

## **1<sup>st</sup> Draft Feedback Submitted to the Environmental Science PAC**

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**Karen Tombs-Harling, Administrator and Faculty, Harrisburg Area Community College-HACC, 11/15/2011**

### **Environmental Science**

This articulation is focusing on Environmental Science not Studies. It is a heavy science and math based curriculum that fits better with environmental science programs versus the softer side of environmental studies. Will there be a follow-up articulation agreement for Environmental Studies?

Also, on page 2 of the agreement, only two tracks are being focused upon. What about a third....Study Tract III: Environmental Assessment Related Programs?

Successful completion of an associate's degree that includes all of the required major-specific content area competencies from ONE of the TWO study-tracts identified in this Agreement:

1. Study Tract I: Biology-Related Programs
2. Study Tract II: Geoscience-Related Programs

As far as the chemistry, I understood the agreement to require a minimum of 8 credits of chemistry with a max credit of 16. So, two inorganic Chem courses could qualify a student for the 8 credits. I do not read the articulation agreement as requiring both CHEM 101, 102 and Organic Chem courses...but maybe I am misinterpreting the language.

I suggest that careful attention be given to the math requirements and transfer institutions.

As far as the Geology component. This articulation agreement is missing the Environmental Geology course that is often required as part of an environmental science degree as opposed to historical geology.

As far as the Geography component. I found during my research of transfer institutions that a geography course is not a major requirement in many transfer curriculums for environmental. It is heavily required by Shippensburg's Geoenvironmental curriculum. But many other schools do not require this curriculum component.

After a quick review of the articulation agreement, I am surprised that an Intro to Environmental Science lab course and an Environmental Law course are not included. These are key courses to a solid foundation for a student to be successful in a career in environmental science.

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**Christine Bittinger, Professor of Environmental Science, Harrisburg Area Community College-HACC, 11/17/2011**

### **Environmental Science Comments**

First, the attached articulation is focusing on Environmental Science not Studies. It is a heavy science and math based curriculum that fits better with environmental science programs versus the softer side of environmental studies. Will there be a follow-up articulation agreement for Environmental Studies?

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I suggest that careful attention be given to the math requirements and transfer institutions.

As far as the Geology component. This articulation agreement is missing the Environmental Geology course that is often required as part of an environmental science degree as opposed to historical geology.

As far as the Geography component. I found during my research of transfer institutions that a geography course is not a major requirement in many transfer curriculums for environmental. It is heavily required by Shippensburg's Geoenvironmental curriculum. But many other schools do not require this curriculum component. Hence, consider removing this requirement

After a quick review of the articulation agreement, I am surprised that an Intro to Environmental Science lab course and an Environmental Law course are not included. These are key courses to a solid foundation for a student to be successful in a career in environmental science.

In 2007, I completed a study of transfer programs at other colleges to better understand what our students should take in order to transfer to these schools. I can provide the data that I collected. Over 96 environmental degrees from 36 colleges were reviewed to ascertain the core curriculum requirements for transferring students.

The courses that ranked at being required 20% or more often at transfer institutions are as follows:

ENGL 101

ENGL102

Environmental Seminar

Introduction to Environmental Science with lab

Environmental Law/Policy

Aquatic Resource Management or Watershed Management

Environmental Internship

Meteorology (I do not suggest however that this be included as a required course, maybe an elective)

Biol 101

Biol 102

Ecology 4 credits

Ecology 3 credits

Botany

Genetics

Microbiology

Invertebrate Zoology (was at about 19%)

BioStatistics

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Environmental Science PAC  
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Chem 101  
Chem 102  
OR - Organic Chem I and / or II  
Environmental Chemistry  
Environmental Philosophy and Ethics  
Physical Geology  
Environmental Geology  
GIS  
Physics I and II  
Calc I and/or II  
Statistics  
Environmental Economics preferred over Micro and Macro Economics

I am not suggesting that all of the above courses be required in an Environmental Science curriculum. I provided the above information to help you be aware of the variety of courses required in the core curriculums for environmental sciences at 4 year colleges. It is varied which makes it challenging to establish a statewide articulation agreement...but with some research, data collection and fine tuning, it can be done.

I hope that this helps. Please email me to obtain the attached file in support of the efforts to setup a general articulation agreement for environmental science

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**Kathi Knight, Faculty, Bucks County Community College, 11/17/2011**

Environmental Science Biology-Related Program

I don't feel that Organic Chemistry I and II should be required. Perhaps Organic Chemistry I could be included as an environmental science elective.

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**Henry Lawrence, Faculty, Edinboro University of Pennsylvania, 11/18/2011**

Geography

I think there is an error in "Appendix B, the Program-to-Program Articulation Model for Environmental Science: Study-Tract II: Geoscience-Related Programs." The Transfer Criteria listed for Geology and Geography both refer to Biology competencies.

Shouldn't the Geology Transfer Criteria be: "Successful completion of courses addressing the required competencies specified in this Agreement for Geology: Essentials of Physical Geology and Historical Geology," rather than the current wording of "competencies specified in Principles of Biology."?

And shouldn't the Geography Transfer Criteria be: "Successful completion of courses addressing the required competencies specified in this Agreement for Geography," rather than the current wording of "at least two, but not more than three, courses addressing the required competencies specified in this Agreement for Botany, Genetics, Microbiology, Ecology, and Research Methods."?

It looks like someone did a quick cut-and-paste from the Biology section of the Agreement into the Geoscience section without reading the wording.

**Barbara Ford, Environmental Science, 11/22/2011**

- Overview bullet #1 says "at least 30 credits of foundation courses from the Transfer Credit Framework." The Framework was designed to have UP TO (not at least) 30 credits in the categories transfer and be applied toward the program.
  - As the draft is written, the agreement appears to require the complete Framework. That is, it requires that at least two social science (Category 5) courses and at least two courses in the general humanities area (Category 6) will be required in each applicable associate degree.
  - The Appendix B Transfer Criteria for Geography seems to be the description for science competencies, not Geography.
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**Robert Smith, Environmental Science, 11/23/2011**

These are minor, but our faculty pointed out that in the geosciences tract, it seems that many of the competencies listed under geography could also be met in other disciplines, such as meteorology. Competency area #4 could also be met by a geomorphology course in a geology or earth sciences department.

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**Ginny Mihalik, Environmental Science, 11/25/2011**

Am I correct in my interpretation that to be compliant, every associate degree must include the appropriate distribution of designated "framework courses" within their degree requirements (re: "Successful completion of at least 30 credits of foundation courses from the Transfer Credit Framework.")?

Page 7 - Note credit discrepancy: #1 Geology - 6 - 8 credits is stated at top of page; Geology - 6 - 9 is stated below.

Many thanks to the members of this PAC for your hard work. Well done!