ISA Certified Urban Forest Professional

EXAMINATION OUTLINE

About the Program

ISA Certification is a voluntary program that tests and certifies a professional's achievement of a standard level of knowledge and skill in the field of arboriculture. When a professional becomes an ISA Certified Urban Forest Professional, they should be recognized by their peers and the public as a tree care professional who has attained a fundamental level of knowledge in core areas of the arboriculture practice within an urban forest context and management of trees as a community providing societal benefits.

Domains

Domains are the major responsibilities or duties that characterize the practice of arboriculture. The weight or percentages denote the amount of the exam that is devoted to each domain.

- Urban Forest Management—32%
- Arboricultural Practices—26%
- Communication and Public Education—21%
- Administration, Policy, and Planning—21%

Urban Forest Management — Weight: 32%

Task A: Develop and/or implement a community's urban forest management program.

Knowledge of:

1. Urban ecology and climate change
2. Forest ecology
3. Remote sensing technologies
4. Geographic information systems [GIS]
5. The benefits of trees
6. Program planning and development
7. Resource assessment and analysis
8. Budgeting
9. Workforce, volunteer, and partner/collaborator planning
10. Program evaluation
11. Arboricultural tools and equipment
12. Program reporting (i.e., documentation)
13. Standards of practice for arboriculture, urban and community forestry, and natural resource management
14. Relationship between community political structures and/or processes of government, NGOs, and other partner management strategy and policy development
15. The role of the urban and community forester within the structure of government, NGOs, and other partner management of community resources
16. Tree equity principals

Skills in:

1. Project management
2. Analyzing the assets and liabilities of the community forest
3. Developing a planting plan based on needs identified within the tree inventory and urban tree canopy analysis
4. Scheduling activities to maintain the community forest (e.g., risk assessment, pruning, integrated pest management, watering, nutrient management)
5. Creating work schedules for crews, volunteers, and partners to enact the community forest management plan
6. Reviewing and evaluating site plans and/or specifications by considering the wellbeing of the tree
7. Developing processes for collecting, disposal, or reuse of wood and tree parts (e.g., firewood, refuse, recycling, upcycling, chipping)
8. Monitoring programs and evaluating project outcomes to identify avenues for program improvement and adaptation
9. Reporting program and project outcomes, challenges, and adaptations

Task B: Foster the equitable enjoyment of urban forest benefits by employing urban forest management and planning techniques.

Knowledge of:

1. Benefits and ecosystem services of urban trees and forests
2. Urban forest management planning
3. Industry-accepted tree care practices (e.g., planting, pruning, risk assessment)
4. GIS and data management
5. Social science methods and techniques (e.g., surveys)
6. Underserved communities and geographies within scope area
7. Direct and indirect community engagement strategies

Skills in:

1. Stakeholder engagement
2. Analyzing and utilizing social, spatial, demographic datasets (e.g., census data, Tree Equity Score)
3. Soliciting public opinion
4. Engaging and collaborating with community leaders
5. Conducting a feasibility study
6. Identifying areas where urban canopy can be enhanced
7. Recommending design solutions to foster canopy growth in underserved areas

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Task C: Manage trees and urban forests to ensure long-term sustainability and resilience through implementation of holistic plant health care and management practices.

Knowledge of:

1. Urban and forest ecology
2. Climate change
3. Plant selection (e.g., selecting and procurement of appropriate stock, supporting biodiversity and ecological health)
4. Health care best practices (e.g., building healthy soils, integrated pest management, supporting biodiversity and ecological health)
5. Pest management factors (e.g., prevalence, susceptibility, prevention, mortality rates)
6. Biotic and abiotic tree disorders that are common to urban areas
7. GIS and remote sensing technologies

Skills in:

1. Monitoring tree and forest health within the managed area by inspection, prevention, and removal of afflicted trees
2. Analyzing diagnostic data to track trends in pest activity
3. Keeping records of integrated pest management applications
4. Diagnosing tree disorders
5. Managing tree disorders

Task D: Develop pruning plans that maximize tree benefits and longevity while minimizing risk and liability.

