentrations to MS in Environmental Science and Policy

DATE: October 28, 2004

Attached please find catalog copy for the MS in Environmental Science and Policy which has been revised to include two new concentrations within the degree. These two new concentrations, Environmental Biocomplexity and Earth Surface Processes & Environmental Geochemistry, are being proposed to draw attention to two areas within the ESP graduate program which we feel need enhanced visibility. No new faculty will be needed to launch these concentrations. Rather, these will promote more robust enrollments and more complete utilization of existing university resources. The course requirements for the two new concentrations fall within the rubric of the existing Environmental Science and Policy concentration, but are more specific and highlight these two areas of study.

Should further information be needed please don’t hesitate to contact me at rcjones@gmu.edu or x31127.
GRADUATE PROGRAMS

■ Environmental Science and Policy, MS

The MS in Environmental Science and Policy is designed to meet the increasing need for trained environmental professionals who can address the problems of land and water management, land use and urbanization, wetland loss, microbial ecology, bioremediation, conservation biology, and ecosystem preservation. These professionals will also contribute to the analysis and resolution of global problems such as deforestation, insufficient world food supplies, acid deposition, population growth and public health, global warming, and depletion of the ozone layer. Areas of specific departmental focus include ecosystems, conservation, environmental biocomplexity, and sustainability science, policy, and management.

Environmental problems are defined in the real world and do not necessarily conform to traditional academic disciplines. As such, their solutions require creative combinations of diverse interests and subjects. Effective training requires rigorous, problem-focused interdisciplinary action in a setting in which research is an essential element supporting instruction.

Four concentrations are available in the master's program: Environmental Science and Policy, Environmental Biocomplexity, Earth Surface Processes and Environmental Geochemistry, and Environmental Management. The first three concentrations are designed for students who wish to obtain a research-oriented master's degree. These concentrations can serve as a training ground for students wishing to further their education by pursuing the Ph.D. in Environmental Science and Public Policy at George Mason or doctoral programs at other universities. The Environmental Science and Policy concentration is the largest concentration and serves as a home for a broad array of research foci. The Environmental Biocomplexity concentration is designed for students who wish to obtain a research-oriented master's degree in Population Genetics, Microbial Ecology, and Molecular Systematics. The concentration in Earth Surface Processes and Environmental Geochemistry provides a specific research focus in the earth science area.

The Environmental Management Concentration serves as a terminal professional master's degree for individuals currently working in or aspiring to work as managers in the environmental field in both government and private industry. It combines the managerial and administrative skills developed in a traditional master of public administration degree program with the scientific knowledge and understanding normally found in a master of science degree.

Admission Requirements

Applicants must complete a standard George Mason University Graduate Application Form available from the Graduate Admissions Office or online at admissions.gmu.edu. Applicants for the MS in Environmental Science and Policy should hold a bachelor's degree with a GPA of 3.000 in natural or earth sciences, engineering, resource planning, environmental studies, or a related field from an accredited institution. Applicants should have taken at least two semesters of chemistry and three semesters of biology including a course in ecology. Applicants should submit three letters of recommendation, including at least one from a former professor (or if not available, from someone with a PhD). The aptitude portion of the GRE is required, and successful applicants will normally achieve a minimum score of 1,100 for verbal and quantitative combined. Applicants must also submit a statement of interest in the program, which should include the concentration to which they are applying, potential areas of emphasis, research skills option preferred, and an explanation of career goals. Prospective students are encouraged to contact potential faculty advisors appropriate to their interests. The availability of an advisor in the student's area of interest is one of the criteria for admission. Based on this availability and on the student’s interests, they will be assigned an advisor upon admission. Students will choose their research skills option at the time of application but may change this option later with their advisor's permission.
Degree Requirements

Environmental Science Concentration

This degree encourages an independent and creative approach to the development of curricula that reside within the general field of environmental science and policy. Students must form a supervisory committee and submit a Program of Study to the graduate coordinator for approval within the first 9 credits of course work or by the end of the second semester, whichever comes first. The supervisory committee will consist of the advisor and at least two other members, chosen in consultation with their advisor and conforming to university policy on master's thesis committees. Course requirements may be fulfilled by completing courses from a variety of academic units at the university. The program requires a minimum of 33 graduate credits distributed in four categories to provide a breadth of knowledge appropriate for addressing current environmental issues. Course selection should reflect a coherent individual program focus, which is stated and briefly described in the Program of Study, and support the research component of the student’s degree program.

Natural sciences: A minimum of 6 hours is required in biology, geology, geography, chemistry, or environmental engineering. For those students without previous course work in ecology, EVPP 607 is required in addition to the 6 hours.

