

Program Information	
Program:	PhD in Water Resources Science
Reporting Time Period:	AY 2019-2020
College or Administrative Division:	The Graduate School
Subunit(s)	Water Resources Graduate Program
Report Submitted By:	Mary Santelmann, Professor and Director
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Date Submitted:	June 15, 2020
Due Date:	June 1, 2020
URL to Program GLOs:	Each program must have their GLOs listed on their website; URL here. https://gradwater.oregonstate.edu/student-resources

	University: Graduate Learning Outcomes (GLOs) for Doctoral students (approved by Faculty Senate on January 13, 2011)			Program Level Student Learning Outcomes (add additional columns if needed)			
Outcomes: University and program level student learning outcome (GLO)	Produce and defend an original significant contribution to knowledge	Demonstrate mastery of subject material	Conduct scholarly or professional activities in an ethical manner	Conduct original research that extends knowledge in the fields of hydrology, ecohydrology, and/or geochemistry.	Perform basic hydrologic analyses and to understand key linkages and interactions between the hydrologic cycle and other aspects of earth science	Communicate professionally about water resources and water resources research.	Demonstrate a commitment to diversity and high ethical standards in scholarship, teaching, and service.

<p>Outcomes: What year was this program level learning outcome developed or most recently changed?</p>	NA	NA	NA	2004			
<p style="text-align: center;">Assessment Method</p>							
<p>Assessment Method¹: List the measures or instruments used to assess each outcome. [How do students demonstrate their attainment of the learning outcome? How is their learning evaluated?] At least one of these must be a direct measure. For additional guidance see: http://oregonstate.edu/admin/aa/apaa/assessment-resources</p>	Completion and successful defense of dissertation.	Completion of coursework required for the degree.	Appropriate references to the literature in dissertation and completion of CITI modules on research ethics.	Conducting research and preparation and successful defense of doctoral dissertation.	Completion of lecture and lab assignments on measuring discharge in WRP 524 and assignments in BEE 512 Physical hydrology	Presentations in WRP 524 and/or at professional meetings. Presentation at final dissertation defense.	Complete training in research ethics (CITI modules), participate in WRP class discussion of codes of ethics.
<p>Assessment Method: Has this assessment method changed since the last reporting cycle? Yes or No. Explain any changes.</p>	NO	NO	NO	NO	NO	NO	NO
<p>¹In order to explore trends in the data, we advise that assessment method remain consistent from year-to-year.</p>							

Benchmark for evaluating satisfactory achievement of learning outcome							
Benchmark²: What benchmark or milestone - related to the specific measure or instrument - is used to determine whether the outcome has been satisfactorily met by the students?	Successful dissertation defense.	Passing courses required for the degree with grade of B or better.	Completion of CITI modules on research ethics.	Successful dissertation defense.	Passing courses required for the degree with grade of B or better.	Presentation of research to committee at initial proposal defense and final defense.	Completion of CITI modules on research ethics.
Benchmark: Describe any changes to the benchmark or milestone since the last reporting cycle.				None	None	None	None
² In order to explore trends in the data, we advise that benchmarks remain consistent from year-to-year.							
Process used for gathering assessment data							
Process: Describe the <u>data collection process</u> (e.g., Who is involved? How is the data collected?)				See Appendix A and Appendix B.	See Appendix A and Appendix B.	See Appendix A and Appendix B.	See Appendix A and Appendix B.

What do the data show about student learning?							
<p>Results: What do the data show about student learning relative to the specific learning outcome? Describe any result, pattern, or trends that you identify as meaningful or that highlights an area(s) of concern or success. You must provide data to substantiate your claims.</p>				Students are excelling in meeting their learning outcomes. See Appendix A.	Students are excelling in meeting their learning outcomes. See Appendix A.	Students are excelling in meeting their learning outcomes. See Appendix A.	Students are excelling in meeting their learning outcomes. See Appendix A.
Actions							
<p>Actions: Describe any <u>course-level</u> (content, pedagogical, structural, etc.) changes that are an outgrowth of the current year's assessment of this outcome. Include timelines.</p>				None	None	None	None
<p>Actions: Describe any <u>program or degree-level changes</u> that are an outgrowth of the current year's assessment of this outcome. Include timeline.</p>				We will be communicating expectations about the proposal defense to incoming students and their advisors to reinforce	None	None	None

				understanding of expectations.			
Full-Cycle Impact							
<i>Full-Cycle impact:</i> If this learning outcome has been assessed previously and is being reported on again this year, what impact have the changes had (if any) on student learning? If you have not previously assessed this learning outcome, please indicate the year you will revisit this outcome.				We are very satisfied with the student achievement of learning outcomes and do not plan any changes in the foreseeable future.	We are very satisfied with the student achievement of learning outcomes and do not plan any changes in the foreseeable future.	We are very satisfied with the student achievement of learning outcomes and do not plan any changes in the foreseeable future.	We are very satisfied with the student achievement of learning outcomes and do not plan any changes in the foreseeable future.
Process, Reflection and Planning							
Describe the process the program used to reflect on the outcome data.				Preparation of this annual assessment	Preparation of this annual assessment	Preparation of this annual assessment	Preparation of this annual assessment