Knowledge of:

1. Accepted industry standards and best practices for tree pruning (e.g., ANSI A300 Pruning Standard - Part 1 and accompanying ISA Best Management Practices, BSI/ BS3998 Tree Work - Recommendations)
2. Industry-accepted safety standards and requirements (e.g., ANSI Z133 Safety Requirements for Arboricultural Operations, local requirements, ISO 11681-2:2011/AMD 1:2017, Machinery for forestry — Portable chain saw safety requirements and testing — Part 2: Chain saws for tree service — Amendment 1)
3. Industry-accepted safety standards and local requirements regarding working near electrical systems (e.g., ANSI Z133 Safety Requirements for Arboricultural Operations, local requirements)
4. Pruning practices and considerations associated with optimal timing and quantity depending on species type, condition, and environmental factors
5. Outcomes of tree pruning (e.g., benefits, consequences, cost, flowering, fruiting)
6. Pruning objectives (e.g., structural development, risk mitigation, clearance, density reduction, restoration, size management)
7. Purposes, cycles, benefits, and costs of tree pruning
8. Pruning tools and equipment
9. Types of work crews, volunteers, and partners who perform pruning

Skills in:

1. Writing pruning specifications according to industry-accepted standards, local regulations, and best practices
2. Allocating resources (e.g., tools, equipment, labor) to perform tree pruning
3. Scheduling tree pruning activities (i.e., routine, response, priority, cycle)
4. Coordinating the disposal or reuse of tree debris
5. Inspecting compliance with pruning work specification

Task E: Formulate and/or implement a planting plan and stocking rate to maintain and/or meet the goals of the community urban forest management plan and maximize benefits of the urban tree canopy.

Knowledge of:

1. Urban ecology and climate change
2. Forest pest and disease management
3. Best practices concerning tree diversity (e.g., taxonomic, species, ecological, age)
4. Tree inventory (e.g., methodology, specifications)
5. Benefits and features of urban tree canopy
6. Soil science
7. Site assessment (e.g., species selection, site conditions, constraints)
8. Remote sensing
9. Standards and specifications for planting
10. Industry-accepted nursery standards
11. Planting work crew types (e.g., staff, volunteers, partners)

Skills in:

1. Coordinating with allied professionals (e.g., architects, landscape architects, landscape designers, community planners, stormwater engineers, civil engineers, NGOs, community groups)
2. Interpreting tree inventory data
3. Sourcing of trees for planting
4. Budgeting
5. Scheduling
6. Assessing site and analyzing soil conditions before planting
7. Assessing urban canopy cover data
8. Selecting species appropriate for planting in various situations/locations to meet defined goals
9. Selecting planting methods based on site and project requirements
10. Interpreting site plans (e.g., landscape design, architectural design plans, engineering standards)
11. Allocating resources (e.g., tools, equipment, labor) to perform tree planting

Task F: Collaborate in the development and/or implementation of forest and natural resources conservation plans.

Knowledge of:

1. Climate change
2. Urban ecology
3. Forest ecology
4. Ecological parameters of urban and natural areas (e.g., invasive species management, species conservation)
5. Forest and natural resource management
6. Inventory and classification systems for natural areas
7. Differences between natural areas and urban forested spaces
8. Wildland-urban interface [WUI]
9. Wildlife habitat
10. Laws and regulations related to the conservation of forests and natural areas

Skills in:

1. Managing trees, forests, and natural areas to support plan objectives while considering community and environmental needs
2. Identifying natural areas based on factors (e.g., species, ecological interactions)
3. Collecting and analyzing data
4. Quantifying and reporting ecosystem services
5. Engaging stakeholders, partners, and allies in forest and natural area management
6. Initiating management activities which are sensitive to forests and natural areas and the interaction between wildland and urban spaces

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Task G: Plan, implement, maintain, and analyze tree inventories based on community resources and management needs.

