

RESOLUTION TO APPROVE B.S. IN WATER: RESOURCES, POLICY, AND MANAGEMENT

Documents included:

1. Resolution to Approve B.S. in Water: Resources, Policy, and Management
2. Degree Proposal for B.S. Water: Resources, Policy, and Management
3. Degree Proposal Presentation – slides

RESOLUTION TO APPROVE BACHELOR OF SCIENCE DEGREE IN WATER: RESOURCES, POLICY, AND MANAGEMENT

WHEREAS, water: resources, policy, and management (WRPM), a STEM-H discipline, encompasses the rapidly emerging area of water, which connects society and environment through energy, food, climate, ecological, health, and economic systems; and

WHEREAS, water is of vital importance to sustaining human life and water issues including drought, flooding, sanitation, contamination, and climate change affect every citizen on the planet; and

WHEREAS, sustainably managing water resources is a complex challenge that requires knowledge in a wide range of academic disciplines; and

WHEREAS, the bachelor of science in WRPM is the result of collaboration among 10 departments and five colleges at Virginia Tech and will offer strong interdisciplinary training in water science, policy, and management, while complementing existing undergraduate degree programs at Virginia Tech, and

WHEREAS, the College of Natural Resources and Environment is in an excellent position to initiate a bachelor of science in WRPM because of its strong base of senior faculty and recent additions of junior and senior faculty who are actively engaged in water resources research and teaching, and

WHEREAS, the bachelor of science in WRPM will prepare graduates for interdisciplinary research and education, for employment in government agencies, the private sector, non-government organizations, municipalities, utilities, and for post-baccalaureate training, and

WHEREAS, the bachelor of science in WRPM is unique in the Commonwealth of Virginia and to the United States, thereby establishing Virginia Tech and the Commonwealth as key leaders in education for this rapidly emerging field that affects all areas of human endeavor;

NOW, THEREFORE, BE IT RESOLVED, that the bachelor of science in water: resources, policy, and management be approved and forwarded to the State Council of Higher Education for Virginia (SCHEV) for approval and to the Southern Association of Colleges and Schools (SACS) for notification.

RECOMMENDATION:

That the resolution to approve the bachelor of science in water: resources, policy, and management be approved.

June 2, 2014

Virginia Tech Degree Proposal
Bachelor of Science in Water: Resources, Policy, and Management
(CIP: 03.0205)

Type of degree action (circle one): ☒ New ☐ Spinoff ☐ Revision ☐ Discontinuance

Program description

Virginia Polytechnic Institute and State University (Virginia Tech) requests approval for a new Bachelor of Science (B.S.) degree in Water: Resources, Policy, and Management, with an anticipated initiation in Spring 2015. Water connects society and environment through energy, food, climate, ecological, health, and economic systems and is therefore of vital importance to sustaining human life. Water issues such as drought, flooding, sanitation, and contamination exist on every continent and touch every citizen on the planet. As a resource, freshwater abundance is finite, with ever-increasing demands for its use as human population growth expands through urbanization and industrialization, which put additional pressures on aquatic ecosystems and the supply of safe drinking water. Sustainably managing water resources is a complex challenge that requires knowledge in a wide range of academic disciplines.

Few undergraduate degree programs provide integrated training in water science, policy, and management, although professionals are required to have interdisciplinary expertise in these areas to solve critical problems facing society today and in the future. Although the B.S. Water: Resources, Policy, and Management degree will be administered by the Department of Forest Resources and Environmental Conservation within the College of Natural Resources and Environment, it is nonetheless an interdisciplinary program and would be the first of its kind in Virginia as well as unique to any other undergraduate program anywhere in the U.S. The proposed new degree program will offer a strong interdisciplinary approach to water science, policy and management, while complementing existing undergraduate degree programs on our campus. Virginia Tech, with more than 80 faculty across all colleges involved in water research, teaching, and engagement, is well-situated to offer this degree with minimal need for new resources.

