

WWU Courses for the River Studies & Leadership Certificate (RSLC)

WWU's RSLC faculty advisors:

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Students pursuing the River Management Society's River Studies & Leadership Certificate can select from the approved WWU courses listed in Table 1.

Table 1: Approved RSLC Courses at WWU*

Core Courses (1 course in EACH area)	
GIS	ENVS 320 Introduction to Geographic Information Science (4 cr)
River Science (select 1)	ESCI 225 Basic Ecology (4 cr)
	ESCI 310 Environmental Systems (4 cr)
	ESCI 325 Fundamentals of Ecology (3 cr)
	ESCI 409 Riparian Conservation (4 cr)
	ESCI 410 Habitat and Ecology of Pacific Salmon and Trout (3 cr)
	ESCI 429 Stream Ecology (5 cr)
River Policy (select 1)	ENVS 426 Water Resources (4 cr)
	UEPP 355 Environmental Law & Policy (4 cr)
	UEPP 451 Natural Resource Policy (3 cr)
	ESCI 496 Integration of Environmental Science and Policy (3 cr)
Water Safety Training	PE 177 Basic Kayak (1 cr) OR approved training
Emphasis Coursework (2 courses in ONE area)	
River Science	ESCI 315 The Art, Science, and Ethics of Fly fishing (3 cr)
	ESCI 316 Advanced Fly fishing: River Stewardship (2 cr)
	ESCI 409 Riparian Conservation (4 cr)
	ESCI 410 Habitat and Ecology of Pacific Salmon and Trout (3 cr)
	ESCI 411 A Field Practicum in Fish Habitat Assessment (2 cr)
	ESCI 429 Stream Ecology (5 cr)
	ESCI 431 Watershed Biogeochemistry (5 cr)
	ESCI 470 Ecological Restoration (5 cr)
	GEOL 472 Surface Water Hydrology (4 cr)
Policy & Management	ENVS 426 Water Resources (4 cr)
	UEPP 451 Natural Resources Policy (3 cr)
	UEPP 463 Native American Planning & Natural Resource Policy (3 cr)
	ESCI/UEPP/ENVS 493 Environmental Impact Assessment (5 cr)
	ESCI 496 Integration of Environmental Science and Policy (3 cr)
River-based Recreation, Education & Tourism	ENVS 483 Environmental Interpretation (4 cr)
	RECR 272 Introduction to Outdoor Recreation (3 cr)
	RECR 279 Introduction to Tourism (3 cr)
	RECR 370 Outdoor Program Development (5 cr)
	RECR 379 Sustainable Tourism Program Planning (5 cr)

*Students are required to meet course pre-requisites

The catalog description of the approved WWU courses for the RSLC are provided below.

CORE COURSES

GIS

ENVS 320 Introduction to Geographic Information Science (4 cr)

An introduction to Geographic Information Science concepts and Geographic Information Systems (GIS) technology. Lectures will focus on the nature of spatial data, spatial data sources, and the input, manipulation, analysis, and display of spatial data. Practical experience in GIS applications through lab assignments.

River Science (select 1)

ESCI 225 Basic Ecology (4 cr)

This class serves as an introduction to ecological concepts, principles, and applications with a focus on conservation.

ESCI 310 Environmental Systems (4 cr)

Interaction of biotic systems with earth's physical systems; principles of ecology and natural systems; ecosystem structure, function and management.

ESCI 325 Fundamentals of Ecology (3 cr)

Investigation of the complex interactions of organisms with each other and with their physical surroundings, explored in the context of populations, communities, ecosystems and landscapes.

ESCI 409 Riparian Conservation (4 cr)

Advanced course in conservation concepts, implementation, and research applied to rivers and adjacent lands. Emphasis on solutions to conservation problems, field study, and effective scientific communication. Study areas will be accessed via day hikes, backpacking, and a river expedition. Taught as part of ESCI Field Camp, a block of four integrated courses.

ESCI 410 Habitat and Ecology of Pacific Salmon and Trout (3 cr)

Examination of the habitat, ecology and management of Pacific salmon and trout, with emphasis on Pacific northwest ecosystems. Topics covered include basic principles of watershed and riparian ecology, habitat requirements and ecology of salmonid fishes, effects of forest management and other land use practices on stream habitat, and strategies for mitigating adverse impacts.