Knowledge of:

1. GIS and remote sensing technology
2. Purpose of asset inventories
3. Types of asset inventories (e.g., sample, partial, complete, periodic, continuous)
4. Information that is gathered as part of asset inventories (e.g., location, species, diameter, height, condition, risk rating, maintenance, work prioritization)
5. Methods of conducting a tree inventory

Skills in:

1. Tree identification, assessment, and measurement
2. Collecting, analyzing, and managing tree inventory data
3. Collecting and maintaining canopy cover data and analysis
4. Leading, training, supporting, coordinating, and managing participants taking part in the asset inventory (e.g., staff, volunteers)
5. Overseeing the data management and updating of the tree inventory

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Task H: Manage fleet, tools, and equipment for sustainable and efficient use.

Knowledge of:

1. Safe operations of arboricultural and forestry tools and equipment
2. Purchasing and procurement best practices
3. Equipment needs forecasting
4. Fleet management
5. Inventory systems for tools, equipment and/or fleet vehicles
6. Inventorying tools, equipment, and vehicles

Skills in:

1. Inspection and maintenance of tools, equipment, and fleet vehicles
2. Managing purchasing/request orders

Task I: Determine ownership of trees (i.e., public versus private).

Knowledge of:

1. Legal framework and implications for tree ownership
2. Property documentation (e.g., aerial images, surveying reports, plot maps, deeds, easements)

Skills in:

1. Reviewing documentation to identity tree ownership
2. Coordinating with other relevant parties to resolve questions of ownership (e.g., land registry, legal counsel, land planners and developers, GIS analysts)

Task J: Oversee a systematic process to identify, analyze, and evaluate tree risk.

Knowledge of:

1. Duty of care (i.e., liability associated with community trees)
2. Levels of tree risk assessment
3. Impact of time frame on the outcomes of tree risk assessment
4. Types of risk
5. Common features of a tree risk assessment report (e.g., identification of targets, likelihood of failure, likelihood of impact, consequence, mitigation)
6. Prioritization of mitigation options
7. Tree ownership (i.e., public versus private)

Skills in:

1. Prioritizing response to risk
2. Interpreting tree risk assessment reports
3. Prescribing mitigation measures to reduce tree risk
4. Monitoring tree risk by utilizing tree risk management methodology

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Task K: Develop and implement policies, procedures, and practices to identify, evaluate, mitigate, monitor, and communicate tree risk.

Knowledge of:

1. Accepted industry standards for tree risk assessment methodology and outcomes
2. Risk tolerance of stakeholders (e.g., department, utility, public)
3. Tree risk management plans

Skills in:

1. Writing policy statements regarding tree risk management
2. Empathetic and prudent communication of risk and associated mitigation strategies
3. Establishing a frequency for assessing tree risk
4. Selecting tree risk methodology based on programmatic factors (e.g., budget, labor, equipment) and situational factors (e.g., site access, location, quantity)
5. Assessing the risk tolerance of stakeholders (e.g., department, utility, public)
6. Prioritizing tree risk mitigation strategies based situational factors (e.g., risk tolerance, consequence, mitigation strategy, budget)

Arboriculture Practices — Weight: 26%

Task A: Select tree(s) appropriate for a given planting site and project needs taking into consideration short- and long-term tree requirements and maintenance goals.

Knowledge of:

1. Characteristics of tree species (e.g., cultural needs, size, growth pattern and rate, flower and fruiting, wildlife use, air quality and sustainability, maintenance needs, benefit-cost ratio, invasiveness)
2. Species-specific considerations and potential vulnerabilities (i.e., biotic factors, abiotic factors, site characteristics)

Skills in:

1. Collecting soil samples
2. Analyzing soil characteristics (e.g., soil texture, drainage, available rooting space)
3. Assessing site characteristics (e.g., sun and wind exposure, water availability and drainage, soil-available space)
4. Selecting a tree species that will thrive at the planting site
5. Recommending tree species for the planting site to other stakeholders (e.g., community partners, governmental agencies, engineers, general public)
6. Communicating tree requirements and site considerations to other stakeholders (e.g., community partners, governmental agencies, engineers, general public)
7. Making recommendations based on tree, site, and plan requirements

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Task B: Explain the interaction between water and soil and how it affects tree growth and development, assess site conditions, and list management options when needed.

