

Environmental Learning in US Mining Engineering Schools

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Univ. of Utah - premise of “Universities should lead”

Beginning in 1992 – Technical electives
were offered:

- Reclamation of disturbed areas
- Water pollution from mining
- Aquatic chemistry
- Mine reclamation
- Mine permitting

In 2000 – *Mine Permitting and
Reclamation* became required

Curious to see
what other
programs
teach:
Was I
subjecting my
students to
unreasonable
learning
opportunities?



Looking at other programs



What, how and where?

- What environmental learning is provided to mining engineering students in the US at 14 schools?
 1. How much learning is required? Is the learning recommended or required?
 2. Is academic credit provided as part of the mining curricula or a related department?
 3. Are environmental concepts included in the senior mine design project?
 4. At what level of education it is introduced?
 5. What environmental topics are involved?

What environmental learning is provided to mining engineering students in the US?



- 14 Surveyed
- 12 Responses
- 9 Complete responses

How much learning is required? Is the learning recommended or required?



- All 12 schools require some environmental learning in order to receive a degree
- 3 credit hours – 8 schools require this
- 2 credits - one
- 1 (or less) – one school

At what level of education is environmental learning introduced?



- Most schools steer students toward environmental learning at Junior or Senior level.
- Some schools say they prefer to require some basic mining courses first.

Is academic credit provided as part of the mining curricula or a related department?



- Two schools rely on outside departments to teach the environmental aspects of mining.

Are environmental concepts included in the senior mine design project?



- For six (6) schools it is a requirement to integrate environmental aspects into the senior mine plan design.
- Two schools try to work on the senior project in the environmental class.
- Another school depends on the mine project they are developing.

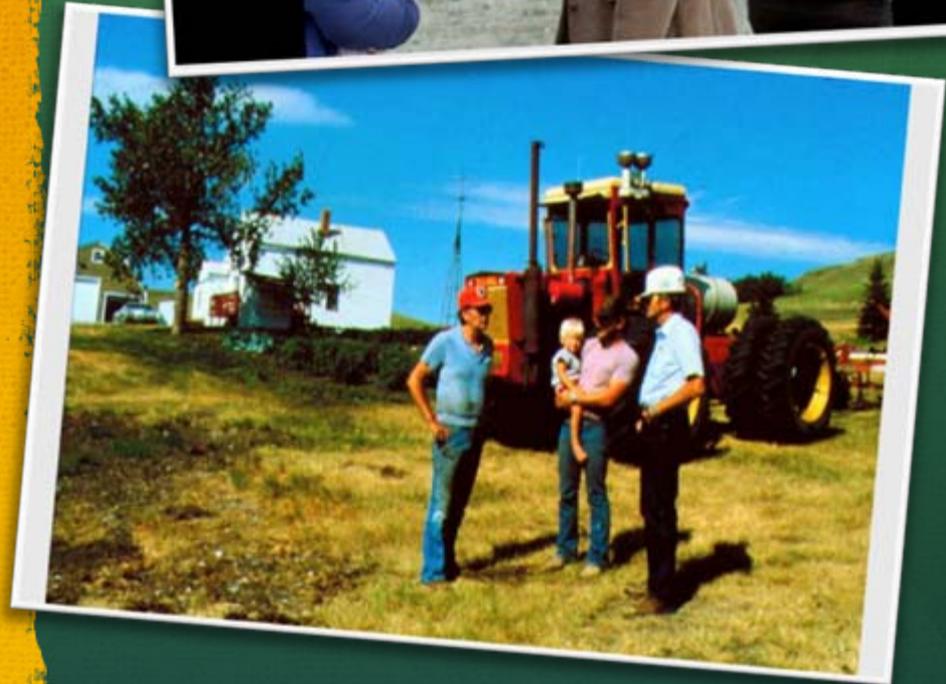
What environmental topics are taught?

Defined 8 components (total of 50 subtopics):

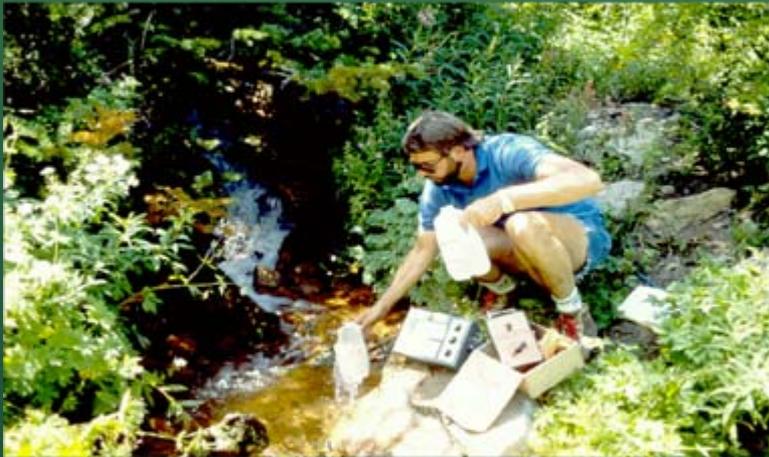
- Social Issues
- Basic environmental science
- Mining laws
- Environmental laws
- Environmental Management Systems
- Mine Reclamation techniques
- Mock mine permitting
- Field trip

Social Issues (12) (7-9 scores) such as:

- Sustainability
- Social License to Operate
- Public relations basics
- Mining Engineers as Ambassadors
- Environmental history & disasters



Basic Environmental Science (7) (score 9) & Environmental Management Systems (6) (8-9 scores)



Environmental and Mining Laws (19) (7-9 scores)

Disasters



And the laws that
followed



Mine reclamation techniques (6) (7-9 scores)



7 schools perform mock mine permitting





And, field trips

6 schools take students on an environmental field trip

Final thought: teach problem solving skills

