SEACOAST SCHOOL OF TECHNOLOGY

Student Competency Profile

Pre-Engineering – CIP 140101

Student: _____ **YOG/Completed Program:**

Vasiliki Partinoudi, Instructor

Margaret E. Callahan, Principal

Technical Competencies & Performance Indicators

	Understand through principles and practices workplace safety concepts and procedures in order to operate in a safe environment.
	1. Demonstrate and apply safe practices and procedures in the workplace.

	Understand the methodologies and engineering disciplines as applied to the fundamental skills associated with the engineering design process.
	2. Describe the engineering design process and how it impacts the various engineering and engineering technology disciplines.
	3. Demonstrate an understanding and application of the methodologies involved in the engineering design process.
	4. Develop a design for a product, process, or project. Describe the manufacturing, construction or procedural methods used to convert the design into a finished product, process, or project.
	5. Demonstrate various engineering product and project planning methodologies.
	6. Demonstrate the effective use of design refinement in the engineering design process.
	7. Demonstrate the use mathematics and models (physical and virtual) as applied to the engineering design process.
	8. Demonstrate the use of cost analysis in the engineering design process.
	9. Demonstrate the use of human resources and facility requirements in the engineering design process.
	10. Demonstrate what is meant by a multi-disciplinary design team.
	11. Demonstrate the effective use of design teams as applied to the engineering design process.
	12. Describe quality assurance and quality control and their applications in production and engineering design environments.

	Understand the use of problem-solving.
	13. Demonstrate the ability to apply problem solving and decision making methods to an engineering problem.
	14. Demonstrate the use of a variety of written and oral communication techniques to resolve engineering problems (brainstorming, conference calls, consult experts, internet searches, etc.)

	Understand the interaction of multiple disciplines and the underlying principles of engineering.
	15. Create an engineering case study.
	16. Create a product design using computer based tools (CAD, spreadsheets, simulation packages, etc.)
	17. Demonstrate an understanding of the interrelationships of the various engineering disciplines as applied to engineering projects.
	18. Demonstrate an understanding of the concept of open and closed loop systems.
	19. Demonstrate an understanding of engineering systems (control, electrical, fluid and mechanical).
	20. Demonstrate an understanding of material characteristics as applied to engineering projects.
	21. Demonstrate the ability to present and defend project information in a formal presentation.

	Understand the impact engineering has on society.
	22. Demonstrate an understanding life cycles (product, sustainability, obsolescence, etc.).
	23. Demonstrate how engineering impacts society at a local, national, and global level.
	24. Demonstrate an understanding of what is meant by infrastructure.
	25. Demonstrate an understanding of professional ethics and how they apply to the engineering professions.

	Understand that making effective choices is essential in meeting an individual career goal.
	26. Demonstrate an understanding of the value of professional organizations in the engineering disciplines and their relationship to career develop.
	27. Describe the educational pathways for various careers in engineering, engineering technologies and related fields.
	28. Describe career and employment opportunities in engineering (including entrepreneurship).

Understand the importance of personal growth and leadership to enhance career success.	
	29. Prepare a proper portfolio of exemplary work.
	30. Demonstrate personal growth, community leadership, democratic principles, and social responsibility by participating in activities/events offered through student, industry and/or community organizations.

Rating Scale

1. No Exposure
2. Novice – Learner requires significant supervision.
3. Proficient – Learner demonstrates skills regularly.
4. Mastery – Learner demonstrates skills numerous times without supervision

Career Ready Practices (CRP)

1. Demonstrate creativity and innovation.
2. Model integrity, ethical leadership and effective management.
3. Attend to personal health and financial well-being.
4. Consider the environmental, social and economic impacts of decisions.
5. Act as a responsible and contributing citizen and employee.
6. Communicate clearly, effectively, and with reason.
7. Apply appropriate academic and technical skills.
8. Employ valid and reliable research strategies.
9. Use technology to enhance productivity.
10. Work productively in teams while using cultural/global awareness.
11. Utilize critical thinking to make sense of problems and persevere in solving them.
12. Plan education and career path aligned to personal growth.

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