



Ontario
College of
Teachers

Ordre des
enseignantes et
des enseignants
de l'Ontario

Additional Qualification Course Guideline Teaching Green Industries – Horticulture Management Science

Schedule F Teachers' Qualifications Regulation

December 2014

Ce document est disponible en français sous le titre *Ligne directrice du cours menant à la qualification additionnelle Technologie agricole, forestière et paysagère – Gestion en horticulture*, décembre 2014.

Additional Qualification Course Guideline

1. Introduction

The guideline for Teaching Green Industries – Horticulture Management Science is organized using the following framework.



Diagram 1: Guideline Organization

Teachers are able to take the Additional Qualification course: Teaching Green Industries – Horticulture Management Science if they hold a technological education qualification at Grades 9 and 10 or Grades 11 and 12 in the broad-based area of Teaching Green Industries.

The Additional Qualification Course: Teaching Green Industries – Horticulture Management Science employs a critical, pedagogical lens to explore in holistic and integrated manner theoretical foundations, development of learners, program planning and implementation, instructional practices, assessment and evaluation, the learning environment and ethical considerations related to teaching and learning.

The Ontario College of Teachers recognizes that candidates working in the publicly funded school system, independent/private institutions or First Nations schools will have a need to explore topics and issues of particular relevance to the context in which they work or may work.

Critical to the implementation of this course is the creation of positive learning experiences that reflect care, diversity and equity. This course supports the enhancement of professional knowledge, ethical practice, leadership and ongoing learning.

The French language and the English language communities will also need to implement these guidelines to reflect the unique contextual dimensions and needs of each community. Each of these language communities will explore the guideline content from distinct perspectives and emphasis. This flexibility will enable both language communities to implement Teaching Green Industries – Horticulture Management Science as understood from a variety of contexts.

The Teaching Green Industries – Horticulture Management Science additional qualification course guideline provides a conceptual framework for providers and instructors to develop and facilitate the Teaching Green Industries – Horticulture Management Science course. The guideline framework is intended to be a fluid, holistic and integrated representation of key concepts associated with Teaching Green Industries – Horticulture Management Science.

2. Regulatory Context

The College is the self-regulating body for the teaching profession in Ontario. The College's responsibility related to courses leading to additional qualifications includes the following:

- to establish and enforce professional standards and ethical standards applicable to members of the College
- to provide for the ongoing education of members of the College
- to accredit additional qualification courses or programs and more specifically,

The program content and expected achievement of persons enrolled in the program match the skills and knowledge reflected in the College's Standards of Practice for the Teaching Profession and the Ethical Standards for the Teaching Profession and in the program guidelines issued by the College.

(*Accreditation of Teacher Education Programs Regulation, Part IV, Subsection 24*).

Additional qualifications for teachers are identified in the *Teachers' Qualifications Regulation*. This regulation includes courses/programs that lead to Additional Qualifications, the Principal's Qualifications and the Supervisory Officer's Qualifications. A session of a course leading to an additional qualification shall consist of a minimum of 125 hours as approved by the Registrar. Accredited additional qualification courses reflect the *Ethical Standards for the Teaching Profession*, the *Standards of Practice for the Teaching Profession* and the *Professional Learning Framework for the Teaching Profession*.

The course developed from this guideline is open to candidates who meet the entry requirements identified in the *Teachers' Qualifications Regulation*.

Successful completion of the course leading to the Additional Qualification: Teaching Green Industries – Horticulture Management Science, listed in Schedule F of the *Teachers' Qualifications Regulation* is recorded on the Certificate of Qualification and Registration. Successful completion of three schedule F courses within a specific broad-based technology area will be deemed to be equivalent to one specialist or honour specialist qualification for purposes of entry into the principal's qualification or the supervisory officer qualification. (O. Reg. 176/10 S.49 (4) and (5))

In this document, all references to candidates are to teachers enrolled in the additional qualification course. References to students indicate those enrolled in school programs.

