Virginia CTE

Introduction to Plant Systems (2021)

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
Exploring Leadership Opportunities through FFA	39 **Identify the role of supervised agricultural experiences (SAEs) in agricultural education.** 39
	Participate in an SAE. 40

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	41 Identify the benefits and responsibilities of FFA membership. 41
	42 Describe leadership characteristics and opportunities as they relate to agriculture and FFA. 42
	43 Apply for an FFA degree and/or an agricultural proficiency award. 43
Introducing Botany	44 Explain the importance of plant taxonomy. 44
	45 Identify major plant parts and their primary functions. 45
	46 Explain the characteristics of plants. 46
	47 Differentiate between plant life cycles based on classification. 47
	48 Describe the growth stages of a plant. 48
	49 Illustrate the importance of plant systems in relation to humans. 49
	50 Discuss the major disciplinary fields of plant agriculture. 50
	51 Research innovative plant breeding technologies. 51
Understanding Plant Processes	52 Explain the life-sustaining processes by which all plants grow and develop. 52
	53 Explain the process of osmosis. 53
	54 Explain the process of diffusion. 54
Evaluating the Environmental Stimuli that Affect Plant Growth and Development	55 Evaluate the effect of light on plants. 55
	56 Evaluate the effect of temperature on plants. 56
	57 Evaluate the effect of water on plants. 57
	58 Evaluate the effect of carbon dioxide (CO_2), oxygen, and airflow on plants. 58
	59 Evaluate types and components of greenhouses and other indoor plant-growing facilities. 59
Demonstrating Sexual Propagation in the Production of Plants	60 Examine the advantages and disadvantages of sexual propagation in the development of new plant varieties. 60
	61 Plant seeds using various methods. 61
	62 Analyze scarification and stratification methods that aid in the propagation process. 62
	63 Describe the germination process. 63

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	64 Calculate the germination rates of seeds. 64
	65 Demonstrate how to transplant seedlings. 65
Demonstrating Methods of Asexual Propagation in the Production of Plants	66 Examine the advantages and disadvantages of asexual propagation in the production of plants. 66
	67 Demonstrate how to produce plants through cuttings. 67
	68 Demonstrate how to produce plants by layering. 68
	69 Demonstrate how to produce plants through division and separation. 69
	70 Describe grafting and budding techniques for woody and herbaceous plants. 70
	71 Describe how to produce plants through micropropagation. 71
	72 Evaluate cultural practices for vegetable crops grown in a greenhouse. 72
Managing Plants: Soil and Soilless Gorwing Systems	73 Evaluate the physical and chemical properties of soil and soilless substrates. 73
	74 Amend substrates for optimal plant growth. 74
	75 Collect a soil sample for evaluation. 75
	76 Analyze soil sample for nutrients and pH. 76
	77 Describe hydroponic, aquaponic, and aeroponic plant production. 77
Investigating the Principles of Plant Nutrition	78 Evaluate the effects of primary and secondary macronutrients on plant growth and development. 78
	79 Evaluate the effects of micronutrients on plant growth and development. 79
	80 Diagnose nutrient deficiencies in plants. 80
	81 Describe fertilizer application methods. 81
Using Basic Scientific Principles in Plant Pest Management	82 Identify the common invertebrates that affect plant growth and development. 82
	83 Identify abiotic and biotic factors influencing plant growth and development. 83
	84 Classify common weeds that affect plant growth. 84
	85 Classify types of vertebrate pests that affect plant growth. 85
	Explain methods of plant pest management. 86
	Interpret the information on a pesticide label. 87

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	88 Identify the application of different types of pesticides. 88
Using Basic Scientific Skills and Principles in Plant Selection	89 Identify U.S. Department of Agriculture (USDA) plant hardiness zones and how they affect plant selection. 89
	90 Evaluate the common tree species of Virginia. 90
	91 Evaluate the common species of agronomic plants grown in Virginia. 91
	92 Evaluate common species of fruits and vegetables grown in Virginia. 92
	93 Evaluate common species of nursery and landscape horticulture plants grown in Virginia. 93
	94 Evaluate common species of turfgrass grown in Virginia. 94
	95 Evaluate common species of floriculture crops grown in Virginia. 95
Incorporating Mechanical Skills Related to the Plant Systems Pathway	96 Demonstrate safety practices and procedures in various areas associated with agricultural mechanics in plant systems. 96
	97 Demonstrate equipment safety and operation as they relate to the plant systems pathway. 97
	98 Demonstrate standard measurement techniques in plant systems. 98
	99 Demonstrate drawing for agricultural mechanics as it relates to the plant systems pathway. 99
	100 Examine metalworking operations as they relate to the plant systems pathway. 100
	101 Examine woodworking operations as they relate to the plant systems pathway. 101
	102 Examine electrical operations as they relate to the plant systems pathway. 102
	103 Examine small-engine operations as they relate to the plant systems pathway. 103
	104 Examine plumbing operations as they relate to the plant systems pathway. 104