



## Environmental Science | 2015-2016 Assessment Report

1. Please give a brief overview of the assessment data you collected this year.

We assessed Env Sci Outcome 1: *Understand fundamental physical and biological processes of the natural environment.*

We used an embedded assessment question on the final exam given in Environmental Systems (ENV SCI 305) Fall 2015, a core ENV SCI course. The course was not taught in Spring 2016 as originally planned. The question asked the students to synthesize all of the fate-and-transport concepts that were presented throughout the semester to describe and contrast the movement of two differing chemical compounds through various environmental compartments (air, soil, sediment, water, and biota). Students needed to describe significant distribution processes, pathways, and factors that influence their relative distribution rates and magnitudes in the various environmental compartments.

### **Performance Rating Scale:**

Outstanding: Students listed and demonstrated understanding of the majority of the pertinent pathways, processes, reservoirs, and rates of movement for carbon and contaminants in environmental systems. Students listed and correctly described important properties and their impacts on contaminant dissipation and distribution. Students correctly listed and described the influence of major physical environmental factors on contaminant dispersal in the atmosphere, hydrosphere and lithosphere. Student's discussion points were pertinent to the questions and very little if any superfluous points were made.

Good: Students listed and demonstrated understanding of main pathways, processes, reservoirs, and rates of movement for carbon and contaminants in environmental systems. Students listed and correctly described some of the contaminant chemical properties and physical, environmental properties that influence the fate and distribution of the contaminants in environmental systems. Limited superfluous information was presented.

Marginal: Students listed several pathways, processes, reservoirs, and rates of movement for carbon and contaminants in environmental systems. Some of the major elements were missing or students did not demonstrate understanding of the connection between elements of the environmental systems. Students listed and described several chemical and physical environmental factors that influence contaminant fate and distribution. Several key factors missing or incorrect.

Unacceptable: Students did not list or demonstrate understanding of key elements to biogeochemical cycle or contaminant distribution pathways and processes. Major contaminant factors and important physical environmental factors and processes not listed or described. Students' response contained incorrect information and/or substantial discussion not pertinent to stated questions.

Performance Rating	Number of Students	Percent of Class	Overall Average
Outstanding = 1	4	40	1.8 Good to Outstanding
Good = 2	4	40	
Marginal = 3	2	20	
Unacceptable = 4	0	0	

**Summary:**

Based on the assessment, eight out of ten students satisfactorily achieved (outstanding or good performance ratings) the stated learning outcome. Only one of the two student responses that rated in the “marginal” category was clearly at that level. The other student response tended toward the “good” category.

This assessment question focused more on the “fundamental physical processes of the natural environment” but also did include biological processes. Understanding of fundamental biological processes is taught and assessed more thoroughly in other courses in the program.

2. How will you use what you’ve learned from the data that was collected?

Overall the assessment showed that the vast majority of the students understand the fundamental physical and biological processes of the natural environment. There is, however, capacity for students to demonstrate a more complete or encompassing understanding of important processes and their linkages. Faculty will continue to encourage students to describe and contrast fundamental processes important to chemical fate in the environment in both lecture discussion and in laboratory exercises. Faculty will emphasize the importance of building on and linking the various physical and biological process that are studied progressively throughout the semester.