

2010/2011 DoDEA Student Competency Record
Engineering Design and Development
PTE603 - 36 weeks

Student	School Year
Grade	Term (fall, spring)
School	Teacher Signature

Mastery is a level of performance that indicates a student has demonstrated the knowledge, skills, and abilities for a unit of instruction or subject area as defined by a recognized standard. DoDEA defines mastery as being competent in the task and non-mastery as needing task remediation.

As students complete each competency, the student or teacher should assess the student's level of performance and mark the appropriate column next to the competency. This record should be used to provide information about competencies mastered to employer, student-employee, or another school/teacher.

PTE603 36 weeks	Engineering Design and Development TASKS/COMPETENCIES	Mastery	Non-Mastery
Implementing DoDEA's CTE Course Requirements			
• 001	Demonstrate DoDEA's Workplace Readiness Skills in course activities.		
• 002	Identify issues relating to this field of study that affect the environment that impact local and global communities.		
• 003	Identify Internet safety issues and procedures for complying with acceptable use standards.		
Research Journaling			
• 004	Explain the need for retaining project research in one location.		
• 005	Select appropriate information for inclusion in the research journal.		
• 006	Format the journal so it is well-organized and easy to use.		
Use Conventional Library Resources			
• 007	Use conventional library resources as a starting point for all research.		
• 008	Choose the appropriate media to obtain the desired information.		
Using the Computer as a Research Tool			
• 009	Distinguish relevant from irrelevant web sites.		
• 010	Manipulate search engines to find specific information.		
• 011	Create strategies for identifying key terms that narrow their search topic.		
• 012	Examine on-line databases to search for patents, people, business, Government and Academic information.		

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• 013	Correspond by E-mail including the use of attachments.		
Contacting The Experts			
• 014	Compose an introduction and a thank you letter.		
• 015	Define the positive characteristics for personal interviewing. (e.g. courtesy, professionalism, listening skills, personal hygiene, etc.)		
• 016	Develop communication skills that will allow them to converse over the phone and conduct a face-to-face interview.		
Demonstrate Methods of Brainstorming			
• 017	Use a decision matrix in narrowing a topic of research.		
• 018	Develop and define constraints and specifications for use in a decision matrix.		
• 019	Decision matrix to rank order alternatives.		
• 020	Decision matrices to develop a concise problem statement.		
Research the Topic			
• 021	Discuss and explain key issues and terminology within their topic area.		
• 022	Narrow a topic focus using the decision matrix.		
• 023	Give an oral presentation.		
Writing A Problem Statement			
• 024	Based on their research, develop a problem statement.		
• 025	Apply the decision matrix to a problem, justifying their problem statements based on previous research findings and decision matrices.		
Researching, Redefining & Justifying Alternative Solutions			
• 026	Generate a list of existing solutions to their research problem.		
• 027	Using decision matrices, evaluate the advantages and disadvantages of present solutions to their research problem.		
• 028	Following a review of the specifications and constraints identified in their decision matrices, develop a list of alternative solutions to their stated problem.		
• 029	Conduct preliminary patent searches to determine the originality of their alternative choices.		
• 030	Conduct research to determine the merit of their alternative choices based on the state of the art in the field.		
Presentation Methods			
• 031	Identify techniques for delivering formal presentations.		
• 032	Choose an appropriate formal presentation format and prepare their presentation.		
• 033	Construct and deliver a PowerPoint presentation centered on their topic of research.		
Independent Research			
• 034	Define and demonstrate time management planning skills as they pertain to their project.		

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• 035	Identify methods and sources for obtaining materials and supplies.		
• 036	Complete an independent research project.		
Develop A Prototype			
• 037	Provide a detailed set of instructions for producing a testable prototype based upon their research and the information gained through their research.		
• 038	Identify safe practices for the use of tools and equipment.		
• 039	Create and justify a process for testing a prototype design that will yield valid data concerning the design's attempt at solving their problem statement.		
• 040	Review testing procedures to determine the validity of the testing procedures.		
• 041	Apply the appropriate statistical analysis tools to test results to ensure their validity and significance.		
• 042	Identify, define, and implement needed modifications to their design based upon their ongoing research.		
• 043	Evaluate and explain the effectiveness of their design at solving the problem that they have defined.		
Write a Research Paper			
• 044	Arrange the data and information compiled throughout the project and compose a technical research paper.		
• 045	Use a standardized format for composing their research papers.		
Make a Formal Presentation			
• 046	The student will be able to discuss their findings in a formal presentation before an audience.		
Developing Career Exploration and Employability Skills			
• 047	Describe and define the purpose and rationale of the course and the skills and knowledge base it is designed to present.		
• 048	Describe the characteristics of a successfully completed project based on previously completed projects.		
• 049	Distinguish the differences between the goals of this class and the type of projects done in other classes.		
• 050	Describe and define the structure for evaluating a research project.		
• 051	Create or update a portfolio containing representative samples of student work.		