Assessment Plan for Outcome A - Template

Course:

Instructor:

Outcome: A – An ability to apply knowledge of mathematics, science, and engineering

Course description:

Student work assessed:

Relevance:

Where assigned:

When assigned:

Assessment completed by date:

Performance indicators used for assessment:

Rubric:

Outcome A				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
Problem formulation	Cannot create a mathematical model to solve the engineering problem	Creates a mathematical model, but it has serious errors or is missing major components or is inappropriately constructed	Mathematical model is basically correct and reasonably complete but some minor details are missing or inappropriately included	Mathematical model was correctly created and shows a complete understanding of the engineering problem
Solution sequence	No apparent sequence to solving the problem or significant steps missing	Several steps in the solution technique are present but it is incomplete or the order is incorrect	Most solution steps are present and the solution sequence is generally correct	All solution steps are present and the solution sequence is readily apparent and correct
Evaluation	Evaluation not attempted or shows no understanding of necessary operations.	Shows some understanding of necessary operations but makes significant errors – many operations not shown	Shows understanding of necessary operations and is correct except for small computational errors – all major operations shown	Understands the necessary operations and executes all computations correctly – all major operations shown
Approximate nature	Shows no understanding of the approximate nature of the problem	Misses major limitations of the accuracy of the mathematical model	Shows understanding of most major deficiencies of the mathematical model	Shows understanding of major deficiencies of the mathematical model and how they relate to the engineering problem

Assessment Plan for Outcome B - Template

Course:

Instructor:

Outcome: B – An ability to design and conduct experiments, as well as to analyze and interpret data

Course description:

Student work assessed:

Relevance:

Where assigned:

When assigned:

Assessment completed by date:

Performance indicators used for assessment:

Rubric:

Outcome B				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
Design experiment	Cannot design a meaningful experiment	Designs an experiment, but it has serious errors or is missing major components or is inappropriately constructed	Designs an experiment that is basically correct and reasonably complete but some minor details are missing or inappropriately included	Experiment was correctly designed and shows a good understanding of the engineering problem
Conduct experiment	No apparent understanding of the selection and use of the measurement equipment and procedures	Some understanding of the selection and use of the measurement equipment and procedures but not sufficient to conduct the experiment	Good understanding of the selection and use of the measurement equipment and procedures but minor errors when conducting the experiment	Complete understanding of the selection and use of the measurement equipment and procedures resulting in correct and usable results
Analyze data	Analysis not attempted or shows no understanding of necessary operations and/or analysis tools	Shows some understanding of necessary operations and/or analysis tools but makes significant omissions or errors	Shows understanding of necessary operations and/or analysis tools and is correct except for minor computational errors	Understands the necessary operations and/or analysis tools and executes and documents all computations correctly
Interpret data	Shows no understanding of the relevance of the results	Misses major points of significance of the results	Shows understanding of most major points of the results	Shows understanding of all major points of the results

Assessment Plan for Outcome C - Template

Course:

Instructor:

Outcome: C – An ability to design a system, component, or process that meets desired needs within the realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

Course description:

Student work assessed:

Relevance:

Where assigned:

When assigned:

Assessment completed by date:

Performance indicators used for assessment:

Rubric:

Outcome C				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
Design suitability	The design is unsuitable for the intended purpose. The design is conceptually wrong.	The design may serve its intended purpose but will function poorly at best.	The design is reasonably well suited for its intended purpose and should function relatively well.	The design is highly suited for its intended purpose and will function very well.
Design analysis	No analysis was done, it was grossly incorrect, or inadequate.	Some analysis was done but large parts of the analysis were missing or performed incorrectly.	Sufficient analysis was performed to verify the design would perform its intended function.	Complete analysis was performed showing the design would perform its intended function and operate reasonably well under typical use.
Realistic design constraints	No constraints were considered in the design.	Some constraints were considered, but the design minimally met these constraints if at all.	All constraints were considered and most were met.	All design constraints were considered and met.

Assessment Plan for Outcome D - Template

Course:

Instructor:

Outcome: D: an ability to function on multidisciplinary teams

Course description:

Student work assessed:

Relevance:

Where assigned:

When assigned:

Assessment completed by date:

Performance indicators used for assessment:

Rubric:

Outcome D				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
Research and Gather Information	Does not collect any information that relates to the topic	Collects very little information - some relates to the topic	Collects some basic information - most relates to the topic	Collects a great deal of information - all relates to the topic
Fulfill Team Role's Duties	Does not perform any duties of assigned team role	Performs very little duties	Performs nearly all of the duties	Performs all duties of assigned team roles
Share in Work of Team	Always relies on other to do the work	Rarely does the assigned work - often needs reminding	Usually does the assigned work - rarely needs reminding	Always does the assigned work without having to be reminded
Listen to Other Teammates	Is always talking - never allows anyone else to speak	Usually doing most of the talking - rarely allows others to speak	Listens, but sometimes talks too much	Listens and speaks a fair amount

