

# Duntemann Urban Forestry, LLC

## ISA BCMA Exam Preparatory Course – Course Description & Agenda

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**Course Description:** The highest credential a member of the International Society of Arboriculture can achieve is the Board-Certified Master Arborist certification. This course is designed to prepare practitioners for the BCMA exam through content lectures, discussion, exercises, review, and self-assessments. The course consists of nine, 3-hour modules presented over nine consecutive weeks. The BCMA Guide for Exam Preparation provides the framework for instruction. The lectures, and exercises developed by Duntemann Urban Forestry are intended to provide participants with a comprehensive review to prepare for their exam.

**Course Structure:** The time and money any one individual invest to prepare for the BCMA exam can be considerable. Understanding this, Mark created a training experience that strives to reinforce participant strengths and identify areas of needed concentration. The primary goal is to provide participants with the tools to think critically. The structure of the course was designed to facilitate these ends.

1. Registrants will complete and submit the preliminary assessment from the BCMA Guide at the course's onset. Mark will review and discuss the results of this preliminary assessment with each registrant in preparation for the course.
2. Participants will complete and submit chapter practice questions at the end of each module.
3. An analysis of responses from the previous module's exams will be presented and reviewed at the beginning of the subsequent module.
4. Course participants will complete and submit the sample exam from the BCMA Guide at the series' end.
5. After the course's completion participants will confer with Mark to review their practice test results. of the course and submission of the sample exam answer sheet, Mark will schedule a one-on-one conversation with each participant. Mentoring will include recommendations for additional study prior to the scheduled exam.

Workshop materials include a detailed narrative related to each module, case studies, exercises, and sample exams. Additionally, each participant will receive a certificate of participation will be provided. Modules are offered twice daily to accommodate international participation.



### Instructor Biography

Mark Duntemann is the owner of Duntemann Urban Forestry, LLC. He is an internationally recognized expert in tree risk management policy development. Mark is an ISA Board-Certified Master Arborist, is an ISA-tree risk assessment qualification (TRAQ) instructor and maintains the tree assessment certification from the Arboriculture Association (UK). He is currently developing a book on tree risk management. Mark has served as an expert witness in numerous tree-related injury and fatality cases. This experience also informs his lectures.

Over his thirty-five-year career, Mark has worked almost exclusively with municipalities. First, as a tree inventory provider and later as a contract urban forester for smaller communities. Currently, he develops actionable management plans for managing large systems of trees. This work is international in scope. This breath of experience allows Mark to tailor the Municipal Specialist course to provide a broad range of ideas and case studies to make for a robust learning experience for all participants.

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**Module 1 – Tree Biology and Biotic Disorders**

Trees are comprehensive adaptive biological structures. The opening module of this course provides a foundation for understanding tree components at the cellular, tissue, and structures level. Each narrative covers independent and interrelated functions of each. This information allows arboricultural professionals to anticipate tree responses to external stresses. A biotic factor is a living organism that shapes its environment. Some biotic factors have negative effects on tree health and structure. This portion of the module discusses insects and pathogens as they relate to plant health.

**Learning Outcomes:**

- Identify tree structures and describe their integrated functions.
- Identify and describe the primary physiological processes of a tree.
- Describe how a tree responds to external dynamic and static loading.
- Describe the physiological response to decay.
- Identify biotic disorder types and their potential negative affect on trees.
- Develop plant health management utilizing pathogen life cycles.

**Module 2 – Abiotic Disorders and Tree Preservation**

Abiotic disorders are caused by nonliving factors, such as drought stress, sunscald, freeze injury, and many more environmental and/or cultural errors. The built environment also introduces a range of complications for trees that affect tree health, structure, and longevity. This module defines these conditions and details/defines/reviews approaches for preserving trees particularly in contexts where these factors are present.

**Learning Outcomes:**

- Describe physical and mechanical injuries to plants.
- Assess soil and site influences on plant performance.
- Distinguish symptoms of nutrient deficiencies.
- Assess and differentiate chemical and pollution injury to plants.
- Recommend appropriate treatments for various abiotic disorders.
- Describe preservation specifications pre-, during and post construction.
- Describe the potential negative effects of construction on trees.
- Describe treatment measures for post-construction damage to trees.

**Module 3 – Plant Identification, Selection, and Installation**

The ability to identify a tree species is an essential skill in arboricultural. This allows practitioners to make recommendations and take actions that are specific to species' needs. The community gains the most benefits from trees that reach maturity with a healthy crown. Matching tree to site is an integral part of meeting this long-term sustainability goal. The range of methods for installing trees appropriately with respect to long term sustainability goals is the culminating topic of this module.

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**Learning Outcomes:**

- Describe the information that informs on appropriate plant selection.
- Describe nursery stock specifications and parameters for quality control.
- Explain the system of plant taxonomy and nomenclature.
- Explain the site selection process for tree planting.
- Describe the importance of identification for the proper management of plants.
- Describe best management practices applied to tree planting.
- Discuss early care of newly planted trees to achieve healthy establishment.