ESCI 429 Stream Ecology (5 cr)

Ecology and analysis of streams with emphasis on physical and chemical properties in relation to biotic communities. Processing of organic matter by stream invertebrates and fish communities. Perturbation by high organic loading or chemical pollutants and recovery processes. Reservoirs as hybrid systems. Field and laboratory exercises in sampling and analysis of stream ecosystems.

River Policy (select 1)

ENVS 426 Water Resources (4 cr)

The role of water in the environment; the nature of water use and resulting problems; processes which underlie comprehensive water resource planning and basin management; data analysis and presentation.

UEPP 355 Environmental Law and Policy (4 cr)

Environmental law and policy provide tools to prevent and address environmental harm. Explore, analyze, and critique policy tools and processes relating to air and water quality, hazardous wastes, and species protection.

UEPP 451 Natural Resource Policy (4 cr)

Explores issues, politics, and conflicts in the area of natural resource policy, including endangered species, water rights and allocation, forest policy, public lands, and/or wetlands.

ESCI 496 Integration of Environmental Science and Policy (3 cr)

This course will investigate the integration of science and policy within EPA and other Federal agencies such as US Forest Service, US Geological Survey, NOAA and NASA. The course will be an introduction to the process of science, a review of Kuhn, Popper and Oreskes, and the interaction between observational and experimental data, theory and simulation. Policy formulation under several federal level programs will be introduced. Detailed examination of several case studies will be presented by the students. During the quarter, local policy makers-shapers will also be invited to discuss their experiences in melding science and policy.

Water Safety Training (select 1)

PE 177 Basic Kayak (1 cr)

Course provides an introduction to the basic skills of Kayak Touring. Including boat handling, rescues, navigation, weather, safety tactics, and tide forecasting and trip planning. Instructional emphasis on the water paddling skills.

OR

Swift water training through an accepted training program.

OR

If there is a large enough cohort needing training, we can arrange a 1-day river safety course through the AS Outdoor Center. Contact advisors for more information.

EMPHASIS COURSEWORK – Select one emphasis and take two courses

1) River Science (select 2)

Must select different courses from those used to fulfill the core.

ESCI 315 The Art, Science, and Ethics of Fly fishing (3 cr)

The goals of this course are to learn how to fly fish and to use fly fishing as a window into environmental studies and, more specifically, into the structure and function of river ecosystems and how people interact with them. Class format includes lectures, discussions,

and laboratory and field exercises to gain insight into stream ecology and to understand relations of science, ethics, and environmental management.

ESCI 316 Advanced Fly fishing: River Stewardship, Reflection, and Native Trout (2 cr)

Students will be immersed in a wilderness setting for one intensive week of hands-on study, following classroom preparation. Classroom preparation includes lectures, organism identification, flyfishing techniques, and fly tying as background for the field experience. Selections from flyfishing literature will be used to discuss the reflective nature and ethics of fly fishing and conservation with a focus on native trout. Students will learn to identify freshwater fishes of the Pacific Northwest and will be collecting and identifying aquatic insects at three long-term monitoring sites that will be surveyed by subsequent classes to assess environmental status.

ESCI 409 Riparian Conservation (4 cr)

Advanced course in conservation concepts, implementation, and research applied to rivers and adjacent lands. Emphasis on solutions to conservation problems, field study, and effective scientific communication. Study areas will be accessed via day hikes, backpacking, and a river expedition. Taught as part of ESCI Field Camp, a block of four integrated courses.

ESCI 410 Habitat and Ecology of Pacific Salmon and Trout (3 cr)

Examination of the habitat, ecology and management of Pacific salmon and trout, with emphasis on Pacific northwest ecosystems. Topics covered include basic principles of watershed and riparian ecology, habitat requirements and ecology of salmonid fishes, effects of forest management and other land use practices on stream habitat, and strategies for mitigating adverse impacts.

ESCI 411 A Field Practicum in Fish Habitat Assessment (2 cr)

A project-oriented course based on laboratory and field investigations of riparian and in-stream habitats and their fish communities. Small groups will undertake investigations of local streams through the use of commonly accepted assessment practices.

