Virginia CTE

Technological Systems (2022)

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
	19	Apply mathematical skills to job-specific tasks. 19
		Demonstrate professionalism. 20

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	21	**Demonstrate reading and writing skills.** 21
	22	**Demonstrate workplace safety.** 22
Addressing Elements of Student Life	23	**Identify the purposes and goals of the student organization.** 23
	24	**Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.** 24
	25	**Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects.** 25
	26	**Identify Internet safety issues and procedures for complying with acceptable use standards.** 26
Exploring Work-Based Learning	27	**Identify the types of work-based learning (WBL) opportunities.** 27
	28	**Reflect on lessons learned during the WBL experience.** 28
	29	**Explore career opportunities related to the WBL experience.** 29
	30	**Participate in a WBL experience, when appropriate.** 30
Exploring Technological Systems	31	**Explain technology.** 31
	32	**Define technology.** 32
	33	**Analyze the core concepts of technology.** 33
	34	**Analyze existing products or solutions.** 34
	35	**Describe the steps of the Virginia Department of Education (VDOE) engineering design process.** 35
	36	**Define system.** 36
	37	**Explore the Universal Systems Model.** 37
	38	**Analyze a product, process, or system, using the Universal Systems Model.** 38
	39	**Differentiate the subsystems within a given system.** 39
	40	**Explain the potential technological effects of products and systems.** 40
	41	**Analyze ethics related to technological systems.** 41
	42	**Explain the influences of technology on history.** 42

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Designing Technological Systems	**43** Distinguish the characteristics/properties of materials and families of materials. 43
	44 Demonstrate various types of measuring. 44
	45 Design a model of a product or process, using computer-aided design (CAD) systems. 45
	46 Create an open-loop system. 46
	47 Create a closed-loop system. 47
	48 Design systems for a given context. 48
	49 Maintain a design portfolio/engineer's notebook. 49
Creating Systems	**50** Plan a solution to an engineering design problem, as part of a team. 50
	51 Demonstrate the safe use of a minimum of seven tools and/or pieces of equipment. 51
	52 Construct a model or prototype of the proposed solution, as part of a team. 52
	53 Communicate the process and results of the solution, as part of a team. 53
	54 Model electronic systems. 54
	55 Demonstrate the process for changing inputs to outputs in a system (using the Universal Systems Model). 55
	56 Program (code) a system that uses microcontrollers. 56
	57 Model given systems. 57
Evaluating Technological Systems	**58** Analyze the cause of a failure or a problem in a technological system. 58
	59 Assess the effect of technological systems on individuals, resources, society, and the environment. 59
	60 Research careers related to technological systems. 60