Virginia CTE

Engineering Practicum IV (2023)

Demonstrating Personal Qualities and Abilities	1	Demonstrate creativity and innovation. 1
	2	Demonstrate critical thinking and problem solving. 2
	3	Demonstrate initiative and self-direction. 3
	4	Demonstrate integrity. 4
	5	Demonstrate work ethic. 5
Demonstrating Interpersonal Skills	6	Demonstrate conflict-resolution skills. 6
	7	Demonstrate listening and speaking skills. 7
	8	Demonstrate respect for diversity. 8
	9	Demonstrate customer service skills. 9
	10	Collaborate with team members. 10
Demonstrating Professional Competencies	11	Demonstrate big-picture thinking. 11
	12	Demonstrate career- and life-management skills. 12
	13	Demonstrate continuous learning and adaptability. 13
	14	Manage time and resources. 14
	15	Demonstrate information-literacy skills. 15
	16	Demonstrate an understanding of information security. 16
	17	Maintain working knowledge of current information-technology (IT) systems. 17
	18	Demonstrate proficiency with technologies, tools, and machines common to a specific occupation. 18
		Apply mathematical skills to job-specific tasks. 19

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	20 **Demonstrate professionalism.** 20
	21 **Demonstrate reading and writing skills.** 21
	22 **Demonstrate workplace safety.** 22
Examining All Aspects of an Industry	23 **Examine aspects of planning within an industry/organization.** 23
	24 **Examine aspects of management within an industry/organization.** 24
	25 **Examine aspects of financial responsibility within an industry/organization.** 25
	26 **Examine technical and production skills required of workers within an industry/organization.** 26
	27 **Examine principles of technology that underlie an industry/organization.** 27
	28 **Examine labor issues related to an industry/organization.** 28
	29 **Examine community issues related to an industry/organization.** 29
	30 **Examine health, safety, and environmental issues related to an industry/organization.** 30
Addressing Elements of Student Life	31 **Identify the purposes and goals of the student organization.** 31
	32 **Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.** 32
	33 **Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects.** 33
	34 **Identify Internet safety issues and procedures for complying with acceptable use standards.** 34
Exploring Work-Based Learning	35 **Identify the types of work-based learning (WBL) opportunities.** 35
	36 **Reflect on lessons learned during the WBL experience.** 36
	37 **Explore career opportunities related to the WBL experience.** 37
	38 **Participate in a WBL experience, when appropriate.** 38
Examining Employability Skills	39 **Research a principal field of interest in engineering.** 39
	40 **Identify educational requirements for the chosen field.** 40
	Research postsecondary education opportunities. 41

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	42 Compare requirements for select professional certifications and licensure. 42
	43 Build a complete work portfolio. 43
	44 Identify the process of applying for an engineering internship or job. 44
	45 Analyze the similarities and differences between the engineering design process and the scientific method. 45
Examining Intellectual Property	**46** Explain how ethical behavior of engineers is essential to the betterment of society. 46
	47 Identify types of intellectual property rights and how they are protected and enforced. 47
	48 Compare professional and personal ethics. 48
Designing a Practicum Project	**49** Identify the need or opportunity for an engineering solution. 49
	50 Use systems thinking in an engineering design process. 50
	51 Evaluate the safety of designs. 51
	52 Present a proposal to an engineering challenge. 52
	53 Peer review all proposals. 53
	54 Use the engineering design process to complete the practicum project. 54
	55 Develop a schedule using industry-standard applications to ensure the solution can be completed during the course. 55
	56 Research cost-estimation tools and methods in the engineering field. 56
	57 Use engineering project management tools. 57
	58 Develop a budget. 58
	59 Create a work schedule. 59
	60 Document the progression of the engineering practicum in a technical report. 60
	61 Apply model and simulation techniques to create a model. 61
	62 Analyze the potential risk list. 62
	63 Communicate the solution to stakeholders. 63
	Present the final project. 64

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65 **Participate in a mock interview, preferably with professionals in the industry.** 65

66 **Exhibit technical and life skills necessary for success in the engineering field.** 66