

# Portland Community College's Student Lead Monitoring in Johnson Creek, Portland, Oregon

Jesse Schwartz, PhD

Southeast Campus

[jesse.schwartz@pcc.edu](mailto:jesse.schwartz@pcc.edu)



**Portland  
Community  
College**

# Current Work

- President, Portland Fish Company - Diagnosis of Ecosystems
  - [www.portlandfishcompany.com](http://www.portlandfishcompany.com)
- President, Columbia Clearwater – Inspiring people to preserve and restore the Columbia River and all of its waters
  - [www.columbiaclearwater.org](http://www.columbiaclearwater.org)
- Instructor – Environmental Studies, Southeast Campus, Portland Community College
  - <http://www.pcc.edu/programs/environmental-studies/>

# PCC and Sustainability



**Portland  
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- Tree Campus - <http://news.pcc.edu/2016/04/tree-campus-usa/>
- Sustainability Office – <http://www.pcc.edu/about/sustainability/>
- As the only community college in the nation to be a founding member of the Sustainable Purchasing Leadership Council.
- By practicing a closed loop system on the PCC Rock Creek Campus, producing cafeteria food in campus gardens and returning food waste to the soil in the form of compost.
- By achieving LEED Platinum and Gold certifications while striving for Silver as the minimum on PCC's newest construction projects

# PCC Southeast Course Offerings

ESR 173 - Fall	ESR 172 - Winter	ESR 171 - Spring
Environmental Science: Geological Perspectives	Environmental Science: Chemical Perspectives	Environmental Science: Biological Perspectives
<p>Develop an understanding of environmental topics that are primarily geological in nature. Includes geology basics, soil resources, hydrogeology, nonrenewable mineral and energy resources, perpetual energy resources, and solid waste. The associated laboratories will illustrate these topics.</p> <p>Prerequisites: WR 115, RD 115 and MTH 20 or equivalent placement test scores. Audit available.</p>	<p>Develops an understanding of environmental topics that are primarily chemical in nature. Includes air pollution, global warming, toxicology, risk assessment, water pollution, and hazardous waste. The associated laboratories will illustrate these topics. Prerequisites: WR 115, RD 115 and MTH 20 or equivalent placement test scores. Audit available.</p>	<p>Develops an understanding of environmental topics that are primarily biological in nature. Includes human population issues, matter and energy resources, ecosystems, environmental ethics, and food and land resources. The associated laboratories will illustrate these topics.</p> <p>Prerequisites: WR 115, RD 115 and MTH 20 or equivalent placement test scores. Audit available.</p>

# Additional PCC Biology Offerings

- **BI 141. Habitats: Life of the Forest. 4 Credits**
- **BI 142. Habitats: Marine Biology. 4 Credits**
- **BI 143. Habitats: Fresh Water Biology. 4 Credits**
- **BI 145. Intro. to Fish and Wildlife Conservation and Management. 4 Credits**
- **BI 160. Ecology/Field Biology: Coast. 2 Credits**
- **BI 161. Ecology/Field Bio: Great Basin. 2 Credits**
- **BI 163. Organic Gardening. 4 Credits**
- **BI 164. Bird ID and Ecology. 4 Credits**
- **BI 200A. Principles of Ecology: Field Biology. 2 Credits**
- **BI 200B. Principles of Ecology: Field Biology. 4 Credits**
- **BI 200C. Principles of Ecology: Field Biology. 6 Credits**
- **BI 202. Botany: An Introduction to the Plant Kingdom. 4 Credits**

# Additional PCC ESR Offerings

- **ESR 140. Introduction to Environmental Sustainability. 4 Credits**
- **ESR 141. Introduction to Individual Sustainability. 4 Credits**
- **ESR 150. Environmental Studies Orientation. 1 Credit**
- **ESR 160. Intro to Environmental Systems. 4 Credits**
- **ESR 201. Applied Environmental Studies: Science/Policy Consideration. 4 Credits**
- **ESR 202. Applied Environmental Studies: Prep for Problem Solving. 4 Credits**
- **ESR 204. Introduction to Environmental Restoration. 4 Credits**
- **ESR 298. Special Topics: Environmental Science. 1-4 Credit**

# ESR 171: Environmental Studies: Biological Perspectives

- **Intended Outcomes for the course**

- A student will be able to collaboratively and independently:
- Express graphically, orally or in writing form, basic elements and functions of ecosystems.
- Identify and express interactions of humans and the environment.
- Utilize field and laboratory methods/technologies to measure and describe ecosystems.
- Demonstrate an understanding of ecosystem functioning and human effects upon ecosystems.

