STUDENT LEARNING GOALS/OBJECTIVES DEVELOPMENT GUIDE

Grade: 9-12

Content Area: Engineering

Component	Guiding Questions	Descriptors		
Baseline/Trend Data	What data were reviewed to assist in establishing the student learning goal/objective?	 Over the past three years students in Engineering 1 course have done poorly on standard number: 25.Identify the components of the design process: define the problem, brainstorm, research, develop solutions, prototype, test/evaluate, and communicate results. Only 25% of the students have met goal. Pre-assessment scores for the past two years have return the following results: 25% of students scored between 0-10 points on the Engineering Design Rubric 70% of students scored between 11-19 points on the Engineering Design Rubric 5% of students scored between 20-30 points on the Engineering Design Rubric 		
Student Population	Who is included in this student learning goal/objective? Why is this target group/class selected?	Students in this course have little prerequisite knowledge of the engineering design process. This assessment challenge will measure content knowledge as well as the application of content within a problem-based setting. Class consist of two ELL students; one student with an IEP, five gifted students; and 12 students with no special designation		
Standards And Learning Content	Which standards are connected to the learning content?	 Connecticut Technology Education, Engineering Standards: ENG.02 Use the design process to solve problems by creating and refining prototypes. ENG.03 Ensure quality control using the major components of manufacturing processes including measurement systems, tools and instruments to produce a product. ENG.04Design using the appropriate materials in engineering by identifying. Comparing, selecting and testing. Connecticut Performance Standards & Competencies Standard: 25. Identify the components of the design process: define the problem, brainstorm, research, develop solutions, prototypes, test/evaluate, and communicate results. Common Core State Standards in English/Language Arts: RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. WHST.11-12.2a Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. 		

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Student Learning Goal/Objective Statement	What is the expectation for student growth and development?	Students will demonstrate the engineering design process. Students will be able to apply the engineering design process to a real-world problem. Students will communicate their solutions using the engineering design process for a real-world problem.		
Indicators Of Academic Growth And Development (IAGDs) Growth Targets	 A. How will you measure progress toward your student learning goal/objective? B. What targets will you establish to demonstrate attainment of your student learning goal/objective? NOTE: If teacher sets only one goal/objective then there MUST be at least two IAGDs. 	IAGDs:• ASSESSMENTS/MEASURES OF PROGRESSStudent Performance progress will be measured by:• Engineering design process assignments• Group design challenge• Scores on group design challenge• Practice CTE Engineering AssessmentB.GROWTH TARGETS• 80% will raise their scores a minimum of 10 points on the Engineering Design Rubric• 80% of students will be "at target" on the Engineering Design Rubric• 70% of students will meet goal on Connecticut CTE Engineering Assessment Standard #25		
Instructional Strategies/Supports	What methods will you use to accomplish this student learning goal/objective? How will progress be monitored? What professional learning/supports do you need to achieve this student learning goal/objective?	 Teaching strategies will include: Group activities Scaffold Instruction Peer Coaching Provide multiple means of expression to insure that students have comprehended and can apply content Guided discovery Educational Aides will work with special education student to modify the lessons as appropriate; rubric will be adjusted to accommodate the students' learning curve. Language learners will be given written instructions in both English and their native language, Spanish 		

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Engineering Design Rubric

Student Name:

Date:

Defining the ProblemRephrases the problem clearly and preciselyBrainstorming a SolutionContributes few or implausible ideasContributes a plausible ideaContributes multiple plausible ideasGenerating IdeasContributes ideasContributes aplausible ideaContributes multiple plausible ideasGenerating IdeasContributes ideasContributes multiple plausible ideaContributes multiple plausible ideaIdeasControbutes incomplete sketches Does not present a conceptContributes one produces marginally accurate pictorial and orthographic sketches of design conceptsContributes multiple plausible ideasIdentifying CriteriaDoes not restate the criteria clearly and fails to identify constraintsRestates the criteria clearly and fails to identify constraintsRestates the criteria clearly and precisely and identifies many constraintsExploring PossibilitiesInadequately analyzes the pluses and minuses of a variety of possible solutions solutionSelects a promising solution based on criteria and constraintsSelects a promising solution based on a thorough analysis criteria and constraintsMaking a Prototype Testing and evaluating the DesignRefinement based on testing and evaluation processes are inadequateTesting and evaluation processes are adequate for refining the problem solutionTesting and evaluation processes are adequate for refining the problem solutionRefining the DesignRefinement based on testing and evaluation is not evidentRefinements made based on testing and evaluation<	Category	Below Target (0 points)	At Target (2 points)	Above Target (3 points)	Points Earned	
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