

Outcome 7: Understanding of the effect of engineering solutions in a global, environmental, economic, and societal context
Performance Criteria Scoring Rubrics

Course: _____

Semester taught: _____

Type of Student Work Used for Assessment
(e.g., Homework #4, Exam #2 problem 3, final project): _____

Number of students in course: _____

Number of students sampled: _____

Scale Element \ Rating	0	Needs Improvement	1	2	Meets Expectations	3	4	Exceeds Expectations	5	N/A
Global nature of industry and the marketplace		Discusses how society has become more global; has some knowledge of worldwide presence of chemical engineering and related industries			Applies knowledge of cultures to predict some potential effects of engineering solutions in a simple analysis; includes some consideration of global effects in class projects/case studies			Actively seeks knowledge of world events and how chemical engineering will affect or be affected by them; evaluates these in terms of costs & benefits		
Environmental context of chemical engineering		Discusses how engineering and science have affected the environment in a basic way—not an analysis, but a recall of events (e.g., Exxon Valdez); has some knowledge of the effect and interactions of chemical/ biochemicals on and with the environment			Applies knowledge of chemistry and chemical engineering to predict some potential effects of engineering solutions on the environment in a simple analysis; includes some consideration of environmental effects in class projects/case studies			Evaluates and analyzes the role of chemical engineering and technology on the environment; in particular, takes a scientific rather than a “populist” approach using science-based reasoning to reach conclusion and make decisions & recommendations		

Economic context of chemical engineering		Discusses how engineering and science have constrained by economics—not an analysis, but a statement of fact			Applies basic economic analysis to understanding the outcome of a problem solution, (e.g., some materials should not be recycled because the cost of the recycling is greater than the value of the product recovered)			Evaluates and analyzes the economics of an engineering problem solution; uses the analysis to reach conclusion and make decisions & recommendations		
Differences in cultural norms and their effect on professional environments		Describes differences in cultural norms among societies mainly in terms of social and professional interactions; states some differences in needs that result from diversity in societies			Examines affects of societal differences on engineering solutions; differentiates own perspective from that of other cultures			Evaluates conflicting/competing social values in order to make informed decisions about an engineering solution		