Curriculum for BS in Environmental Science at Union College

(Revised 6/21/2014)

A. Required Core Courses (7-9 courses)

1. ENS 100 *Introduction to Environmental Studies* (1)
2. BIO 110 *Heredity, Evolution and Ecology* (1)
3. BIO 315 *Biology of Plants*, or BIO 320 *Ecology*, or BIO322 *Conservation Biology*, or BIO 324 *Plant Ecology*, or BIO 350T *Terrestrial Ecology* (1)
4. CHM 101 *Introductory Chemistry I* and CHM 102 *Introductory Chemistry II*, or CHM 110 *Accelerated Introductory Chemistry* (1-2)
5. GEO 110 *Physical Geology*, or GEO 112 *Environmental Geology*, or GEO 117 *Natural Disasters*, or GEO 120 *Earth and Life through Time* (1)
6. ENS 204 *GIS* (1)
7. MTH 113 *AP Calculus*, or MTH 110 *Differential Calculus* and MTH 112 *Integral Calculus* or PSY 200 *Statistics* (1-2)

B. Environmental Policy Courses (2 courses from among)

AAH 265 *Environmentalism and Globalization in Contemporary Art*, ANT 241 *Environmental Anthropology*, ANT 248 *Sustainable Culture*, CLS 153 *Ancient Environment*, ECO 228 *Environmental Economics*, ENS 201 *Food Ecology*, ENS 222 (MLT 209) *The New Wall of China*, HST 138 Big History, HST 225 *American Environmental History*, PHL 272 *Sustainability Theory and Practice*, PHL 273 *Environmental Ethics*, PHL 339 *Environmental Ontology: Where the Wild Things Are*, PSC 260 *Policy Making & American Society*, PSC 272 *The Environment, Energy and U.S. Politics*, REE 300T *History and Environment of Siberia*, SOC 260 *Demography: Population and Society*, SOC 270 *Social Movements, the Environment, and Society*, SOC 271 *Sociology of Disaster*, SOC 358T *Marine Policy and Maritime Environment*, SOC 359 *Environmental Policy and Resource Management*, SOC 450 *Environmental Policy Seminar*, TAB 358T *Sustainability Down Under*

C. Areas of Concentration (6 upper level science courses; no more than 4 courses from one department except no limit for Environmental Engineering and Technology track; no double counting from Section A for any/all areas of concentration).
The following are suggested areas of concentration. Alterations should be approved by the ESPE Director.

Ecology	Environmental Geosciences	Energy and Environmental Physics	Environmental Engineering & Technology
BIO 250 *Vertebrate Natural History*	BIO 314 *Ornithology*	**1.** PHY 110 *Physics for Life Sciences I*	**1.** PHY 120 *Matter in Motion*
BIO 257T *Tropical Biology*	BIO 315 *Biology of Plants*	and PHY 111 *Physics for Life Sciences II*	**2.** choose from the following:
BIO 314 *Ornithology*	BIO 320 *Ecology*	or	
BIO 315 *Biology of Plants*	*BIO 324 Plant Ecology*	PHY 120 *Matter in Motion and* PHY121 *Principles of Electromagnetics*	ENS 200 *Energy*
BIO 320 *Ecology*	BIO 350T *Terrestrial Ecology*	or	ENS 207 *Hydrology*
BIO 322 *Conservation Biology*	BIO 352T Marine Ecology	IMP 111 *Integrated Math Physics*, 112 *Integrated Math Physics*, and 113 *Integrated Math Physics*	ENS 208 *Waste Management and Recycling*
BIO 324 Plant Ecology	CHM 231 *Organic Chemistry I*	**2.** choose 4 from the following:	ENS 209 *Renewable Energy Systems*
BIO 325 *Animal Behavior*	CHM 240 *Analytical Chemistry*	ENS 200 *Energy*	ENS 222 (MLT 209) *The New Wall of China*
BIO 350 *Evolutionary Biology*	CHM 245 *Environmental Chemistry*	ENS 209 *Renewable Energy Systems*	ENS 247 *Sustainable Infrastructure*
BIO 350T *Terrestrial Ecology*	CHM 340 *Chemical Instrumentation*	MER 471 *Solar Energy Analysis and Design*	ENS 250 *Water Resources and the Environment*
BIO 352T *Marine Ecology*	GEO 201 *Sedimentology…*	PHY 122 *Relativity, Quantum, and Their Application*	ENS 252 *Environmental Geotechniques*
ENS 201 *Food for a Planet*	GEO 202 *Geomorphology*	PHY 123 *Heat, Light and Astronomy*	ENS 253 *Environmentally Friendly Buildings*
GEO 202 *Geomorphology*	GEO 203 *Lakes and Environmental Change*	PHY 220 *Intermediate Modern Physics*	ENS 277 *The Water Paradox*
GEO 203 *Lakes and Environmental Change*	GEO 205 *Active Tectonics*	PHY 300 *Methods of Modern Experimental Physics*	ENS 299 *Environmental Forensics*
GEO 207 *Stable Isotopes in Env Sci*	GEO 206 *Volcanology*	PHY 310 *Advanced Topics in Physics: Environmental Physics*	ESC 370 *Engineering Economics*
GEO 208 *Paleontology, Paleobiology, and Paleoecology*	GEO 207 *Stable Isotopes in Env Sci*		MER 231 *Thermodynamics*
GEO 209 *Paleoclimatology*	GEO 208 *Paleontology, Paleobiology, and Paleoecology*		TAB 333T *New Zealand Miniterm*
GEO 300 *Glacial Geology*	GEO 209 *Paleoclimatology*		
GEO 305 *Biogeochemistry*	GEO 300 *Glacial Geology*		
GEO 355T *Living on the Edge*	GEO 302 *Geochemical Systems*		
	GEO 305 *Biogeochemistry*		
	Any *Geology Miniterm*		

D. ESPE Senior Seminar (1) - ENS 460

E. Thesis (1-2) - ENS 498 and 499, or one term senior research project ENS 497, or SOC 450 with senior writing assignment

Total courses = 17-20