Were there any challenges or concerns?				No	No	No	No
How are the results of your assessment effort related to strategic planning and overall program review?				Assessments inform the program annual assessments and biannual report	Assessments inform the program annual assessments and biannual report	Assessments inform the program annual assessments and biannual report	Assessments inform the program annual assessments and biannual report
Are there specific data archiving notes for the outcome(s) you are reporting on in this report?				No	No	No	No
Plans							
Describe the unit's (or sub-units) assessment plans for the upcoming year.				We will continue to assess performance in coursework and at defenses	We will continue to assess performance in coursework and at defenses	We will continue to assess performance in coursework and at defenses	We will continue to assess performance in coursework and at defenses

Appendix A WRS Assessment Summary June 2020

Table 1. WRS GLO Assessment for PhD graduates for AY 2020; n = 1 graduates, 1 form returned

	(a) Does not meet Expectations	(b) Meets Expectations	(c) Exemplary Performance
1. Problem Definition: Has stated the research/project problem clearly, providing motivation for undertaking the research	0	0	1
2. Literature and Previous Work: Demonstrated sound knowledge of literature in the area, and of prior work on the specific research/project problem	0	0	1
3. Impact of Research/Project: Demonstrated the potential value of solution to the research/project problem in advancing knowledge within the area of study	0	0	1
4. Solution Approach: Has applied sound state-of-the-art research/project methods/tools to solve the defined problem and has described the methods/tools effectively	0	0	1
5. Results: Analyzed and interpreted research/project results/data effectively	0	0	1
6. Quality of Written Communication: Communicates research/project results clearly and professionally in written form	0	0	1
7. Quality of Oral Communication: Communicates research/project results clearly and professionally in oral form	0	0	1
8. Thinking: Has demonstrated capability for independent research/project in the area of study and expertise in the area	0	0	1
9. Broader Impact: Demonstrated awareness of broader implications of the concluded research/project. Broader implications may include social, economic, technical, ethical, business, etc. aspects.	0	0	1
10. Publications: Journal, conference, or some other scholarly publications have resulted (or are anticipated) from this research/project	0	0	1
11. OVERALL, My rating of the Thesis indicates that it:	0	0	1

Appendix B. WRS Graduate Assessment Summary for AY 2020

PhD degree

Overview

The sections that follow summarize the learning outcomes achieved by graduates of the WRS degree program in AY 2020 in the areas of scholarship, knowledge, communication and service, ethics and diversity.

Results of final examination

Graduate assessment checklists were provided to advisors of graduates in the WRS degree program in the 2018 academic year. There was only one PhD graduate in the WRS degree program in AY 2020, and one checklist was returned to the program office with outcome-specific and overall assessment of the student's performance at the defense. The student exceeded expectations in all categories (See Appendix A). With respect to *Overall rating of the dissertation* (outcome 11), the student exceeded expectations.

Graduate Assessment of Learning Outcomes

The Water Resources Science Program Assessment Plan describes the following overarching learning outcomes for students in the graduate program:

"...students will gain an advanced understanding of water resources science and hydrologic function. Students will be sufficiently trained through disciplinary coursework and research experience to bring hydrologic expertise to a team, and will have the breadth in water resources and environmental issues to be able to communicate with professionals from the wide range of specialties involved in water resources management and research."

SCHOLARSHIP

Program graduates demonstrated mastery and application of critical thinking that extends knowledge in water resources engineering by designing and conducting their thesis or project research and presenting results of this research at their final examination.

KNOWLEDGE

By successfully completing the coursework required for the degree program, designing, conducting and presenting the results of a research project, and completing their thesis or project paper, program graduates demonstrated in-depth disciplinary knowledge and the capacity to apply that knowledge to a water resource issue. Graduates of the WRS program met the coursework requirements to gain Professional Hydrologist certification through the American Institute of Hydrology (AIH). All but one student enrolled in the WRS degree program maintained a graduate GPA of over 3.0 in the past year, that student has left the program.

COMMUNICATION & SERVICE

Program graduates have all demonstrated the ability to present the results of their research by completion of assignments in the core course WRP 524; or by presenting at the Water Resources Research Symposium held at OSU in May, and by presenting their work at professional meetings.

ETHICS AND DIVERSITY

Graduates of the WRS degree program receive training in ethics through research methods courses, the core course WRP 524, online training in ethics through OSU Office of Research Integrity. Students are also encouraged to participate in activities honoring diversity and multiculturalism such as the annual MLK Birthday Celebration.