

From: noreply@wsu.edu
To: [curriculum.submit](#)
Subject: 467372 Environment Requirements Revise - Revise or Drop Graduate Plan
Date: Thursday, September 27, 2018 9:54:55 AM
Attachments: [2018.09.27.09.54.50.73.FormData.html](#)
[2018.09.27.09.54.49.81.currentCatalogFile Requirement Change MS ES Vancouver ThesisOption.pdf](#)

Alecia Hoene has submitted a request for a major curricular change. His/her email address is: alecia.hoene@wsu.edu.

Requested change: Revise or Drop Graduate Plan

Degree: M.S. Environmental Science

Title: Thesis [CSC Note: Change requested is for MS in ES WSU Vancouver]

Requested Effective Date: Fall 2019

Revise plan requirement: Yes

Dean: Rodriguez-Vivaldi, Ana Maria - Assoc Dean - CAS,

Chair: Keller, Kent,

Catalog Subcommittee
Approval Date

AAC, PHSC, or GSC
Approval Date

Faculty Senate
Approval Date

From: [Keller, Kent](#)
To: [curriculum.submit](#)
Cc: [Rodriguez-Vivaldi, Ana Maria](#); [Carroll, Matthew Stephen](#)
Subject: Re: 467372 Environment Requirements Revise - Revise or Drop Graduate Plan
Date: Thursday, September 27, 2018 2:20:57 PM

I approve this proposal in its current form. -Kent Keller

On Sep 27, 2018, at 9:54 AM, curriculum.submit@wsu.edu wrote:

Keller, Kent,

Rodriguez-Vivaldi, Ana Maria - Assoc Dean - CAS,

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Both Chair and Dean approval is required to complete the submission process. Please indicate that you have reviewed the proposal by highlighting one of the statements below and **reply all** to this email. (curriculum.submit@wsu.edu.) [Details of major change requested can be found in the attached supplemental documentation]

1. **I approve this proposal in its current form.**
2. I approve this proposal with revisions. Revisions are attached.
3. I do not approve this proposal. Please return to submitter.

If you do not respond within one week, you will be sent a reminder email. If no response is received within three weeks of the submission date, the proposal will be returned to the submitter.

Thank you for your assistance as we embark on this new process. If you have any questions or concerns, please let us know wsu.curriculum@wsu.edu.

From: [Rodriguez-Vivaldi, Ana Maria](#)
To: [curriculum.submit](#); [Keller, Kent](#)
Subject: RE: 467372 Environment Requirements Revise - Revise or Drop Graduate Plan
Date: Thursday, September 27, 2018 12:47:04 PM

I approve this proposal in its current form.

Ana María Rodríguez-Vivaldi

From: curriculum.submit@wsu.edu [mailto:curriculum.submit@wsu.edu]
Sent: Thursday, September 27, 2018 9:55 AM
To: Keller, Kent <ckkeller@wsu.edu>; Rodriguez-Vivaldi, Ana Maria <amrodriguez@wsu.edu>
Subject: 467372 Environment Requirements Revise - Revise or Drop Graduate Plan

Keller, Kent,

Rodriguez-Vivaldi, Ana Maria - Assoc Dean - CAS,

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Rationale for proposed changes to Masters in Environmental Science at WSU Vancouver: Thesis Option

Reasons for request:

Goals:

Overarching goal 1: making better use of evolving faculty strengths

Of the 17 full-time faculty currently involved in delivery of the Master of Science in Environmental Science (MS ES) at WSU Vancouver, 15 have been hired in the 16 years since the degree was first approved. Consequently, there have been substantial changes in Vancouver expertise. The program retains the focus on Environmental Sciences, with ongoing presence and strength in Ecology and Biogeochemistry. However, many recent hires have strengthened Vancouver's capabilities across a broader range of Environmental Sciences, including aquatic and soil biogeochemistry, environmental hydrodynamics, climate science, statistics, and ecotoxicology. This range of new faculty strengths was chosen partly because these topics are seen as having growing importance in the Environmental Sciences, and growing societal relevance. The first overarching goal of the proposed changes is to allow students to take full advantage of the developing breadth of faculty capabilities, thereby improving the quality of graduate education.