Universities and colleges have a major responsibility to prepare future water and land managers to meet the many complex challenges to sustainably manage water resources in the face of a rapidly expanding global population. Future water managers and decision makers need knowledge and training in natural science, technical assessment, economics, planning, and policy. A new B.S. degree program at Virginia Tech that integrates existing programs and courses from at least five colleges and numerous departments can provide an interdisciplinary and substantive understanding of water science, policy, and management. The proposed program will prepare Virginia Tech graduates for critical future responsibilities and will be a strong incentive for others who consider enrollment at Virginia Tech. There are currently no other undergraduate water degrees of this kind offered at any universities or colleges in the Commonwealth. Upon completing requirements for the new water degree, students will be qualified as professionals for employment with government agencies, the private sector, non-government

organizations, municipalities, and utilities seeking employees with university-level training in aspects of water science, policy, and/or management.

Curriculum summary

The B.S. degree in Water: Resources, Policy, and Management comprises 120 credits, distributed among the following categories of courses: i) Curriculum for a Liberal Education (general education; 36 credits); ii) Water Core (18 credits; listed below); iii) Writing (3 credits; listed below); iv) Water Law, Planning, and Economics (9 credits; listed below); v) Geospatial Technology (3 credits; listed below); vi) Water Science (12 credits); vii) Water Policy (12 credits); viii) Restricted Electives (18 credits), and ix) Free Electives (9 credits). All courses in the proposed curriculum are currently being taught by faculty at Virginia Tech.

Core Degree Requirements (57 credits)**Water Core (all 18 credits required)**

GEOG/NR 2004: Introduction to Water Resources and Environmental Issues (3)

PHYS 2205: General Physics (3)

PHYS 2215: General Physics Lab (1)

FOR 3104: Principles of Watershed Hydrology (3)

ENSC 3604: Fundamentals of Environmental Science (3)

ENSC 4314: Water Quality (3)

ALS/NR 4614: Watershed Assessment, Management, and Policy (2)

Writing (3 credits – choose one course)

ENGL 3754 Advanced Composition (3) or

ENGL 3764 Technical Writing (3)

Water Law, Planning, and Economics (9 credits – choose one course from each area below)

AAEC 3314 Environmental Law (3), or UAP 4344 Law of Critical Environmental Areas (3)

UAP 3354 Introduction to Environmental Policy and Planning (3), or UAP 4374 Land Use and Environment: Planning and Policy (3)

AAEC 3324 Environmental and Sustainable Development Economics (3) or CEE 4344 Water Resources Planning (3)

Geospatial Technology (3 credits – choose one course)

GEOG 4084 Introduction to GIS (3)

GEOG 4354 Introduction to Remote Sensing (3)

FOR 4114 Information Technology for Natural Resource Management (3)

FOR 4214 Forest Photogrammetry and Spatial Data Processing (3)

BSE 4344 GIS for Engineers (3)

Specialization Areas in Water Science and Water Policy (24 credits)

All students in the proposed curriculum will be required to take a minimum of 12 credits in Water Science Specialization Areas and a minimum of 12 credits in Water Policy Specialization Areas. Nine of the 12 credits must be completed in one Water Science Specialization Area and nine of the 12 credits must be completed in one Water Policy Specialization Area. Course listings by specialization area in Water Science and Water Policy are provided in Appendices A and B, respectively.

Restricted Electives (Minimum 18 credits)

Choose from courses listed under the Water Science or Water Policy Specializations or from those listed as Restricted Electives.

Free Electives (9 credits)**Curriculum for Liberal Education (36 credits)**

Area 1: Writing and Discourse (0-6 credits – depending on placement)

Area 2: Ideas, Cultural Traditions, and Values (6 credits)

Area 3: Society and Human Behavior (6 credits)

Area 4: Scientific Reasoning and Discovery (8 credits, including 2 labs)

Area 5: Quantitative and Symbolic Reasoning (6 credits)

Area 6: Creativity and Aesthetic Experience (1 credit)

Area 7: Critical Issues in a Global Context (3 credits)

Relevance to university mission and strategic planning

The proposed degree fully supports Virginia Tech's mission. Students in this program will have opportunities to serve the Commonwealth of Virginia, the nation, and the global community by utilizing their training in water science, policy, and management. They will be prepared to create, convey, and apply their knowledge of water to expand personal growth and opportunity, advance social and community development, foster economic competitiveness, and improve quality of life as presented in Virginia Tech's Mission Statement. Additionally, the proposed degree supports stated goals in Virginia Tech's Plan for a New Horizon: Envisioning Virginia Tech 2012-2018 (<http://www.president.vt.edu/strategic-plan/strategic-plan.html>) and the College of Natural Resources and Environment's 2012-2018 Strategic Plan (<http://cnre.vt.edu/college/about/2012-2018-CNRE-Strategic-Plan.pdf>).

