

I	Electrical Utility Pruning
I A	Tree growth and response to pruning: Predict trees' responses to pruning based on species and site conditions.
I A 1	Biological principles: Consider basic principles of tree anatomy and physiology in pruning decisions.
I A 2	Growth responses to pruning cuts
I B	Pruning concepts
I B 1	Cut types and placement: Recognize proper and improper pruning cuts.
I C	Determination of pruning style: Discuss various pruning techniques specific to utility arboriculture.
I C 1	Objectives: Identify tree and wire conflicts.
I C 2	Crown reduction
I C 3	Directional pruning: Contrast natural pruning with directional pruning.
I C 4	Raising
I C 5	Growth rate and clearance requirements
I D	Cutting/rigging concerns
I D 1	Branch weight
I D 2	Cutting techniques
I D 3	Rigging techniques: Select appropriate rigging methods based on situations.
I E	Standards and best practices: Prune trees for line clearance in according to applicable standards and best practices.
I F	Pruning as mitigation of risk: Discuss benefits and limits of tree risk assessment for mitigating tree-related interruptions of service.
I F 1	Decrease likelihood of failure
I F 2	Decrease likelihood of impacting a target
I F 3	Decrease consequences of failure
I F 4	Limitations
II	Program Management
II A	Planning
II A 1	Vegetation management strategic plan: Develop a strategic plan for a vegetation management program.
II A 2	Objectives: Discuss objectives, philosophy, and policies critical to long-term, sustainable vegetation management.
II A 3	Budgeting: Develop vegetation management budgets.
II A 4	Evaluation plan
II B	Resource assessment
II B 1	GPS/GIS: Utilize GIS and GPS for data collection.
II B 3	Aerial patrol: Utilize aerial patrols as a tool.

ISA Certified Arborist Utility Specialist Exam Outline

II C	Risk Management
II C 1	Power continuity: Identify vegetation conditions that could cause a mechanical or electric fault or interruption.
II C 2	Legal/citations: Ensure compliance with laws and regulations.
II C 3	Vegetation management: Assess the risks and benefits of various manual, mechanical, herbicide, biological and ecological techniques.
II C 4	Emergency response: Recommend appropriate methods to mitigate risks during events and storms.
II C 5	Risk to public: Identify characteristics of a climbable tree (accessible to the public).
II D	System hardening: Identify elements of system hardening such as on- and off-ROW tree risk assessment.
II E	Fire suppression: Employ basic fire suppression techniques, as appropriate.
II F	Emergency management/Storm response
II F 1	Plan: Develop an integrated, detailed storm plan.
II F 2	Training: Perform emergency response training.
II F 3	Objectives: Establish utility restoration objectives and priorities.
II F 4	Preparation: Monitor storm events using applicable technology and communication channels.
II F 5	Assessment: Coordinate electrical system assessments following events and storms.
II F 6	Restoration: Work toward achieving restoration objectives according to established protocols and priorities.
II F 7	Organization: Develop a vegetation management emergency organization.
II F 8	Safety: Identify risks and hazards during emergency events and storms.
II F 9	Communication: Discuss the elements of emergency preparedness.
III	Integrated Vegetation Management
III A	Basic concepts
III B	Planning
III B 1	Site assessment: Prepare site-specific prescriptions for vegetation management.
III B 2	Action thresholds: Develop tolerance levels for use as action thresholds for veg maintenance treatment options.
III B 3	Goals: Determine the balance between program goals and customer satisfaction.
III B 4	Economic factors: Account for economic and ecological effects of treatments during planning.
III B 5	Management of power continuity: Identify factors that affect SAIDI, SAIFI, MAIFI, and CAIDI.
III B 6	Annual plan: Develop an annual vegetation maintenance plan based on site assessment.
III C	Management options: Compile broad array of control methods including mechanical, physical, cultural chemical, and biological.
III C 1	Management options: Select appropriate vegetation management approaches for various situations and sites.
III C 2	Chemical
III C 3	Biological