Overarching goal 2: Strengthening graduate research

While allowing students an improved opportunity to take full advantage of the best available courses is one important motivation (goal 1 above), and second goal is the strengthening of graduate research. Given the importance of graduate research to the university's research mission, this goal is well-aligned with WSU's top-priority "Drive to 25" – the aim of becoming one of the nation's top 25 research universities by 2030. Our Overarching Goal 2 is also well aligned with WSU Vancouver's Strategic Plan, specifically through Goal 1: research, and the sub-goal of increasing Graduate Student's productivity. To facilitate graduate research and strengthen student's opportunities to develop high-quality thesis work, the Graduate School has reduced the required coursework to 21 graded credits. To improve the quality and depth of student research, the proposed revisions bring the degree into line with the new graduate school course credit requirements.

In addition to the above overarching goals, there are several minor proposed revisions intended to accomplish more additional goals, listed below.

Goal 3: Building graduate student research community

A third goal of the proposed changes is to bring students together by strengthening shared experiences of research seminars.

Goal 4: Adaptability in preparation for ongoing faculty turnover

At the growing Vancouver campus, further changes in faculty strength are anticipated. A last goal of the revisions is rewording the most rigid previous requirements, so that revised requirements will be more adaptable to growing and changing faculty strengths.

Goal 5: Natural Sciences rigor of Admission requirements

Admission requirements are slightly revised, for better alignment with the Natural Sciences emphasis of the degree.

Reasons for specific changes:

- The largest changes are the removal of the Ecology course requirement, the “Applied Biological, Physical, or Social Science” course requirement, and introduction of a more flexible requirement for course credits across environmental sciences. These changes are made to advance Overarching Goal 1, outlined above.
- Another major change is the reduction in total graded coursework credits, from 26 to 21. There are corresponding reductions in total credits from 32 to 30, and SOE 700 credits from 6 to 4, consistent with required Graduate School requirements. This accomplishes Overarching Goal 2.

Remaining revisions are more minor, and are focused mostly on Goals 3 and 4.

- Quantitative requirement: to advance goal 4, the wording has been refined to allow for “...other highly quantitative courses”.
- Addition of SOE 598 requirement: advances Goal 3.
- The advanced special topics requirement has been very slightly reworded, to allow for possible future course options.
- Policy/Society/Management requirement: this revision advances goal 4. This requirement must be revised, because although 4 credits of 544 were previously required, this course has recently been changed in the catalog from 4 to 3 credits, unfortunately making completion of the degree technically impossible. Although the sole current course satisfying the new requirement is 544, wording has been broadened to allow for possible introduction of new courses (a key, highly valued instructor who previously taught 544 is retiring, and it is possible that replacement faculty may have slightly different strengths within Environmental Policy/Society/Management).

Impacts to departments or colleges in Pullman, and on other campuses

The Faculty Senate has independently approved the MS in ES degree to be offered on three campuses - Pullman, Vancouver and Tri-Cities. Therefore, the changes to the MS ES offered at WSU Vancouver do not impact programs in Pullman or Tri-Cities. We note that the WSU Puyallup Research and Extension Center participates in the WSU Vancouver MS in ES, and involved faculty have agreed to the proposed revisions. Reducing the course requirements will help students in Puyallup in a similar manner to those benefits described for the Vancouver students.

Current and Proposed Requirements for Master of Science in Environmental Sciences Offered at WSU Vancouver: Thesis Option

As requested, degree requirements that would be eliminated under the proposed revisions are marked with strikethrough, and new requirements are underlined. Requirements without strikethrough or underlining are unchanged.

Ungraded Credits

SOE 501 Graduate Skills Seminar course: 1 credit.