# Assessment Tasks

- Written assessments:
- Essay, short and multiple choice exams.
- Write-ups of field and laboratory experiences.
- Research paper on environmental topic
- Journal: self-assessment and exploration of topics
- Oral presentations with accompanying Visual/graphical representations
- Concept Maps
- Graphs
- Maps



# ESR 171 Course Content

## Concepts and Themes

- Energy flow and matter transformation within biologic systems
- Carbon cycle
- Fundamentals of ecosystems
- Human Impacts on biologic systems

## Process Skills

- Relate scientific concepts to local and regional issues.
- Understand the sources of scientific uncertainty.
- Locate and access information from non-governmental organizations and governmental agencies.
- Think critically.
- **Collaborate with peers -- Work effectively in groups.**
- Present conclusions with scientific rigor.

# 2015 ESR 171 Schedule

Week	Date	Topic	Reading (chapters)
1	3/28	Humans, Ecology, and Sustainability	1 + 2
		Lab 1: Scientific Method	
2	4/4	Ecosystems	3 + 4
		Lab 2: Biodiversity	
3	4/11	Populations and Species Interactions	5+ 6
		Lab 3: DBH + Ecological Footprint Analysis	
4	4/18	Climate & Biodiversity	7
		Lab 4: 🌲 Foster Floodplain	
5	4/25	Water Resources & Water Pollution	11
		Lab 5: 🌲 Upper Johnson Creek	
6	5/2	Exam 1 (Ch 1,2,3,4,5,6,7,11)	
		Lab 6: 🌲 Mt Tabor Park Habitat Surveys	
7	5/9	Food Production and the Environment	10
		Lab 7: 🌲 Zenger Farms	
8	5/16	Environmental Hazards and Human Health	14
		Lab 8: 🌲 Bio-Assay + Dharma Rain	
9	5/23	Sustaining Biodiversity	8 + 9
		Lab 9: 🌲 Bonneville Dam	
10	6/1...	Environmental Economics, Politics, and Worldviews	17