Knowledge of:

1. Urban soils features
2. Beneficial organisms and their interactions with root systems
3. Physical, chemical, and biological properties of the soil and how they relate to water
4. Water movement and drainage (e.g., surface, underground, storm water)
5. Soil structure and water behavior in soil
6. Relationship between drainage, available water, and soil characteristics
7. Water budgets (i.e., rate of change of water stored in an area or soil surrounding trees and balanced by the quantity and rate at which water flows in and out of the same area)
8. Supplemental water, irrigation, and water harvesting systems (e.g., application, scheduling, recycled water)
9. Local climatic condition affecting availability and uptake of water from soil (e.g., humidity, temperature, average rainfall)

Skills in:

1. Assessing drainage and water-holding capacity
2. Soil sampling
3. Generating recommendations for drainage options to manage water around newly planted and existing trees

Task C: Identify trees' soil volume, structure, and nutrition requirements and recommend mitigation strategies when needed.

Knowledge of:

1. Tree root growth requirements
2. Soil management and amendments (e.g., mulching, soil amendments)
3. Soil volume, structure, and nutrient requirements for trees

Skills in:

1. Recommending soil management and development strategies to support tree growth and development in urban spaces (e.g., root paths, soil trenches, soil vaults, structural soils, structural cells)
2. Identifying soil improvement and remediation strategies (e.g., mulching, aeration, vertical mulching, pH remediation, soil replacement and amendments, biochar)
3. Developing strategies for improving urban and community tree soil quality and volume

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Task D: Plant and transplant trees according to industry-accepted standards and best practices.

Knowledge of:

1. Industry-accepted planting and transplanting standards (e.g., BSI/BS 8545 Trees – From nursery to independence in the landscape; ANSI A300 Transplanting Standard – Part 6; ISA Best Management Practices – Tree Planting; Z60.1 American Nursery Stock Standard; BSI/BS 3936-1 Nursery stock – Part 1: Specification for trees and shrubs; CSLA/CNLA Canadian Landscape Standard)
2. How trees are propagated and grown by the nursery industry
3. Planting timing (e.g., season, stock type, water availability, temperature, sunlight availability)
4. Proper placement of the trees
5. Impact of soil amendments
6. Backfilling
7. Root ball interaction with planting hole and soil (e.g., impact of soil amendments, soil settlement, potential for root burn, desiccation, or drainage issues)
8. Advantages and disadvantages of different types of nursery stock

Skills in:

1. Assessing the quality and health of planting stock
2. Inspecting the root system of the planting stock before purchasing
3. Handling of planting stock
4. Selecting appropriate sites for tree planting to ensure long-term survival and service
5. Preparing the planting site (e.g., determining planting hole width and depth)
6. Pruning roots and shaving rootballs to prevent girdling and/or circling roots
7. Planting a tree according to industry-accepted standards and best practices
8. Removing rootball package materials (e.g., wire baskets, burlap and twine/straps, wood crates, plastic containers)
9. Backfilling and adding a soil and/or mulch berm to support tree establishment
10. Transplanting trees (e.g., transport, site choice and preparation, viability, post-planting care)

Task E: Explain why pruning is undertaken and list the main industry-accepted pruning systems, objectives, types of cuts, and general practices.

Knowledge of:

1. Accepted industry standards for tree pruning (e.g., ANSI A300 Pruning Standard - Part 1 and accompanying ISA Best Management Practices, BSI/BS3998 Tree Work - Recommendations)
2. Pruning practices and considerations associated with optimal timing and quantity depending on species type, condition, and environmental factors
3. Outcomes of tree pruning (e.g., benefits, consequences, cost, flowering, fruiting)
4. Wound response
5. Pruning objectives (e.g., structural development, risk mitigation, clearance, density reduction, restoration, size management)

Skills in:

1. Assessing tree and site conditions that influence pruning decisions and short- versus long-term outcomes
2. Communicating to the general public how pruning trees promotes good structure (e.g., reduce the likelihood of failure) while minimizing the impact on tree health
3. Explaining the difference between unacceptable and acceptable pruning techniques to a lay audience

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Task F: Develop and implement tree protection plans for individual trees or population of trees on or near construction, development, or demolition sites.

