

**WORKSHEET FOR IDENTIFYING OR DEVELOPING COURSE OBJECTIVES, STRATEGIES, AND OUTCOMES
UNIVERSITY OF WISCONSIN-MADISON COLLEGE OF ENGINEERING**

COURSE # AND NAME: _____ INSTRUCTOR: _____

OBJECTIVES This <u>course</u> will develop students' knowledge of ...	STRATEGIES The <u>instructor</u> will achieve each of these objectives by (having students) . . .	OUTCOMES Upon successfully completing this course, <u>students</u> will be able to . . .
<p><i>Tips on objectives:</i></p> <ul style="list-style-type: none"> • <i>Course learning objectives should describe student performance in specific measurable terms. Course objectives should align with the broad educational objectives of the program..</i> • <i>Objectives should identify the main topics to be covered by the course. In core curriculum courses some, but not necessarily all, of these objectives are likely to align with ABET's outcomes.</i> 	<p><i>Tips on strategies:</i></p> <ul style="list-style-type: none"> • <i>Strategies are the things that you do to help students learn the subject.</i> • <i>A common strategy is to have students practice the skills listed as course outcomes (see next column). Strategies typically include specific examples of the types of in-class activities, homework, and projects that will be required.</i> • <i>Each objective will probably require at least 2-3 strategies, but each strategy might help students achieve more than one objective.</i> 	<p><i>Tips on outcomes:</i></p> <ul style="list-style-type: none"> • <i>Course outcomes are broad statements describing the specific knowledge and skills students are expected to acquire as a result of the course.</i> • <i>These statements should be "measurable" with specific performance criteria identified that indicates how students could demonstrate to the instructor that they have mastered the course level or unit level objective in the course.</i> • <i>There might be as few as 3-5 outcomes per objective, or there might be as many as 3-5 outcomes for each week in the semester.</i> • <i>These are the things that will need to be assessed for ABET purposes, so fewer, broader outcomes will probably be more manageable.</i>

<ul style="list-style-type: none"> • <i>Aim for 3-5 objectives per course.</i> • <i>All objectives should be assessed with assessment strategies that provide a reasonable way to measure student attainment of the stated learning objectives. A course grade should reflect a student's progress toward all of the objectives</i> 		
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SAMPLE VERBS FOR DESCRIBING STUDENT OUTCOMES:

Bloom's Taxonomy of Cognitive Skills with Action Verb List

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Count	Associate	Add	Analyze	Categorize	Appraise
Define	Compute	Apply	Arrange	Combine	Assess
Describe	Convert	Calculate	Breakdown	Compile	Compare
Draw	Defend	Change	Combine	Compose	Conclude
Identify	Discuss	Classify	Design	Create	Contrast
Labels	Distinguish	Complete	Detect	Drive	Criticize
List	Estimate	Compute	Develop	Design	Critique
Match	Explain	Demonstrate	Diagram	Devise	Determine

Name	Extend	Discover	Differentiate	Explain	Grade
Outlines	Extrapolate	Divide	Discriminate	Generate	Interpret
Point	Generalize	Examine	Illustrate	Group	Judge
Quote	Give examples	Graph	Infer	Integrate	Justify
Read	Infer	Interpolate	Outline	Modify	Measure
Recall	Paraphrase	Manipulate	Point out	Order	Rank
Recite	Predict	Modify	Relate	Organize	Rate
Recognize	Rewrite	Operate	Select	Plan	Support
Record	Summarize	Prepare	Separate	Prescribe	Test
Repeat		Produce	Subdivide	Propose	
Reproduces		Show	Utilize	Rearrange	
Selects		Solve		Reconstruct	
State		Subtract		Related	
Write		Translate		Reorganize	
		Use		Revise	
				Rewrite	
				Summarize	
				Transform	
				Specify	

Source/Reference : These steps were derived from information collected at various conferences by Dr. Cia Verschelden; the original source is unknown. This information was originally posted on the Office of Assessment web site (www.k-state.edu/assessment) in the summer of 2003.

**SAMPLE OBJECTIVES, STRATEGIES, AND OUTCOMES
FOR CEE 698, LECTURE 6: ENGINEERING ETHICS**

OBJECTIVES This <u>course</u> will develop students' knowledge of . . .	STRATEGIES The <u>instructor</u> will achieve each of these objectives by (having students) . . .	OUTCOMES Upon successfully completing this course, <u>students</u> will be able to . . .
. . . the nature of engineering ethics (legal, professional, historical, and personal definitions of "engineering ethics").	<ul style="list-style-type: none"> • . . . locate and read copies of at least one statute dealing with engineering ethics (liability law, e.g.) and at least one professional engineering society's code of ethics/conduct. • . . . explore the development of legal and professional definitions of ethics. • . . . analyze research explaining why a personal code of ethics is the most frequently used code. • . . . read at least one example of a personal code and will write their own personal code of ethics. • . . . apply sample codes and laws to a variety of case studies. 	<ul style="list-style-type: none"> • locate, describe, and apply the content of at least one example of a law (state, national, or international) dealing with engineering ethics. • locate, describe, and apply the content of the code of ethics/conduct of at least one professional society. • prepare, describe, and defend their own personal definition of what makes for an ethical engineer.
. . . the value of engineering ethics (varied contemporary and historical legal, professional, and personal reasons why an engineer should be ethical).	<ul style="list-style-type: none"> • . . . review the history and development of engineering licensing laws, liability laws, and codes of ethics. • . . . read about, discuss, and debate the pros and cons of: being [un]ethical, having a code of ethics, and being responsible for "the public safety." 	<ul style="list-style-type: none"> • describe and explain historical, legal, professional, and personal reasons why legal and professional definitions of ethics exist. • describe the benefits that are expected to arise from acting ethically. • describe the specific consequences of acting unethically (according to any of the definitions provided above).

<p>... the resolution of ethical dilemmas (using common ethical dilemmas, identify possible actions to be taken in response, and probable consequences of those actions).</p>	<ul style="list-style-type: none"> • ... practice identifying ethical dilemmas in newspapers, magazines, journals, etc. • ... read and discuss case studies describing how others have responded to ethical dilemmas and what consequences ensued. • ... search out, locate, and employ a variety of resources for dealing with ethical dilemmas, including regulations, hotlines, advisors, philosophical rules and models, etc. • ... brainstorm and discuss possible responses to a wide variety of ethical dilemmas. • ... apply professional, legal, philosophical, and personal codes to case studies to identify options and limits on their reactions. 	<ul style="list-style-type: none"> • identify the ethical dilemmas implicit in a newspaper article or similarly general document. • name at least two possible actions that could be taken in response to a given ethical dilemma. • describe and evaluate the probable consequences of these actions.
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