Assessment Plan for Outcome E - Template

Course:

Instructor:

Outcome: E: an ability to identify, formulate, and solve engineering problems

Course description:

Student work assessed:

Relevance:

Where assigned:

When assigned:

Assessment completed by date:

Performance indicators used for assessment:

Rubric:

Outcome E				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
Connection to theory	Cannot see the connection between theory and practical problem solving	Can connect theoretical concepts to practical problem solving with prompting	Can relate most theoretical concepts to practical problem solving	Can relate all theoretical concepts to practical problem solving
Mathematical expression	Uses formula(s) from class/lecture but shows no understanding of how it is applicable.	Has difficulty in connecting formulation from theory. Many parts are missing or constructed incorrectly.	Does a good job of expressing applicable theory mathematically with only minor problems.	The problem is formulated correctly demonstrating how the physical theory can be expressed mathematically.
Solve equations with correct units	Cannot solve the equations, use proper units, or solution is grossly incorrect	Solution approach is correct but there are significant errors in the computations and/or units	The solution approach was correct and except for minor errors the solution is correct	The solution approach was correct and produced correct answers with appropriate units
Solution checking	There was no check make to demonstrate the solution was reasonable and related to the posed problem	Some solution checking was done but was inadequate to verify the accuracy of the solution or related to the posed problem	Most of the solution was checked and shown to be correct and related to the posed problem	The solution was carefully checked and shown to be correct and relevant to the posed problem

Assessment Plan for Outcome F - Template

Course:

Instructor:

Outcome: F – An understanding of professional and ethical responsibility

Course description:

Student work assessed:

Relevance:

Where assigned:

When assigned:

Assessment completed by date:

Performance indicators used for assessment:

Rubric:

Outcome F				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
Stakeholder Identification	Students are unable to identify the relevant stakeholders for a given ethical situation.	Students can recognize most direct stakeholders; however, they have difficulty identifying indirect stakeholders. There may be some errors in separating direct and indirect stakeholders.	Students can identify direct stakeholders and most indirect stakeholders. Moreover, they are able to properly rank stakeholders in terms of impact.	Students can identify all direct and indirect stakeholders, and they are able to rank stakeholders by impact. They can evaluate the magnitude of alternative courses of action on various stakeholders
Recognizing Unethical Situations	Students are unable to recognize elementary ethical dilemmas.	Students can recognize basic ethical issues; however, they fail to grasp all of the relevant aspects of the scenario at hand.	Students show a proficient grasp of the ethical points of a given scenario, and they can accurately evaluate the tradeoffs between direct stakeholders.	Students demonstrate a complete grasp of the ethical points of a given scenario. There is a proper understanding of all the relevant trade-offs between direct and indirect stakeholders.
Action Choices	Students are unable to articulate a rational approach to dealing with an ethical dilemma. Their justifications involve erroneous assumptions, fallacious argumentation, or factual errors.	Students can present a valid rationale for choosing among alternative actions; however, there are some clear errors regarding the perceived consequences of their actions.	Students present a well-reasoned rationale for their chosen alternatives; and, they can defend their choices in a logical manner. Some of their reasoning, however, may be less than persuasive.	Students demonstrate precise judgment in selecting among the alternative courses of action in ethically complex situations. They are able to defend their actions with persuasive reasoning.
Professional Codes of Conduct	Students lack knowledge of many rules promulgated by the engineering profession.	Students know most of the rules of professional conduct and can apply them in case scenarios. There are some erroneous perceptions regarding rule justifications.	Students know the rules of professional conduct, can apply them in case scenarios, and understand most of the reasoning underlying the rules	Students know the factual requirements of the rules of conduct and can apply them accurately. They can provide persuasive explanations of the logic behind the rules.