**Module 4 – Soil Science and Treatment & Water Relations**

Soil is the medium in which trees are sustained and thrive. This module details several aspects of soil composition, water relations and methods for modifying soil capacity. These include descriptions and forms of measurement. The concluding discussion focuses on soil interrelationship on tree health and systems.

**Learning Outcomes:**

- Describe, in detail, the physical, chemical, and biological properties of soil.
- Summarize how soil properties affect the hydrology of soil.
- Explain how soil and water conditions affect root growth and development.
- Discuss how to interpret elements of a standard soil test.
- Discuss the various fertilization types and techniques and limitations.
- Describe the process of water uptake and transpiration.
- Discuss physiological responses and adaptations to dry conditions.
- Describe the effects of short- and long-term flooding on trees.
- Summarize the advantages and disadvantages of various irrigation techniques.
- Discuss and purpose of xeriscape and water relations landscaping.
- Discuss the benefits and limitations of applying organic mulch to trees.

**Module 5 – Climbing, Rigging and Removal & Support**

Arborists are, in general, at the front end of the operational care of trees. A dominant focus of the arboriculture industry is professionalism and safety. This session begins with detailing elements of climbing and rigging, such as specific knots, equipment, and techniques. Two additional areas of arboriculture care, tree removals and support systems, including process, specifications, and standards are also covered.

**Learning Outcomes:**

- Select appropriate ropes and knots.
- Explain how friction is used in climbing and rigging systems.
- Select appropriate climbing and rigging equipment.
- Describe various approaches to safely rig branches.
- Identify situations that may require tree support systems and lightening protection.
- Describe the installation of tree support systems based on best management practices.

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**Module 6 – Plant Health Care & Diagnostic Processes**

Diagnosis is the science and art of identifying the agents or causes of a problem under investigation. When one renders a diagnosis, one has collected all available information, clues and observations and then arrives at an informed conclusion as to the most feasible causal factor(s). At its essence, plant problem diagnosis is an investigative and problem-solving process. Plant Health Care focuses on maintaining plant host health to minimize pathogen impacts. This module has participants refine their diagnostic skills and applying those skills to making plant health care recommendations.

**Learning Outcomes:**

- Explain the role of phenology for interpreting pest management choices.
- Describe the role of monitoring and inspection in Plant Health Care.
- Describe biological, mechanical, cultural, and chemical control methods.
- Explain the systematic process for plant diagnosis.
- Differentiate signs and symptoms of plant disorders.

**Module 7 – Tree Inventories & Management Plans**

Tree inventories provide essential data for the implementation of short-term actions and development of long-term policies. This module will focus on the planning, design, and execution of a comprehensive tree inventory. Inventory based management plans define a municipal tree program and guides maintenance and management over time. Examples of fundamental management plan components, including mission statement, plan structures, and actionable objectives are provided. A tree inventory data dictionary is also provided.

**Learning Outcomes:**

- Discuss the elements of establishing a tree inventory.
- Describe the core tree inventory data fields and their use.
- Differentiate types of tree inventories.
- Discuss the components of an urban forestry management plan.

**Module 8 – Tree Risk Assessment & Plant Appraisal**

This three-hour module focuses on two specializations within arboriculture: tree risk assessments and plant appraisal. The purpose of a tree risk assessment is to anticipate the potential of a future negative, tree-related event through a subjective process. The relevant elements of the ISA tree risk assessment process will be presented in detail. Additional discussions will focus on system-level risk management for arborists, companies, and government agencies. Secondly, the value of a tree can be determined in several ways and is often dependent on details of the appraisal assignment. The concluding discussion describes concepts found within the Plant Appraisal Guide (10<sup>th</sup> edition) and include invoking an appraisal process, selecting appropriate approaches and methods, and developing a cogent report.

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**Learning Outcomes:**

- Describe the three levels of tree risk assessment and their respective use.
- Identify the four factors that inform a tree-risk rating.
- Contrast the cost, income, and sales approach.
- Describe common circumstances in which plant appraisal might be requested.
- Explain the plant appraisal process.
- Describe the elements of a plant appraisal report.
- Describe potential targets of tree-part failure.

**Module 9 – Business Relations & Safety Management**

The first part of this final module will inform participants on critical aspects of maintaining business credibility through a discussion on ethics, best management practices and stakeholder communications. An underpinning of risk takes on four forms in arboricultural and urban forestry. The risk of harm is of the most important to practitioners. Within this specific form of risk, staff safety is an integral element of a tree care company or agency's tree risk management policies. This segment of the module will refine participant understanding of the operational aspect of safety management and aligned policies.

**Learning Outcomes:**

- Discuss the elements of professional ethics in arboriculture.
- Describe the elements of key business operations.
- Explain the importance of compliance with applicable standards.
- Identify applicable safety regulations and standards.
- Select appropriate personal protective equipment.
- Describe potential work hazards.
- Describe a process for assessing work site accidents using the OSHA 300 form.
- Describe measures taken to develop a culture of safety.
- Describe emergency response procedures.