Knowledge of:

1. Accepted industry standards related to trees and construction (e.g., ANSI A300 Construction Management Standard – Part 5 and accompanying ISA Best Management Practices, BSI/BS 5837 – Trees in Relation to Design, Demolition and Construction)
2. Site plans
3. Construction phases (i.e., planning, design, preconstruction, landscaping, construction, post-construction)
4. Tree Protection Zone [TPZ]
5. Critical Root Zone [CRZ]
6. Species-specific resilience/vulnerability to construction
7. Methods for soil and root protection
8. Roles of other parties (e.g., developers, contractors, interdepartmental) within a tree protection plan
9. Tree protection measures (e.g., developers, contractors, interdepartmental)

Skills in:

1. Interpreting a site plan
2. Utilizing the site plan to aid in implementing the tree protection plan
3. Recommending measures to protect trees from damage before and during construction
4. Coordinating tree protection activities with developers/ contractors
5. Assessing the effectiveness of tree protection plans

Communication and Public Education — Weight: 21%

Task A: Articulate the value of the urban forest to decision-makers and stakeholders (e.g., management, colleagues, partners, elected officials, the public).

Knowledge of:

1. Benefits, ecosystem services, and risks associated with trees in urban spaces
2. GIS and data management
3. Cost/benefit analysis
4. Urban ecology
5. Fact-gathering methods and the scientific method
6. Environmental interpretation
7. Mission, vision, and values
8. Industry standards
9. Public speaking and storytelling
10. Audience assessment

Skills in:

1. Assembling facts into a coherent order for presentation
2. Forming compelling messages in alignment with facts and standards to communicate with the public, partners, and stakeholders
3. Conducting cost-benefit analysis
4. Preparing statements or presentations to decision-makers and stakeholders to promote ongoing support or growth of urban forest and community tree management
5. Persuasive communication
6. Communicating the minimum standards of a community forestry program with decision-makers to garner their support for community tree management programs
7. Developing a message that is tailored to the audience

Task B: Communicate information verbally with stakeholders (e.g., management, colleagues, partners, elected officials, the public).

Knowledge of:

1. Role of audience features (e.g., demographic, motivations, engagement) in crafting verbal communications
2. Presentation techniques (e.g., vocal variety, body language, gestures, use of props)
3. Differences between presentation modalities (i.e., in-person versus remote, synchronous versus asynchronous)

Skills in:

1. Creating visuals to support verbal communications (e.g., videos, posters, slides, props, display boards)
2. Developing a message that aligns with the level of expertise of the audience
3. Storytelling
4. Active listening
5. Empathetic communication
6. Bidirectional communication

Task C: Produce written communication with stakeholders (e.g., management, colleagues, partners, elected officials, the public).

Knowledge of:

1. Legal requirements for access to public records
2. Public administration and governance
3. Industry standards
4. Structure, formatting, and specifications for producing public notices
5. Standards for accessible design
6. Contracting
7. Content requirements of common community forestry and administrative reports (e.g., memorandum of understanding [MOUs], position statements, white paper, executive summaries)
8. Training documentation
9. Grant management (e.g., grant writing, reporting, budgeting)
10. Creating written specifications for work that is needed

Skills in:

1. Recordkeeping and archiving
2. Persuasive writing
3. Searching for grants to fund single or ongoing projects
4. Preparing grant applications by supplying needed information and metrics into the grant application
5. Overseeing the maintenance of the grant-funded program to ensure fulfillment of deliverables

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Task D: Initiate, cultivate, and maintain relationships across relevant parties (e.g., the public, NGOs, interdepartmental, interagency, media, utilities).

Knowledge of:

1. Industry leaders and common public interest or lobbying groups
2. Conflict resolution techniques and/or models (e.g., de-escalation, mediation, negotiation, compromising, constructive conflict)
3. Factors involved in forming or maintaining partnerships
4. Strategic planning and adaptive management

Skills in:

1. Coordinating plans and actions with other agencies' leaders, divisions, and departments
2. Collaborating with the media in traditional and social media platforms to communicate information
3. Coordinating plans and activities with organization partners, local NGOs, commercial partners, and utilities

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Task E: Respond to inquiries from stakeholders by addressing their concerns.