ISA Certified Arborist Utility Specialist Exam Outline

III D	Environmental protection	
III D 1	Water protection: Protect water resources, wetlands, vernal pools, and seeps.	
III D 2	Wildlife: Protect wildlife, including threatened and endangered species, and their habitat.	
III D 3	Invasive plant management: Mitigate the spread of non-native invasive plants.	
III D 4	Other: Protect aesthetic values and cultural resources.	
III E	Implementation:	
III E 1	Contracting: Execute contracts for vegetation management services.	
III E 2	Performance: Measure productivity of crews performing vegetation management.	
III F	Safety	
III F 1	Performance measurements: Identify key indicators of safety performance.	
III F 2	Monitoring: Monitor safety performance.	
III G	Evaluation	
III G 1	Criteria: Formulate metrics for evaluating vegetation management program success. Monitoring: Incorporate results from continuous monitoring IVM work into management plans.	
III G 2	Monitoring: Monitor execution of a vegetation management plan and efficacy of treatments.	
III G 3		
III G 4	Economic: Analyze economic and ecological costs of vegetation management activities.	
IV	Electrical knowledge	
IV A 8 x x 1	General concepts: Explain basic concepts of electricity.	
IV A 8 x x 2	General concepts: Communicate using appropriate electrical terminology.	
IV A 1	Voltage, amperage, and resistance	
IV A 2	Side flash	
IV A 3	Conductivity: Recognize conditions that make electrical flow possible through other types of conductors	
IV A 4	Back feed: Explain back feed.	
IV A 5	Induction: Explain what induction is.	
IV A 6	Step potential: Explain step potential	
IV A 7	Electrical faults: Explain how trees can cause electrical faults.	
IV B	Working around electrical conductors	
IV B 1	Standards and best practices: Perform work around electrical hazards according to applicable regulations and using safe work practices.	
IV B 2	Assess risks: Assess electrical risks.	
IV B 3	Minimum approach distances: Maintain minimum approach distances.	
IV B 4	Direct vs indirect contact: Understand difference between direct and indirect contact.	
IV B 5	Voltage differences: Identify voltage differences.	
IV B 6	Phase-to-phase/phase-to-ground: Understand difference between phase-to-phase and phase-to-ground contact.	
IV B 7	Operation of electrical devices: Explain the difference between automatic versus manual operation of electrical devices.	
IV B 8	Appropriate equipment	
IV B 9	Appropriate PPE	

ISA Certified Arborist Utility Specialist Exam Outline

IV C	x	x	x	1	Hardware recognition: Identify common electric system hardware.
IV C	x	x	x	2	Hardware recognition: Describe basic functions of common electric system hardware.
IV C	1				Line construction types: Describe various utility line construction types and their applications.
IV C	2				Pole/line hardware
IV C	3				Fuses and cutouts: Explain how fuses and cutouts are used.
IV C	4				Potential outage situations
IV D					System configurations: Summarize basic electrical system operations and configurations.
IV D	1				Transmission vs distribution: Differentiate transmission and distribution systems.
IV D	2				Circuit maps/line maps: Interpret road circuit maps.
IV D	3				Radial vs loop feeds: Recognize the difference between radial versus loop feeds.
IV E					Interpretation of outage statistics
IV F					Engineering alternatives: Identify engineering alternatives in vegetation management where applicable.
V					Customer Relations
V A					Public
V A	1				Communication: Describe effective communication techniques for interacting with property owners and the public.
V A	2				Best practices: Explain professional arboricultural practices and related industry best practices to the public and other stakeholders.
V A	3				Rights of way: Explain legal rights of utility and property owners in the context of the rights-of-way.
V A	4				Issues/concerns: Discuss issues related to utility vegetation management that impact the public.
V A	5				Appraisal: Apprise property owners and other stakeholders of utility vegetation maintenance activities.
V A	6				Professionalism: Recognize the value of worker appearance and demeanor.
V A	7				Identify potential fire hazards: Identify potential fire hazards (as related to utility facilities).
V B					Stakeholders: Identify stakeholders in utility vegetation management.
V B	1				Conflict resolution: Resolve issues and disputes related to utility vegetation management.
V C					Government
V C	1				Governing bodies: Describe the utility's relationship with various governing bodies.
V C	2				Public records: Search for property records.
V C	3				Laws and regulations: Interpret applicable local rules and regulations