Public policy: A minimum of 6 hours is required in environmental law, human ecology, environmental ethics, planning, or public affairs.

Methods and statistics: A minimum of 9 hours is required in statistics, remote sensing, information systems, instrumental analysis, or modeling. A course in statistics is highly recommended.

Seminar: A minimum of 1 hour of EVPP 692 Master's Seminar in Environmental Science and Public Policy on an appropriate topic is required.

Research: This requirement may be satisfied in one of two ways: EVPP 798 Research Project (1-3 hours) or EVPP 799 Thesis (3-6 hours).

Students may conduct a project (EVPP 798) or produce a formal thesis (EVPP 799). The depth and sophistication of the research differs between the two options. The thesis normally involves original research with independent acquisition and interpretation of data with a goal of peer-reviewed publication. Projects are generally less extensive and can include a broader range of activities.

Students fulfilling the research requirement with EVPP 798 will be required to take a comprehensive exam administered by their committee. Students choosing to do a thesis and completing EVPP 799 will present their results in a public seminar and defend their thesis before their committee. Students will be graded pass/no credit on their research skills component.

Environmental Biocomplexity Concentration

This concentration is for students desiring an MS degree with the environmental biocomplexity theme. Students must form a supervisory committee and submit a Program of Study to the graduate coordinator for approval within the first 9 credits of course work or by the end of the second semester, whichever comes first. The supervisory committee will consist of the advisor and at least two other members, chosen in consultation with their advisor and conforming to university policy on master's thesis committees. Course requirements may be fulfilled by completing courses from a variety of academic units at the university. The program requires a minimum of 33 graduate credits distributed in five categories to provide a breadth of knowledge appropriate for addressing current environmental issues. Course selection support the research component of the student’s degree program.
Students are encouraged to do at least 1 hour of Directed Studies (EVPP 693) as a lab rotation to broaden the scope of their experience in the concentration.

**Natural sciences**: A minimum of 6 hours is required in courses that cover ecology, biogeochemistry, biochemistry, population genetics, molecular biology, molecular systematics, molecular evolution, microbial ecology, microbial diversity, quantitative genetics, and population biology.

**Public policy**: A minimum of 6 hours is required in environmental law, human ecology, environmental ethics, patent law, legal and ethical issues in science.

**Methods and statistics**: A minimum of 9 hours is required in statistics, bioinformatics, information systems, instrumental analysis, microbiological techniques, molecular methods, phylogenetic methods, and bioinformatics.

**Seminar**: A minimum of 1 hour of EVPP 692 Master's Seminar in Environmental Science and Public Policy on an appropriate topic is required.

**Research**: This requirement may be satisfied in one of two ways: EVPP 798 Research Project (1-3 hours) or EVPP 799 Thesis (3-6 hours) as described above for the Environmental Sciences and Policy concentration.

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**Earth Surface Processes and Environmental Geochemistry Concentration**

This concentration is for students desiring an MS degree with an earth science theme. Students must form a supervisory committee and submit a Program of Study to the graduate coordinator for approval within the first 9 credits of coursework or by the end of the second semester, whichever comes first. The supervisory committee will consist of the advisor and at least two other members, chosen in consultation with their advisor and conforming to university policy on master's thesis committees. Course requirements may be fulfilled by completing courses from a variety of academic units at the university. The program requires a minimum of 33 graduate credits distributed in five categories to provide a breadth of knowledge appropriate for addressing current environmental and earth science issues. Course selection should support the research component of the student’s degree program.

**Natural sciences**: A minimum of 16 hours is required of which 10 hours must be comprised of at least one course from each of the following areas: soils science, hydrogeology, and geochemistry. The remainder may be chosen from a list of applicable EVPP, CHEM, and GEOL graduate courses including: GEOL 500, 501, 601; CHEM 651, 633, 728; EVPP 503, 543, 546, 550, 563, 577, 607, 610, 643, 644, 745.

**Public Policy**: A minimum of 6 hours is required in environmental law, human dimension of global change, environmental ethics, human ecology, or planning.

**Methods**: A minimum of 6 hours is required in remote sensing, GIS, statistics, instrumentation, or modeling.

**Seminar**: A minimum of 1 hour of EVPP 692: Master's Seminar in Environmental Science and Public Policy on an appropriate topic is required.

**Research**: A minimum of 3 hours of EVPP 799 Thesis. A thesis is required for this concentration.

Students completing EVPP 799 will present their results in a public seminar and defend their thesis before their committee. Students will be graded pass/no credit on their research component.