Print Date: 1/24/17

Course Objectives/Course Outline
Spokane Community College

Course Title: Freshwater Ecology
Prefix and Course Number: ENVS219

Learning/Performance Expectations (e.g., outcomes, performance objectives, competencies, etc.)
By the end of this course, a student should:

1. Differentiate among stream, lake, riparian and wetland systems based on their position and role within a watershed, features, and hydrologic processes.
2. Diagram and describe the dominant biotic and abiotic processes that characterize each aquatic system.
3. Identify and describe the distribution and role of regionally significant wetland, riparian, and aquatic plants and algae.
4. Identify and discuss the role that select "keystone" vertebrate and macroinvertebrate species (and species groups) play in aquatic processes.
5. Apply an understanding of the dominant processes within each aquatic system to recognize and/or predict outcomes of historic and proposed management activities.
6. Demonstrate proficiency in the execution of regionally-accepted methods for stream and wetland classification and delineation, and riparian condition assessment.
7. Evaluate the effectiveness of aquatic restoration activities through the collection of standardized monitoring data.

Course Outline

Systems Overview – *aka Build Conceptual Model*
- Watershed – context within which each system operates – location and role in that context
- Riverine system and components - classifications
- Riparian system and components - classifications
- Wetland system and components - classifications
- Lacustrine system and components - classifications

System Processes – *aka Analyze Conceptual Model*
- Watershed – hydrologic cycle, runoff & groundwater
- Riverine system – input and unidirectional movement of nutrients
- Riparian – flooding and hyporheic zone
- Wetland - anaerobic processes & carbon accumulation
- Lacustrine system - seasonal turn over
- Trophic interactions in all

Components & Interactions – *aka Analyze Conceptual Model – put components in their place*
- Substrates - What? Where? Why?
- Riparian & Wetland Plants – What? Where? Why?
- Aquatic Plants - What? Where? Why?
- Algae - What? Where? Why?
- Aquatic Invertebrates - What? Where? Why?
- Vertebrates - What? Where? Why?

Human Impacts
- Watershed uses – how do they affect processes and components?
- Impoundments – how do they affect processes and components?
- Streamside uses & management – how forestry, agriculture & urban affect processes and components
- Channel restrictions – how do they affect processes and components?
- Hydrologic modification - how do they affect processes and components?

Characterization & Assessment Techniques
Restoration Techniques
Monitoring Techniques