Employability Profile: Pre-Engineering

Williamson
Central School
Deep Roots | Core Values | Bright Futures

Student Name: _____

Evaluator: _____   Date Completed: _____

Evaluation Grading Scale

Unsatisfactory (1)	Needs Improvement (2)	Meets Expectations (3)	Exceeds Expectations (4)
Not yet demonstrating the skills outlined and needs to have a plan for improving skills.	Inconsistently demonstrates the skills outlined. Further development is needed.	Demonstrates the skills outlined with rare exceptions, and shows initiative in improving skills.	Consistently demonstrates skills outlined. Often exceeds expectations and has emerged as a leader that improves overall team.

1	2	3	4	General Performance Skills	Performance Expectations	Comments/Student Work Readiness Skills
☐	☐	☐	☐	Attendance	Understands work expectations for attendance and adheres to them. Takes responsibility for absences. (cdos 3b)	
☐	☐	☐	☐	Punctuality	Understands work expectations for punctuality and arriving on time. Takes and returns from breaks in a timely manner. Take responsibility for tardiness.	
☐	☐	☐	☐	Time Management	Completing tasks in a timely manner. Organizing tasks and prioritizing time. Take responsibility for using time wisely.	
☐	☐	☐	☐	Workplace Expectations	Demonstrates professionalism and an understanding of expectations and ethics. Including use of technology (cell phones), dress code, safety procedures, etc.	
☐	☐	☐	☐	Attitude Towards Work	Puts forth best effort, accepts and utilizes constructive criticism and feedback to improve work performance. Takes ownership of work performance. Demonstrates flexibility, shows initiative, and has the ability to work independently.	
☐	☐	☐	☐	Communication Skills	Gives full attention to what other people are saying, asks questions as appropriate, and understands what was heard. Communicates concerns clearly and asks for assistance when needed.	
☐	☐	☐	☐	Cooperates with Others	Interacts and communicates with others in a friendly and courteous way. Shows respect for others' ideas, opinions, and diversity. Effectively works as a member of a team.	

				Self Reflection & Initiative	Identifies one's strengths and weaknesses. Sets goals and monitors one's progress towards achieving these goals. Identifies and pursues opportunities for learning.	
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☐	☐	☐	☐	Critical Thinking & Problem Solving	Able to apply basic/appropriate academics, technologies, resources and past knowledge to problems at hand. Evaluates information for accuracy, bias and usefulness to develop a clear understanding and responds accordingly.	

Learning (L)	Proficient (P)	Excelling (E)
Continues to develop basic skills.	Performs skills at an effective level and continues to work towards excelling.	Performs skills at a high level and continues to meet or exceed expectations.

Components	Sequence Specific Skill Description	L	P	E	Comments/Student Work Readiness Skills
Safety	Demonstrates positive safety attitude and basic safety procedures. Can operate equipment in a safe manner.	☐	☐	☐	
Engineering Design Experience	Work collaboratively on a design team to design a product or solve a problem.	☐	☐	☐	
	Apply and document in detail the engineering design process used to solve a problem or design a product	☐	☐	☐	
	Troubleshoot and evaluate systems/products based on testing and data.	☐	☐	☐	
	Use a variety of measuring devices to measure and report quantities accurately and to a precision appropriate for the purpose.	☐	☐	☐	
	Use common hand and shop tools to create models and build prototypes.	☐	☐	☐	
Technical Drawing	Able to communicate ideas clearly and efficiently using common technical sketching methods.	☐	☐	☐	
	Can design/model objects/parts using both two dimensional and three dimensional CAD software.	☐	☐	☐	
	Generate an annotated multiview technical drawing using CAD software, to fully describe a complex part according to standard engineering practice	☐	☐	☐	
	Appropriately use alternate views including: Sections, Detail, and Auxiliary to effectively communicate a part.	☐	☐	☐	
	Apply, understand, and use tolerances in a technical drawing to account for variation in production.	☐	☐	☐	

	Create assemblies of solid models within CAD software to demonstrate and simulate part interaction.	☐	☐	☐	
Principles of Engineering	Calculate mechanical advantage and drive ratios of mechanisms.	☐	☐	☐	
	Calculate work and power in mechanical, electrical, and fluid systems.	☐	☐	☐	
	Calculate circuit resistance, current, voltage, and power using Ohm's and Kirchoff's laws, including circuits with elements in series and/or parallel.	☐	☐	☐	
	Properly use a multimeter to analyze and troubleshoot a circuit.	☐	☐	☐	
	Write programming code for a project involving a sequence or system of tasks	☐	☐	☐	
	Apply concepts of thermodynamics to analyze and design systems and components.	☐	☐	☐	
	Analyze and select a material based on given properties.	☐	☐	☐	
	Convert engineering measurements between different unit systems	☐	☐	☐	
	Solve structural problems using concepts of static equilibrium and vectoring	☐	☐	☐	
Computer Integrated Manufacturing	Understands basic G&M code.	☐	☐	☐	
	Set Up, operate, and troubleshoot CNC equipment.	☐	☐	☐	
	Can calculate cutting feeds and speeds.	☐	☐	☐	
	Use CAD/CAM software to model, generate toolpaths, and export code of a given part.	☐	☐	☐	
	Use CAD and 3d printing technology to quickly create and prototype a part/product.	☐	☐	☐	
	Identify common manufacturing operations (e.g., casting, molding, welding, finishing)	☐	☐	☐	
	Complete a cost analysis of a part.	☐	☐	☐	
	Explain the effect of quality assurance on profit	☐	☐	☐	
	Program and operate robotic arms to complete basic functions.	☐	☐	☐	
Digital Electronics	Convert values between various number systems: Decimal, Binary, Hexidecimal.	☐	☐	☐	
	Calculate electrical values in parallel and series circuits.	☐	☐	☐	
	Apply Boolean and De Morgan's algebra theorems.	☐	☐	☐	

	Apply Karnaugh mapping to expressions.	☐	☐	☐	
	Create/modify AOI logic.	☐	☐	☐	
	Create/modify NAND/NOR logic.	☐	☐	☐	
	Use 555 timers and various J/K flip flops to create timers/counters.	☐	☐	☐	
	Create/interpret state graphs/tables/machines.	☐	☐	☐	
Architectural Design	Design and document a residential structure including floor plans, elevations, sections, and schedules using professional CAD software.	☐	☐	☐	
	Create a site opportunities map and site plan for a residential structure	☐	☐	☐	
	Use and follow established building code to drive a design.	☐	☐	☐	
	work collaboratively with a client to create a structure to meet specific needs.	☐	☐	☐	
Civil Engineering	Analyze and/or design a simply supported beam	☐	☐	☐	
	Select a floor system to support applied loads	☐	☐	☐	
	Perform a closed loop (control) survey	☐	☐	☐	
	Perform sieve analysis and classify a soil sample	☐	☐	☐	
	Calculate heat loss/gain of a structure	☐	☐	☐	
	Calculate head loss and pressure in a pipe	☐	☐	☐	
	Calculate stormwater runoff from a site	☐	☐	☐	
	Size a spread footing based on given loads and soil bearing pressure.	☐	☐	☐	

ADDITIONAL TEACHER COMMENTS:

Instructor Signature: _____ Date: _____