Knowledge of:

1. Common requests made to arborists, foresters, ecologists, and program supervisors (e.g., tree inspections, tree pruning, tree removals, tree ownership and responsibility)
2. Tools, software, and/or methods for recording and tracking inquiries
3. Program impact metrics (e.g., number of requests resolved, number of permits request treated, canopy retention/growth)
4. Methods for establishing benchmarks or goals for addressing stakeholders and community needs
5. Methods for escalating concerns

Skills in:

1. Receiving and logging inquiries by tracking their status and closing resolved inquiries
2. Monitoring program impact through direct (e.g., surveying, public comment) or indirect (e.g., number of inquiries, meeting attendance) methods
3. Resolving requests in a timely manner to maintain stakeholder and community satisfaction
4. Establishing intervals to gather program impact metrics
5. Responding to feedback

Task F: Involve community members and groups in initiatives that complement the goals and objectives of the community forestry program.

Knowledge of:

1. Common grassroots movements or issues which generate grassroots activism
2. Methods for training, coordinating, and managing a volunteer program
3. Volunteer recruitment and engagement techniques
4. Event planning

Skills in:

1. Interacting with grassroots movements and responding to their inquiries to form amicable resolutions
2. Recruiting and training volunteers to support programmatic objectives
3. Supporting and maintaining volunteer structures to provide consistent and effective volunteer support to programmatic objectives
4. Leading, supporting, and coordinating with community tree boards or similar advisory bodies to achieve common goals

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Task G: Develop and implement a public education program that reaches a wide range of stakeholders and partners.

Knowledge of:

1. Benefits of urban forestry and natural resources
2. Historic and current use of trees in urban spaces
3. Environmental stewardship and nature-based solutions
4. Basic marketing and design principles

Skills in:

1. Engaging diverse audiences
2. Coordinating the creation of educational materials for the public about community and urban forestry
3. Preparing educational presentations about urban forestry and natural resources

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Administration, Policy, and Planning — Weight: 21%

Task A: Contribute and guide the creation of community tree ordinances and policies.

Knowledge of:

1. Conservation principles
2. Common development and construction implications on the urban forest
3. Government, NGO, and other partner political influence in community policy and regulations
4. Advocating for and writing policy (e.g., structure, level of detail, time scale, interconnection with other policy)
5. Policy frameworks
6. Approaches to enforcement and permitting systems
7. Methods for evaluating regulations and policy

Skills in:

1. Environmental interpretation
2. Illustrating the implications of development and construction upon community natural resources
3. Quantification and reporting of ecosystem services
4. Writing and/or recommending and supporting community tree ordinances and/or policy
5. Instituting and supporting a permitting system
6. Administer tree protection regulations, ordinance/policy, and plans
7. Audience assessment

Task B: Administer tree protection regulations, ordinance, policy, and plans.

Knowledge of:

1. Site, development, construction, and tree protection plans, practices, terms, and professionals
2. Urban and forest ecology
3. How damage to soils, trees, forests, and natural resources resulting from development and construction activities occur and affect site/product quality and project results
4. Post-damage management
5. Mitigation measures
6. Processes for code enforcement

Skills in:

1. Project management
2. Reviewing plans, specifications, and documents
3. Specifying and monitoring tree protection zones
4. Specifying mitigation strategies to reduce damage to trees and soil
5. Documenting and reporting compliance or non-compliance with regulations/plans/specifications
6. Communicating with various stakeholders on construction sites
7. Cultivating support among allied professionals for tree protection

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Task C: Develop, establish, and maintain a program budget to meet sustainable and resilient urban forestry program needs.

Knowledge of:

1. Methods for budgeting to create, maintain, and/or implement a diverse and resilient community forest
2. Methods for budget forecasting at different time frames (e.g., monthly, quarterly, annually, multi-year)

Skills in:

1. Developing budget proposals that illustrate and justify operational needs and expenditures to secure funding
2. Monitoring changes in the operating budget (i.e., programmatic expenditures)
3. Identify, illustrate, and report returns on investment related to urban forestry expenditures
4. Identifying and securing alternative funding sources (e.g., grants, fundraising, endowments, awards)

Task D: Develop, adapt, support, and monitor community trees and associated urban and community forestry policy, ordinance, and/or regulations.