ESCI 429 Stream Ecology (5 cr)

Ecology and analysis of streams with emphasis on physical and chemical properties in relation to biotic communities. Processing of organic matter by stream invertebrates and fish communities. Perturbation by high organic loading or chemical pollutants and recovery processes. Reservoirs as hybrid systems. Field and laboratory exercises in sampling and analysis of stream ecosystems.

ESCI 431 Watershed Biogeochemistry (3 cr)

Transfer, cycling, and interaction of carbon, nutrients, and other elements within and between terrestrial and aquatic ecosystems. Physical, chemical and biological influences on transfers. Computer simulation modeling of processes in an ecosystem context.

ESCI 470 Ecological Restoration (5 cr)

Investigates the theory and practice of ecological restoration, including methods for evaluating the success of restoration projects. Incorporates physical and ecological as well as economic and cultural considerations. Students work in groups on actual restoration projects.

GEOL 472 Surface Water Hydrology (4 cr)

Components of the hydrologic cycle, including precipitation, infiltration, evapotranspiration, and runoff, and their effect on a water balance in a watershed.

2) River-based Policy & Management (select 2)

Must select different courses from those used to fulfill the core.

ENVS 426 Water Resources (4 cr)

The role of water in the environment; the nature of water use and resulting problems; processes which underlie comprehensive water resource planning and basin management; data analysis and presentation.

UEPP 451 Natural Resources Policy (4 cr)

Explores issues, politics, and conflicts in the area of natural resource policy, including endangered species, water rights and allocation, forest policy, public lands, and/or wetlands.

UEPP 463 Native American Planning and Natural Resource Policy (3 cr)

Survey of political and jurisdictional considerations, treaty rights, and social and environmental conditions facing tribal communities in their pursuit of self-governance and sustainability. Historic federal Indian policy, court rulings and the consideration of off-reservation treaty rights in regional planning. Approaches to intergovernmental cooperation for sustainable natural resources management.

ESCI/UEPP/ENVS 490 Environmental Impact Assessment (5 cr)

Environmental Impact Assessment requires a range of professional qualifications and involves a wide spectrum of disciplines and methodologies. This interdisciplinary capstone course involves class preparation of an impact assessment of a local project, summarizing physical, biological and social aspects of a study area. Review of pertinent laws and EIS documents.

ESCI 496 Integration of Environmental Science and Policy (3 cr)

This course will investigate the integration of science and policy within EPA and other Federal agencies such as US Forest Service, US Geological Survey, NOAA and NASA. The course will be an introduction to the process of science, a review of Kuhn, Popper and Oreskes, and the interaction between observational and experimental data, theory and simulation. Policy formulation under several federal level programs will be introduced. Detailed examination of several case studies will be presented by the students. During the quarter, local policy makers-shapers will also be invited to discuss their experiences in melding science and policy.

3) River-based Recreation, Education and Tourism (select 2)

ENVS 483 Environmental Interpretation (4 cr)

An overview of the field of environmental interpretation and how it relates to environmental education. Focus is on gaining an understanding of the basic elements of the interpretive process and on becoming familiar with interpretive approaches and methods. Introduces design and technical components.

RECR 272 Introduction to Outdoor Recreation (3 cr)

Introduction to the major professional components of the outdoor recreation field: interpretive services, camping, resource management, programming, private recreation and tourism. Focuses on trends, programs and related professional issues.

RECR 279 Introduction to Tourism (3 cr)

Introduction to the major professional components of tourism: tour development, guiding, visitor services, resort management, and event planning. Also examines history of travel, types of travelers, motives of travel, niche markets, and current trends.

RECR 370 Outdoor Program Development (5 cr)

Methods and techniques in the organization, implementation and evaluation of recreation programs in outdoor settings.

RECR 379 Sustainable Tourism Program Planning (5 cr)

This course focuses on programming sustainable tourism itineraries. Sustainable tourism itineraries minimize negative environmental and social impacts that occur through traditional tourism. Students will learn how to develop itineraries that promote cultural and environmental awareness in travelers and increase positive benefits in destination communities such as environmental conservation, cultural sharing, and local economic benefits. Emphasis will be on non-western cultures.