Specifically, the proposed degree is based on a team-driven initiative to leverage existing and emerging strengths in water science, policy, and management to grow a component of the undergraduate program at Virginia Tech, as specifically recommended in the Plan for a New Horizon. Furthermore, this degree is STEM-H-oriented in that it provides all students in the curriculum with specific course-based core curriculum training in water science, water technology, mathematics, and water-related health topics. Students have opportunities to expand their STEM-H training through selection of specialization areas in water science and water policy and through selection of an additional 18 credit hours in restricted electives that are STEM-H-oriented. Students graduating from this degree program will be STEM-H graduates and will be poised to join the STEM-H workforce.

Justification for the proposed program

The need for sustainable management of water resources at local, regional, and global scales is unprecedented and has been identified as one of the key environmental, economic, engineering, and social challenges for the 21st century. On a global scale, one out of eight people lacks access to clean water and adequate sanitation; and more than three million (6,000 children under the age of five/day) die from water-related health problems each year, mostly in developing countries. Water quality and availability are growing concerns in this country and Virginia as well. Virginia's current and future economic growth depends on the availability of quality water resources. Maintaining water quality for an economically and ecologically sustainable Chesapeake Bay is a prime regional and Commonwealth example. In addition, the increasing population in eastern Virginia has put a strain on the Coastal Plain aquifers, resulting in lowered water levels in wells, and in some areas, land subsidence.

Adequate availability and quality of freshwater is fundamental to the sustainability of all life and requires an interdisciplinary approach to tackle the complex issues involved on a planet with expanding demands and limitations for this resource. Food production accounts for more than 70% of global water use and creates challenges for maintaining environmental water quality, while providing adequate crop production to sustain growing populations. Concurrently, climate change and rapid population growth are converging to create water challenges affecting both people and the environment. Societies now recognize the complexity of managing water sustainably and the need for innovative, transformative, interdisciplinary approaches to meet these complex challenges.

Despite calls for undergraduate education reform in water science and policy, few programs in the U.S. have embraced the integrative, interdisciplinary approach to train water professionals. Water touches on so many aspects of the environment and society that most universities, including Virginia Tech, offer courses spread across multiple colleges and departments, often with little coordination among faculty and students in instructional program delivery. Across universities, all relevant aspects of water science, policy, and management are provided through, for example, programs in civil and environmental engineering, geography, natural resources, geosciences, urban planning, and economics. However, there is a lack of holistic integration that provides students with training to address complex water issues.

Employment Demand

This new interdisciplinary degree program addresses the increasing need for professionals who are trained across an integrated curriculum in water science, policy, and management. The B.S. degree in Water: Resources, Policy, and Management will be attractive to students with an interest in developing skills essential for a diversity of careers involving water, including employment with government agencies, environmental consulting firms, educational facilities, university and government research laboratories, private industries, and non-governmental water organizations. Students in this degree

program will also be able to prepare for graduate schools by selecting appropriate elective courses.

As the number and complexity of water problems increase, so does the wave of water-related opportunities for scientific expertise, knowledge, and innovative solutions. A recent article in the *New York Times* documents that jobs in water are on the rise. The Bureau of Labor Statistics has predicted 18 percent growth from 2010 to 2020 in water-related employment, which is much faster than the average for all other occupations. Many of these jobs are with the federal government and state agencies and state departments of conservation. Others work in architecture, nongovernmental organizations, engineering, and for management, scientific and technical consulting firms.