**** Rubric modified from: Williamson College of Business Administration**

Assessment Plan for Outcome G - Template

Course:

Instructor:

Outcome: G – An ability to communicate effectively

Course description:

Student work assessed:

Relevance:

Where assigned:

When assigned:

Assessment completed by date:

Performance indicators used for assessment:

Rubric:

Outcome G				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
Use of proper and effective language and organization	Serious problems with focus and/or clarity. Grammar errors, misspelling, misrepresents information, brief	Presents misconstructions, disjointed and unclear, difficult to follow	Persuasive, clear and straightforward communication. A logical sequence of information	Highly professional presentation, fully justifies findings. Succinct, clear, and coherent
Provide visual aids	Lack of adequate visual aids, irrelevant to the topic	Limited use of visual aids, shows some of the concepts, but not all	Adequately shows visual aids that cover important concepts, clearly relevant,	Use and variety of visual aids maximizes the communication
Identify and explain the topic with technical depth	Fails to persuade, little use of college skills, proposed goals are not addressed	Focus on work of others, inappropriate or insufficient details to support ideas	Use of skills from college courses, proposed goals are complete.	Advanced insight, exceeds goals of project, focus on new understandings
Utilize quality and quantity of external references and resources	Does not collect external information, irrelevant sources, plagiarism, dishonesty	Inadequate background research, limited use of external sources, lacks variety of references	Identifies and presents useful sources, correctly formatted and referenced	Collects extensive relevant information from a wide range of sources, validates

****Modified from ASEE Paper "**Assessment of Communication and Teamwork Skills in Engineering Technology Programs" by Dr. Daniel Jones

Assessment Plan for Outcome H - Template

Course:

Instructor:

Outcome: H - the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

Course description:

Student work assessed:

Relevance:

Where assigned:

When assigned:

Assessment completed by date:

Performance indicators used for assessment:

Rubric:

Outcome H				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
Types of global impact	Is largely unaware of the impact of the global impact of engineering solutions.	Can identify several global engineering solutions but not their environmental, political, and economical impact	Can identify a variety of global impacts for engineering solutions (i.e. environmental, political, and economical)	Can detail a variety of global impacts for engineering solutions (i.e. environmental, political, and economical)
Economic influence	Cannot identify any cases where engineering solutions have had a global economic impact	Can identify very few cases where engineering solutions have had a global economic impact	Can identify several cases where engineering solutions have had an global economic impact	Can identify several cases where engineering solutions have had an global economic impact and is knowledgeable of the details of that impact.
Environmental Issues	Is not knowledgeable of environmental problems or how engineering could be used to address those problems.	Is aware of environmental problems but is unclear about engineering solutions.	Can identify engineering solutions that can be used to address environmental problems	Can identify engineering solutions can be used to address environmental problems and the effectiveness of these solutions.
Impacting engineering solutions	Cannot name any engineering solutions that have had an impact on modern societies. May not understand the meaning of societal	Can enumerate only 1 or 2 engineering solutions that have had an impact on modern societies	Can enumerate several engineering solutions that have had an impact on modern societies	Can enumerate several engineering solutions that have had an impact on modern societies and is aware of how these impacts vary in different societies

Assessment Plan for Outcome I - Template

Course:

Instructor:

Outcome: I - a recognition of the need for, and an ability to engage in life-long learning

Course description:

Student work assessed:

Relevance:

Where assigned:

When assigned:

Assessment completed by date:

Performance indicators used for assessment:

Rubric:

Outcome I				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
The ability to research and gather information and give proper citations	Collects no information or collects irrelevant information	Collects little information with little relevance	Collects some information with some relevance	Collects a great deal of information most of which is relevant

Assessment Plan for Outcome J - Template

Course:

Instructor:

Outcome: J - a knowledge of contemporary issues

Course Description:

Student Work Assessed:

Relevance:

Where Assigned:

When Assigned:

Assessment completed by date:

Performance indicators used for assessment:

Rubric:

Outcome J				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
Ability to identify contemporary engineering issues	Not able to identify any current engineering issues	Able to identify only a few current engineering issues	Able to identify an adequate number of current engineering issues	Able to identify a significant number of current engineering issues

Assessment Plan for Outcome K - Template

Course:

Instructor:

Outcome: K- ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Course Description:

Student Work Assessed:

Relevance:

Where Assigned:

When Assigned:

Assessment completed by date:

Performance indicator used for assessment:

Rubric:

Outcome K				
Performance Indicators	**Poor (1)**	**Inadequate (2)**	**Adequate (3)**	**Exemplary (4)**
Tool selection	Cannot select the correct program and/or engineering tool. Is unclear about which tools would be appropriate to solve the problem.	Needs guidance in selecting the correct program and/or engineering tools to solve the engineering problem.	Can select a valid program and/or engineering tool to solve a problem or create an engineering design.	Can select two or more programs and/or engineering tools to solve the problem and can compare them with each other.
Tool integration	Does not seem to understand how to use the methods and/or computer programs	Seems to understand the methods and/or computer programs but does not see how they can be integrated to solve the problem.	Demonstrates an adequate knowledge of how to integrate several methods and/or computer programs to solve an engineering problem.	Demonstrates the integration of several methods and/or computer programs beyond the minimum required to solve the engineering problem.