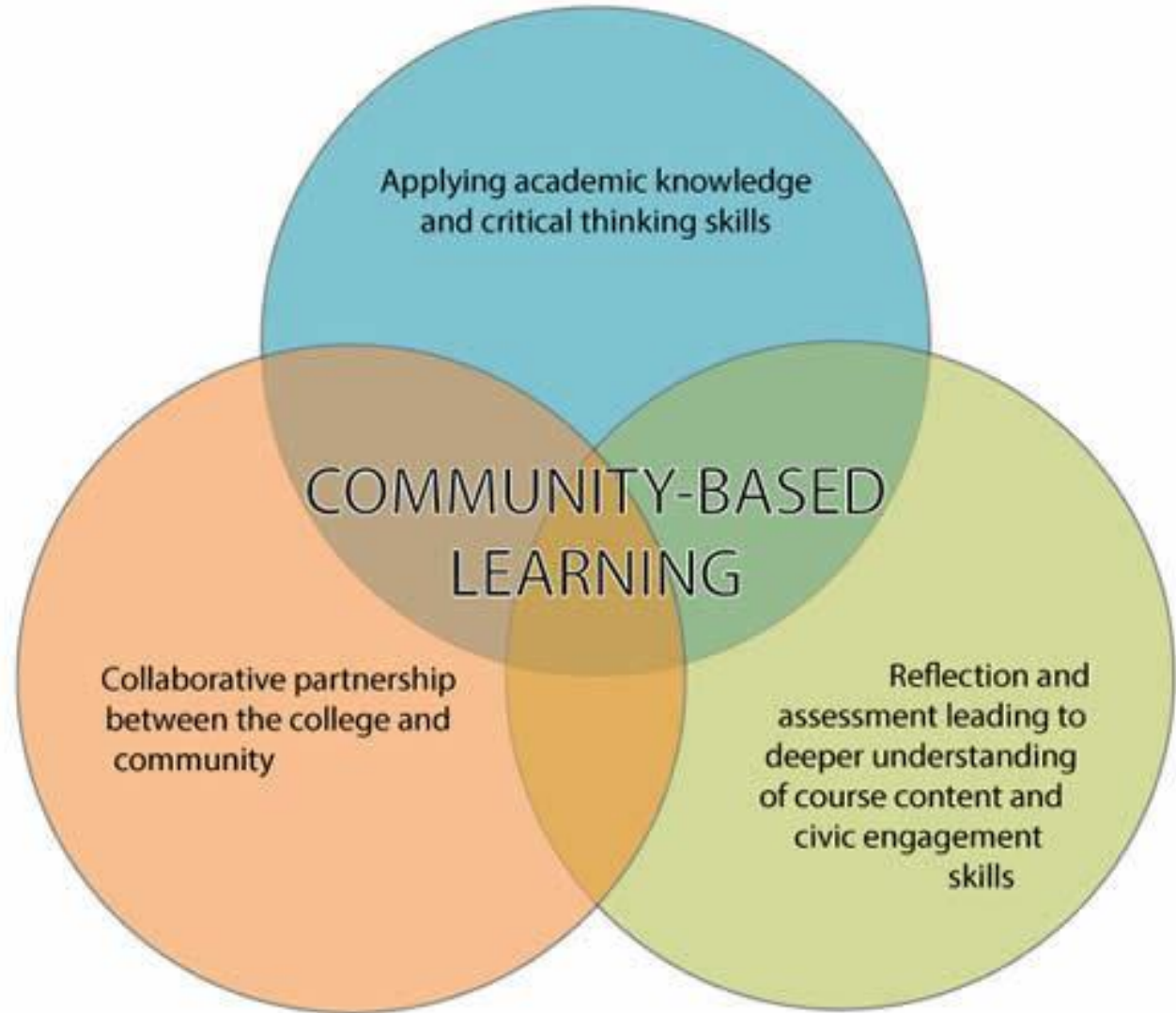
# PCC Community Based Learning

- CBL <http://www.pcc.edu/resources/community-based-learning/>
- Community-Based Learning directly supports that belief through projects that deepen and contextualize course learning outcomes by addressing the needs of our community.
- Community-Based Learning at PCC is an academic program that provides support ***across all disciplines*** through assistance with community-based learning course implementation, professional development, and resources. The program supports the Mission, Vision, and Values of PCC and serves everyone under the PCC umbrella throughout the district.

# Community Based Learning Process

## The Goal

...is to blend service and learning goals and activities in such a way that the two reinforce each other and produce a greater impact than either could produce alone...





# Benefits of Community Partnerships

- Provides short-term volunteers to meet community needs.
- Provides potential long-term volunteers and potential recruits for agency employment.
- Increases awareness of agency services and social issues within the community.
- Community-Based Learning initiatives provide the community with substantial human resources to meet its educational, human, safety, and environmental needs. The talent, energy, and enthusiasm of college students are applied to meet these ever increasing needs.
- Many students commit to a lifetime of volunteering after this experience creating a democracy of participation.
- Community-Based Learning creates a spirit of civic responsibility that replaces the current state of dependence on government programs and altruism by the experts. It results in a renewed sense of community and encourages participative democracy.
- Community agencies gain the opportunity to participate in educational partnerships.

# Community Based Learning and Student Lead Science in the Johnson Creek Watershed

- Foster Floodplain Invasive Species
- Development of Bird Count monitoring stations
- Establishment of Water Quality lab at Southeast Campus
- Development of Course Content to incorporate stream monitoring components

# Next Steps

- Increase enrollment in CBL program to incorporate the Johnson Creek Watershed partners
- Work collaboratively to develop additional course offerings and support for credit and non-credit learning
- Establishment of CBL applications for 2016-2017 academic year: objectives, locations, learning opportunities, and support opportunities
- Collaborative Research Experiences of Undergraduates (REU) grant [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5517](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517)

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