Student Demand

Survey results from 66 students in NR 2984 (First Year Experience), 108 students in FIW 2114 (Principles of Fisheries and Wildlife), and 27 students in ENSC 3604 (Fundamentals of Environmental Science) taken in fall 2012 indicate that there is strong student demand for the proposed interdisciplinary degree program. When asked “if you are an undeclared major and Virginia Tech offered a WRPM major, how likely would you be to declare WRPM as your major?” 106 of 185 (57%) students expressed at least “somewhat likely to” interest in declaring WRPM as their major. Of these, nine said they “definitely would.” When asked “if Virginia Tech offered a WRPM major and adding it to your current major would not extend your undergraduate program past four years, how likely would you be to add WRPM as a second major?” 150 of 201 (75%) students expressed at least “somewhat likely to” interest in adding WRPM as a second major. Of these, 34 said they “definitely would.” When asked “if Virginia Tech offered a WRPM major and transferring to it did not extend your undergraduate program past four years, how likely would you be to change your current major to WRPM?” 91 of 200 (46%) students expressed at least “somewhat likely to” interest in transferring to the WRPM major. Of these, 12 said they “definitely would.” See Appendix C for student comments.

Duplication

This is the first *interdisciplinary* undergraduate water degree of its kind in Virginia and throughout the U.S. There is no duplication of this degree at any other institutions of higher learning in the Commonwealth of Virginia. There are some water-related options in various degree programs at Virginia Tech and in the Commonwealth (see table below). However, competition for students enrolled in the options below is not anticipated, given the substantive differences between the proposed B.S. degree in Water: Resources, Policy, and Management and these degree programs. Furthermore, there is strong support for this degree among departments offering water-related options at Virginia Tech (See Appendix D).

Degrees currently offered at Virginia Tech and other Commonwealth of Virginia universities with water-related options.

Department	B.S. Degree	Option
Virginia Tech		
CSES	Environmental Science	Water Resources
BSE	BSE	Land and Water Resources
		Engineering
CEE	CEE	Environmental and Water Resources
		Engineering
FREC	Environmental Resource Management	Watershed Management
UAP	Environmental Policy and Planning	
AAEC	Environmental Economics, Management and Policy	
Cross-College	Minor	Watershed Management
University of Virginia		
CEE	Environmental and Water Resources Engineering	
Env. Sciences	Environmental Sciences	Hydrology

Resource Needs/Savings

The proposed undergraduate B.S. degree program in Water: Resources, Policy, and Management will rely on existing faculty for delivery of the proposed degree. Currently, 13 faculty from ten different departments and across five different colleges have all committed their instructional expertise to this degree program. All courses in the curriculum are currently being offered at Virginia Tech and permission from academic units responsible for every course listed in the curriculum has been obtained to accommodate students in courses listed in the new degree program. The new degree program is requesting additional resources (one full-time administrative assistant) to help support an academic advisor who will coordinate student advising and oversee student record keeping. Financial support for this position will be forthcoming from the College of Natural Resources and Environment (See Appendix E). No other new resources are requested at this time.

RESOURCE	ESTIMATED COSTS (use NA if not applicable)
Faculty	NA
Administrative Staff	\$45,000/CY
Graduate Teaching/ Graduate Research Assistants	NA
Space	NA

Library	NA
Equipment	NA
Other	NA

Appendix A

Water Science Specialization

(Students complete 9 credits in one Water Science Specialization & select 3 elective credits from this list of Water Science approved courses)

I. Aquatic Ecosystems

BIOL 4004 (Freshwater Ecology), BIOL 4454 (Invertebrate Zoology), BIOL/CSES 4164 (Environmental Microbiology), BIOL/ENT 4354 (Aquatic Entomology), BIOL/FiW/ENT 4484 (Freshwater Biomonitoring), FiW 4514 (Principles of Aquaculture), FiW 4534 (Ecology & Management of Wetland Systems), FiW 4614 (Fish Ecology), FiW 4624 (Marine Ecology), FiW 4714 (Fisheries Management), FOR 4374 (Forested Wetlands), GEOS 3034 (Oceanography)

