ESG 301 SUSTAINABILITY OF THE LONG ISLAND PINE BARRENS (ELECTIVE)

Credit: 3

COURSE CATALOG DESCRIPTION:
The ecologically diverse Long Island Pine Barrens region provides a habitat for a large number of rare and endangered species and contains the local aquifer, but faces challenges associated with protection of a natural ecosystem that lies in close proximity to an economically vibrant urban area that exerts intense development pressure. In this course we consider the interaction of the ecological, developmental and economic factors that impact the Pine Barrens and the effectiveness of decision support systems and technological solutions in promoting sustainability.

PRE- OR COREQUISITE(S):
ESG 100 or CHE 131 or ESG 198 or GEO 101 or GEO 102; U3 or U4 status

TEXT(S) OR OTHER REQUIRED MATERIAL:

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<tr>
<th>COURSE LEARNING OUTCOMES</th>
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<th>ASSESSMENT TOOLS</th>
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<td>Understand basic concepts of soil and groundwater</td>
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<td>quizzes</td>
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<td>Understand the role of evolving land use patterns on environmental impact</td>
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<td>Learn how remediation technologies play a role in limiting the impact of pollutants</td>
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<td>Quiz, final presentation</td>
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COURSE TOPICS:

Week 1. Introduction to Pine Barrens on Long Island and elsewhere
Week 2. The natural system – geology and soil
Week 3. The natural system – hydrology and climate
Week 4. The natural system – glacial retreat to pre-Columbian
Week 5. Effects of fire – natural and human
Week 6. Effects of forestry and farming
Week 7. Development – land use history and suburbanization
Week 8. Establishing protection of the central Pine Barrens
Week 9. Protection by governmental organizations (GOs) and non-governmental organizations (NGOs)
Week 10. Transfer of development rights and economic forces
Week 11. Nature of industrial and non-industrial pollutants
Week 12. Emergence of “green” manufacturing and pollution prevention technologies
Week 13. Computer based modeling, monitoring and decision support; Use of soil/groundwater remediation technologies
Week 14. Evaluating sustainability: wrap up
CLASS/ LABORATORY SCHEDULE

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CURRICULUM

This course contributes 3 credit hours toward meeting the required 48 hours of engineering topics.

STUDENT OUTCOMES (SCALE 1-3):

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3 – Strongly supported 2 – Supported 1-Minimally supported

LEAD COORDINATOR(S) WHO PREPARED THIS DESCRIPTION AND DATE OF PREPARATION:

Gary Halada, 7/13/2010