Knowledge of:

1. Applicability and limitations of government, institutional, agency, and NGO regulatory authority to public and private trees and natural resources
2. Methods for monitoring and assessing regulatory compliance
3. Strategies for regulatory enforcement
4. Damages, fines, and penalties

Skills in:

1. Data collection, management, and analysis
2. Developing, reviewing, assessing, revising, and updating policy/ordinance and regulations
3. Communicating policy to diverse audiences and stakeholders
4. Monitoring regulation compliance in partnership with other professional partners and community allies.
5. Enacting policy in partnership with associated professionals, community partners and legislative bodies

Task E: Oversee contractors involved in urban forest management by managing their acquisition, performance, and utilization.

Knowledge of:

1. Cost-benefit analysis
2. Arboriculture, forestry, and nursery stock standards
3. Contracting (e.g., consultants, engineers, landscapers, tree-planting and nonprofit organizations)
4. Request for bid proposals
5. Methods for developing and defining scope of work
6. Evaluations of bids/awarding of contracts
7. Methods for auditing and metrics for assessing contractor performance
8. Contractor payment management

Skills in:

1. Evaluating contractor bids
2. Onboarding contractors
3. Managing contractor activities and obligations (e.g., advance notice of work, payment, coordination with other partners and stakeholders)
4. Monitoring contractor compliance with the contract
5. Enforcing stipulations of the contract by identifying deficiencies and applying penalties
6. Comparing the efficacy and cost difference of using in-house staff compared to contractors

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Task F: Lead and support staff, partners, and volunteers who are part of urban and community forestry planning and management.

Knowledge of:

1. Accepted industry standards and credentials in arboriculture and urban forestry
2. Training methods and techniques for staff, partners, and volunteers
3. Volunteer management best practices
4. Leadership principles and approaches
5. Diversity, equity, and inclusion principles

Skills in:

1. Managing volunteer, partner, and staff activities
2. Coordinating with volunteers, partners, and staff to schedule and complete work tasks or projects
3. Evaluating volunteer, partner, and staff performance
4. Leading volunteer, partner, and staff (e.g., mentorship, training)
5. Facilitating group work to attain an objective
6. Mediating partner interactions
7. Managing change
8. Project management
9. Mediating conflict and forming amicable resolutions between staff and volunteers

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Task G: Create and/or support a culture of workplace safety, service, responsibility, and accountability.

Knowledge of:

1. Accepted industry standards and credentials in arboriculture and urban forestry
2. Training methods and techniques for staff, partners, and volunteers
3. Hazard recognition
4. Incident reporting
5. Diversity, equity, and inclusion principles

Skills in:

1. Performing a job briefing
2. Fostering a culture of safety and service
3. Recognizing and communicating hazards to employees
4. Reporting incidents and near misses
5. Implementing partner, volunteer, and staff training and education programs
6. Auditing and evaluating workplace safety program/education outcomes
7. Updating safety training programs to reflect changes in the working environment or standards/regulations

Task H: Participate in emergency response planning involving extreme and other weather-related events that may impact urban and community trees within the area of jurisdiction.

Knowledge of:

1. Extreme weather events which necessitate emergency preparation and response (e.g., storm, fire, earthquake)
2. Tree risk management principles, standards, and best practices
3. Emergency response planning
4. Structures for support agreements with other parties (e.g., community, interdepartmental, utility, medical response)
5. Agencies that provide resources during natural disasters
6. Media communication approaches
7. Post-event review and recommendations (i.e., after action review)
8. Safe work procedures during an emergency

Skills in:

1. Leading or supporting teams during emergency response
2. Triaging and prioritizing response to emergencies spread across geographic locations
3. Reporting the status of emergency preparation and response
4. Collaborating with other relevant parties when developing or reviewing emergency response plans