II. Hydrology

BIOL 4114 (Global Change Biology), BSE 3324 (Small Watershed Hydrology), BSE 4224 (Field Methods in Hydrology), CEE 4314 (Groundwater Resources), CEE 3304 (Fluid Mechanics), CEE 3314 (Water Resources Engineering), , CEE 4304 (Hydrology), CEE 4324 (Open Channel Flow), CEE 4354 (Environmental Hydrology), , CSES 3614 (Soil Physical & Hydrological Properties), CSES/GEOG/GEOS 3304 (Geomorphology), FOR 4354 (Forest Soils & Hydrology), GEOS 3014 (Environmental Geosciences), GEOS 4804 (Groundwater Hydrology)

III. Water Quality

BSE 3334 (Nonpoint Source Assessment & Control), BSE 4304 (Nonpoint Source Pollution Modeling & Management), BSE 4324 (Nonpoint Source Pollution), BSE 4394 (Water Supply & Sanitation in Developing Countries), CEE 3104 (Introduction to Environmental Engineering), CEE/CSES 4594 (Soil & Groundwater Pollution), CSES 3634 (Physics of Pollution), CSES 4734 (Environmental Soil Chemistry), FOR 4354 (Forest Soils & Hydrology), FOR 4374 (Forested Wetlands), GEOS 4804 (Groundwater Hydrology)

IV. Water Treatment & Public Health

BSE 4394 (Water Supply & Sanitation in Developing Countries), CEE 3104 (Introduction to Environmental Engineering), CEE 4114 (Fundamentals of Public Health Engineering), CEE 4104 (Water & Wastewater Treatment Design), CEE 4174 (Solid & Hazardous Waste Management), CSES 4164 (Environmental Microbiology), CSES/ENSC 4644 (Land Based Systems for Waste Treatment), FOR 4374 (Forested Wetlands)

Appendix B

Water Policy Specialization

(Students complete 9 credits in one Water Policy Specialization & select 3 elective credits from this list of Water Policy approved courses)

I. Watershed Management

ALS 3134 (Livestock & the Environment), ALS 3404 (Ecological Agriculture Theory & Practice), BSE 3324 (Small Watershed Hydrology), BSE 3334 (Nonpoint Source Assessment & Control), BSE 4304 (Nonpoint Source Pollution Modeling & Management), BSE 4324 (Nonpoint Source Pollution), CEE 3274 (Intro Land Development), CEE 4264 (Sustainable Land Development), FOR 4374 (Forested Wetlands), LAR 3154 (Watershed Sensitive Design & Construction), UAP 3354 (Introduction to Environmental Policy & Planning), UAP 4374 (Land Use & Environment: Planning & Policy)

II. Water Planning, Policy, & Economics

AAEC 3004 (Agricultural Production & Consumption Economics), AAEC 3014 (Analytical Methods of Applied Economics), AAEC 3324 (Environmentally Sustainable Development Economics), AAEC 3314 (Environmental Law), AAEC 3604 (Agricultural Law), AAEC 4314 (Environmental Economic Analysis & Management), AAEC 4344 (Sustainable Development Economics), CEE 4134 (Engineering Solutions for Environmental Sustainability), CEE 4344 (Water Resources Planning), FOR 4014 (Natural Resources Economics), GEOG 4204 (Geography of Resources), LAR 3154 (Watershed Sensitive Design & Construction), UAP 3224 (Policy Implementation), UAP 4344 (Law of Critical Environmental Areas), UAP 4374 (Land Use & Environment: Planning & Policy), UAP 4384 (Pollution Control Planning & Policy), UAP 4184 (Community Involvement)

III. International Water Management

ALS 4714 (Global Seminar), BSE 4394 (Water Supply & Sanitation in Developing Countries), IS 4014 (Seminar in Grassroots Development), UAP 4764 (International Development Policy & Planning), ALS/GEOG/NR/UAP 4404 (Approaches to International Development)

IV. Water, Climate, Energy, & Global Issues

BIOL 4114 (Global Climate Change), CEE 4134 (Engineering Solutions for Environmental Sustainability), CEE 4264 (Sustainable Land Development), GEOG 3104 (Environmental Problems & Population Development), GEOG 3114 (Introduction to Meteorology), ME 4194 (Sustainable Energy Solutions for a Global Society), NR 4444 (Practicing Sustainability), PSCI/UAP 3344 (Global Environmental Issues: Interdisciplinary Perspectives)

Appendix C

Selection of Student Comments from Surveys

I would love it and change to it immediately as I am already about to change to the watershed management option or ERM.

