Watershed Science Technician Associate of Applied Science (AAS) degree

BACKGROUND

We are pleased to present the Watershed Science Technician AAS curriculum for your review and approval.

The Watershed Science Technician program will prepare graduates to work in multidisciplinary fields that survey and assess watersheds and develop strategies and solutions to maintain and restore healthy water resources. This curriculum prepares students to work in the following jobs: watershed resource conservation professionals; stream restoration or water quality technicians; assistant stream ecologists; assistant forest ecologists; environmental technicians; or natural resource specialists for public agencies, non-governmental organizations, nonprofit conservation and restoration organizations, consulting firms, private restoration companies.

Watershed Science Technician is an emerging occupation without distinct historical employment data. Related occupations such as Forest and Conservation Technicians, Environmental Science and Protection Technicians, Conservation Scientists, Zoologists and Wildlife Biologists and hydrologists are estimated to have 9% to 29% growth nationally and 0.4 to 12.6% growth in Oregon over the next decade. Starting wages in the region for fulltime technicians range from \$24,660 to \$38,480 annually. Work is frequently done on a project basis with high mobility in the workforce. Program graduates can expect career opportunities such as Watershed Restoration Specialist, Water Resources Technician, Watershed Project Assistant, Restoration Team member.

Demand for expertise in watershed-related sciences is likely to increase in coming decades. Water use worldwide increased 600% in the past century and is estimated to double by midcentury. Water is now a homeland-security topic and climate change is expected to affect water quality and availability. According to the Government Accountability Office, by 2013 at least 36 states will experience water shortages. With global climate change, flooding and changes in stream-flow behavior are also on the rise. To mitigate future problems, Watershed Science Technicians will promote understanding and protection of watersheds as our sources of water; by restoring streams that have been impacted by human uses and actions. New laws to protect watersheds, wetlands and stream banks require qualified workers to address watershed conservation issues. Given the prohibitive cost of additional water sources, maintenance and careful restoration of watersheds will be required to preserve and increase water resource availability.

Program outcomes are based on input from 20 industry specialists representing local Watershed Councils, the US Forest Service, US Fish and Wildlife agency, the Oregon Department of Environmental Quality, and numerous private companies engaged in watershed restoration and mitigation work. Local conservation managers consistently highlight the need for field skills across all the disciplines that constitute watershed science work. Prospective employers have stated that trained technicians will have an advantage in obtaining employment and in potential job advancement. In addition, several industry professionals have indicated willingness to serve on the new program's advisory committee.

The program design incorporates 11 existing transfer classes (five are transfer science classes) and 6 career-technical classes in the Water Conservation Technician Program. Many of the new

courses are field-based classes taught in 1-2 credit modules that take advantage of the diverse watershed environments on the Lane main campus. This unique landscape affords a natural learning laboratory for training watershed field technicians. The modular approach provides flexibility for watershed practitioners to enroll for skill upgrades. By anchoring the curriculum in integrated site surveys students will gain an immediate employment benefit. The program will provide an overall progression from survey and inventory collection in the field to best practices in watershed management.

The program will seek articulation agreements with the Oregon Institute of Technology Environmental Sciences Program, and will align with an anticipated Lane Watershed Science Transfer Plan that may articulate with Portland State University, Oregon State University and the University of Oregon.

Learning Outcomes The graduate will:

• Demonstrate use of concepts and principles of ecological processes and their interdisciplinary connections that influence the practice of watershed science, including:

Hydrologic Processes and Watersheds Erosion, Sedimentation, Water Quality Ecology of Aquatic and Wetland Environments Ecology of Terrestrial Environments

- Identify common species, ecosystems and ecological processes relevant to watershed assessments, with an emphasis on the Pacific Northwest.
- Perform field identification, field test procedures and ecological surveys using proper, precise, and safe application of measurement tools and technologies.
- Utilize intermediate algebra skills, computer programs, databases, and basic geographic information systems to collect, organize, interpret and communicate watershed data.
- Apply standard water management approaches and best practices to develop effective conservation and management strategies to meet watershed goals.
- Communicate effectively and accurately with supervisors, colleagues, funding agencies and the public using the spoken and written word and visual representations of information.
- Use appropriate library and information resources to research professional issues and support lifelong learning and job advancement.

Program Development/Budget Information

The Watershed Science program will be housed in the Science Department. Program and course development support has been provided through the Perkins grant; and additional support will be requested through the Unit Plan process for further course development. The Science Division is working closely with the Executive Dean for Transfer programs in securing funding for instruction and operations. The technical field courses will carry additional fees to acquire and maintain field equipment.

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Term 1 - Fall		Credits
WATR 10x	Water Careers Exploration (now 199)	3
WATR 101	Introduction to Water Resources	3
ENVS 181	Terrestrial Environment	4
MTH 095	Intermediate Algebra	5
		Total 15
Term 2 - Winter		
SUST 101	Introduction to Sustainability	3
ENVS 183	Aquatic Environment	4
GIS 180	Digital Earth	4
WR 121	Introduction to Academic Writing	4
Human Relations/		
Social Science	See AAS requirements; will recommend option	ıs 3
	Total	18
Term 3 - Spring		
GS 101	Nature of the Northwest	
GS 102*	General Science: Field Methods	2
BI 103F	General Biology: Wildflowers of Oregon	4
WATR 2xx	Stormwater Management (currently 199SW)	4
WST 2xx*	Soils Field Methods	1
	Total	15
Term 4 – Fall		
BI 103J	General Biology: Forest Ecology	4
WATR 261	Regional Water Policy	4
WST 225*	Riparian Field Methods	2
WST 226*	In-stream Field Methods	2
WR 227	Technical Writing	4
		Total 19
Term 5 – Winter		
GIS 245	Maps and Spatial Information	4
WST 2xx*	Watersheds and Hydrology	4
WST 280*	Cooperative Education Internship	3
HE 255	Global Health and Sustainability	4
WATR 202	Fostering Sustainable Practices	3
		Total 18
Term 6 – Spring		
WST 2xx*	Watershed Best Practices (capstone)	4
GIS 246	Introduction to GIS	4
WST 280*	Cooperative Education Internship	3
Field methods: Select minimum 4 credits from the following options-		
WST 2xx*	Prairies to Woodlands Field Methods	2
WST 2xx*	Invasive Species Field Methods	1
WST 2xx*	Threatened and Endangered Species Field Meth	1 nods 1
WST 2xx*	Wetland Field Methods	2
		Total 15

Total Program Credits.... 100

* proposed new class