SOE 598 Research Seminar in Environmental Sciences: 2 credits
(i.e. 2 semesters, at 1 credit per semester).

SOE 700 Thesis: 6 credits

At least 2 credits must be in the semester of the final exam.

All full-time students must take at least 1 credit of SOE 700 during every semester they are enrolled in the degree.

Graded Credits:

~~Advanced Special topics: 2 credits~~

Advanced special topics: 2 credits of advanced SOE special topics coursework.

(Current options for special topics are

SOE 592 Advanced Topics in Environmental and Natural Resources Sciences and

SOE 597 Advanced Topics in Geology)

~~544 Environmental Assessment: 4 credits~~

Policy/Society/Management Courses: 3 credits.

SOE 544 Environmental Assessment, or other courses in Policy, Society, or Management (see attached course lists).

Quantitative skills: 3 credits

This requirement could be met by courses in mathematics, statistics (e.g. STAT 519, 523), or other highly quantitative courses (see attached course lists).

~~Applied Biological, Physical, or Social Science area: 3 credits~~

~~In the past, this was usually met by one of GEOL 516, GEOL 565, ENVR_SCI 577, ENVR_SCI 586, POL_S 430~~

~~Ecology: 3 credits~~

~~In the past, this was usually met by one of BIOL 562, 568, 569~~

Area of Specialization: 11 credits

Other Graded Coursework: 13 credits

There are 19 total credits included in the above “Policy/Society/Management”, “Quantitative”, and “Other” groupings. Of these 19, at least 6 must be SOE credits (see attached course lists).

Total Graded coursework: ~~26 credits minimum~~ 21 credits minimum

Total Credits: ~~32~~ 30

No-more than 6 hours of non-graduate 300 or 400-level courses may be included.

Course List for proposed revised MS ES requirements

This document lists courses that might satisfy proposed revised requirements for the MS ES offered at WSU Vancouver.

List of graduate courses currently satisfying Policy/Society/Management requirement:

SOE 544 Environmental Assessment,
SOE 535 Water Resources Science and Management,
SOE 540 540 Agroecology,
SOE 545 Hazardous Waste Management,
SOE 594 Environmental and Natural Resources Issues and Ethics,
POL_S 544 The Politics of Policy Process.

List of graduate courses currently satisfying Quantitative skills requirement:

STAT 508 Environmental Spatial Statistics
STAT 510 Topics in Probability and Statistics
STAT 511 Statistical Methods for Graduate Researchers
STAT 512 Analysis of Variance of Designed Experiments
STAT 516 Time Series
STAT 519 Applied Multivariate Analysis
STAT 520 Statistical Analysis of Qualitative Data
STAT 523 Statistical Methods for Engineers and Scientists
STAT 535 Regression Analysis
STAT 544 Applied Stochastic Processes

MECH 521 Fundamentals of Fluids I
MECH 523 Computational Fluid Dynamics and Heat Transfer
MECH 532 Finite Elements

List of graduate courses satisfying 6-SOE-credit requirement

505 Geodynamics
510 Species Distribution Modeling
512 [M] Global Biogeochemistry
516 Soil Processes in the Earth's Critical Zone
520 Radiation Instrumentation
521 Uses and Regulation of Radiation
524 Advanced Topics in Sedimentology
531 Fundamentals of Environmental Toxicology
532 Applied Environmental Toxicology
535 Integrated Water Resources Science and Management
540 Agroecology
541 Orogenic Systems
542 Extensional Tectonics
544 Environmental Assessment
545 Hazardous Waste Management
548 Applied Spatial Ecology
555 System Dynamics Models of Environmental Systems
556 Foraging Ecology of Herbivores
560 Advanced Igneous Petrology
562 Watershed Biogeochemistry
577 Advanced Environmental Hydrology
583 Radiogenic Isotopes and Geochronology
584 Stable Isotope Geochemistry
594 Environmental and Natural Resources Issues and Ethics