I definitely would look into having this my declared major.

This sound like a really interesting degree and if it became available I would definitely major in it. So, I hope it does.

If this major had been listed before I declared my major, it would have been very likely of me choosing it. I would definitely still consider choosing it now.

I would love to make this a second major or a minor – or possibly a concentration? I just transferred into Marine Fisheries, but my final goal was to work with international water relations. Marine Fisheries was the best fit for what I wanted, but Water, Resources, Policy, and Management sounds like exactly what I want to focus on. This should definitely become a major.

This program would add to the offerings of Virginia Tech by implementing an interdisciplinary degree the likes of which has not been fully established in the Natural Resources side of the campus. This allows for growth in student base, and in the type of experience offered to students.

I believe that offering WRPM as a major would be a great idea! It would encourage further options and diversity for students at Virginia Tech.

Sounds extremely interesting. Makes me actually want to look into the idea of it. I am sure if you offered this as a major many people would take part in it.

I would not transfer from my current major because I am very interested in it. However, I feel that it would be a great addition to my fisheries science major and there is a very good probability that I would double major with the two.

I feel like the degree is a great opportunity for students in CNRE.

I think it is an important major to add to the college. Water is and up and coming problem in the world, so teaching people how to go about the shortages, cleanliness, and maintenance of water is very crucial.

I would be very interested in adding it as a minor if it did not extend my undergraduate program past four years.

I feel like offering a WRPM major would be very beneficial to the environment in the long run and very informational for students at Virginia Tech.

I feel that this major would have huge potential, an engaging curriculum, and a strong job outlook. Over all, it would be highly beneficial to the university.

I am currently a water resources minor and would like the opportunity to further that line of education. Thanks.

I think this is a great idea. Water is becoming a very important issue in today's time. There is much conflict over it, and the economic and ethical distribution of it. Not to mention, water's role in Global Climate Change. The major is very timely, and I think it would be a great addition to Virginia Tech.

I think it is a wonderful idea.

I think water resources are becoming more and more important and this would be a great major to go into.

Too bad this wasn't here when I was a freshman.



B.S. Degree Water: Resources, Policy, and Management

Presented by: Stephen Schoenholtz
Professor and Director
Virginia Water Resources Research Center
College of Natural Resources and Environment
Board of Visitors, Academic Affairs Committee
June 2, 2014

Proposed B.S. Degree in Water

Water is life!



Proposed B.S. Degree in Water

Water: a rapidly emerging area of scholarship connecting society and environment through many systems

- Energy
- Food
- Climate
- Ecological
- Health
- Economic



Proposed B.S. Degree in Water

- Rapidly increasing demand for water
- Complex interdisciplinary challenges
- Complex interdisciplinary solutions
- Expanding career opportunities for students with interdisciplinary training in water



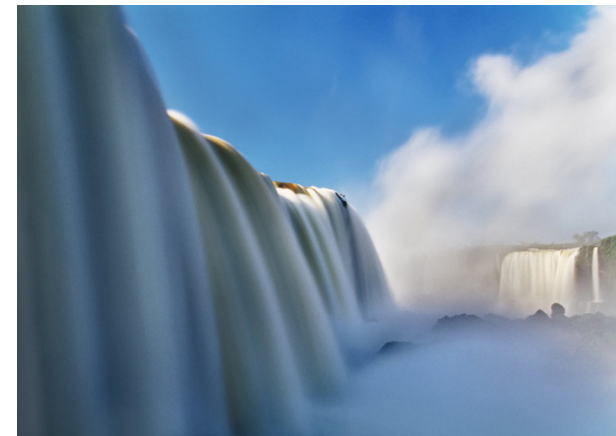
Jobs

- Expanding job demand (18% growth)
- Federal and state agencies
- Municipal water and planning districts
- Consulting firms
- Industry (sustainability, green marketing)
- Non-Government Organizations
- Graduate school



Proposed B.S. Degree in Water

- Water degree unique to Commonwealth of Virginia and to U.S.
- Establishes Virginia Tech and the Commonwealth of Virginia as key leaders in education for a rapidly emerging field vital to everyone
- Planned launch in January 2015



Virginia Tech's Response

Five colleges and 10 departments collaborated to develop the water degree:

- **College of Agriculture & Life Sciences** (Agricultural & Applied Economics, Biological Systems Engineering, Crop & Soil Environmental Sciences)
- **College of Architecture & Urban Studies** (Urban Affairs & Planning)
- **College of Engineering** (Civil & Environmental Engineering)
- **College of Natural Resources & Environment** (Fish & Wildlife Conservation, Forest Resources & Environmental Conservation, Geography)
- **College of Science** (Biological Sciences, Geosciences)

Virginia Tech's Response

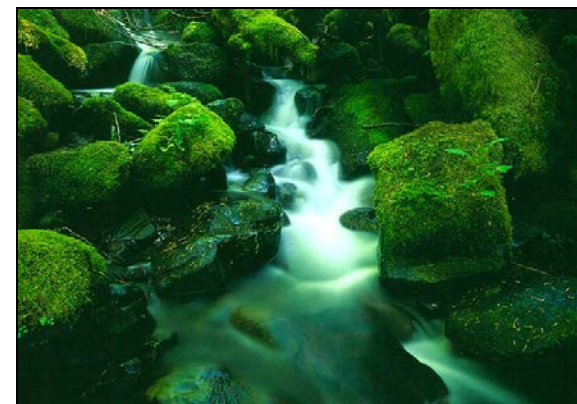
- Builds on strengths of existing faculty & courses
- Recent expansion of water faculty
- Cooperation from 21 academic units offering courses in proposed curriculum
- Offered through Department of Forest Resources and Environmental Conservation



Degree Requirements

Comprehensive, interdisciplinary curriculum
(120 credits)

- Maximum 36 credits – Curriculum for Liberal Education
- 57 credits core courses
 - 18 credits – common water core
 - 12 credits – water science
 - 12 credits – water policy
 - 9 credits – water law, planning, economics
 - 6 credits – writing, geospatial technology
- Minimum 18 credits – restricted electives in water-related courses
- Minimum 9 credits – university electives



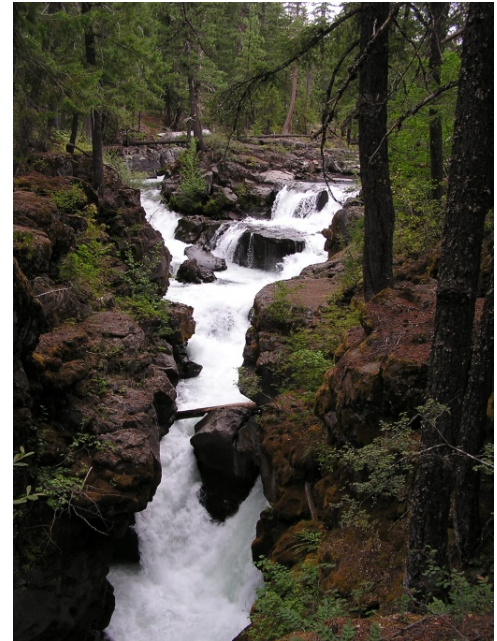
Core Courses – 18 credits

- **GEOG/NR 2004** Intro to Water Resources & Environmental Issues
- **PHYS 2205/2215** General Physics & Lab
- **FOR 3104** Principles of Watershed Hydrology
- **ENSC 3604** Fundamentals of Environmental Science
- **ENSC 4314** Water Quality
- **ALS/NR 4614** Watershed Assessment, Management, Policy



Areas of Water Science Specialization

- Aquatic Ecosystems
- Hydrology
- Water Quality
- Water Treatment and Public Health



Areas of Water Policy Specialization

Attachment C

- Watershed Management
- Water Policy, Planning, Economics
- International Water Management
- Water, Climate, Energy, and Global Issues



Potential Student Demand

- Project minimum of 80 majors by 2019-2020
- Campus surveys show strong interest in declaring the major or adding as a double major



Recommendation

Establish a B.S. Degree in Water: Resources, Policy, and Management effective spring 2015



Attachment C
Thank you!

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Chesapeake Bay