3. Foundations of Professional Practice

The *Foundations of Professional Practice* conveys a provincial vision of what it means to be a teacher in Ontario. This vision lies at the core of teacher professionalism. The *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* (Appendix 1) are the foundation for the development and in the realization of the Additional Qualification course. These nine standards, as principles of professional practice, provide the focus for ongoing professional learning and are the foundation for the development and implementation of the Additional Qualification Course: Teaching Green Industries – Horticulture Management Science. In addition, the

Professional Learning Framework for the Teaching Profession is underpinned by the standards, articulates the principles on which effective teacher learning is based and acknowledges a range of options that promote continuous professional learning. The ongoing enhancement of informed professional judgment, which is acquired through the processes of lived experience, inquiry, and reflection, is central to the embodiment of the standards and the Professional Learning Framework within this AQ course and professional practice.

The *Ethical Standards of the Teaching Profession* and the *Standards of Practice for the Teaching Profession* serve as guiding frameworks that underpin professional knowledge, skills and experiences that teachers require in order to teach effectively within and contribute to an environment that fosters *respect, care, trust and integrity*.

Teacher-Education Resources

The College has developed resources to support the effective integration of the standards within Additional Qualification courses and programs. These teacher education resources explore the integration of the standards within professional practice through a variety of educative, research and inquiry-based processes. This guideline has been designed to reflect the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* and the *Professional Learning Framework for the Teaching Profession*. These resources can be found on the College web site (www.oct.ca). These resources support the development of professional knowledge and professional judgment through reflective practice. The lived experiences of Ontario educators are illuminated in the resources and serve as AQ course support for teacher education.

4. Conceptual Framework

The design, course content and implementation of the Additional Qualification Course Guideline: Teaching Green Industries – Horticulture Management Science support effective teacher education practices. These course guideline components provide a conceptual framework for the development of a holistic, integrated, experiential and inquiry-based course. The following conceptual framework supports and informs professional knowledge, judgment and practices within the Additional Qualification Course: Teaching Green Industries – Horticulture Management Science.

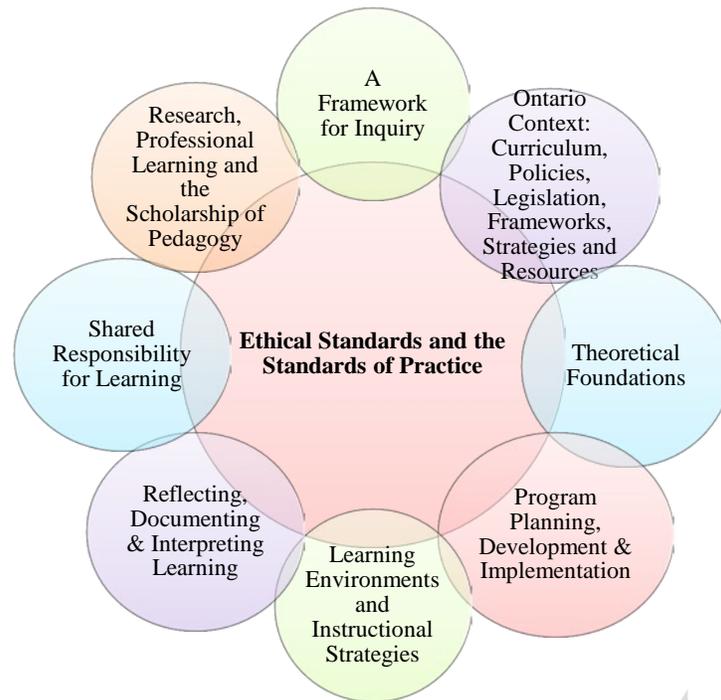


Diagram 2: Conceptual Framework for Teaching Green Industries – Horticulture Management Science

A. The *Ethical Standards for the Teaching Profession and the Standards of Practice for the Teaching Profession*:

The *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* represent a collective vision of professional practice. At the heart of a strong and effective teaching profession is a commitment to students and their learning. Members of the Ontario College of Teachers, in their position of trust, demonstrate responsibility in their relationships with students, parents, guardians, colleagues, educational partners, other professionals, the environment and the public.

The holistic integration of the standards within all course components supports the embodiment of the collective vision of the teaching profession that guides professional knowledge, learning, and practice. The following principles and concepts support this holistic integration within the AQ course.

- understanding and embodying care, trust, respect and integrity

- fostering commitment to students and student learning
- integrating professional knowledge
- enriching and developing professional practice
- supporting leadership in learning communities
- engaging in ongoing professional learning.

Through professional dialogue, collaborative reflection and an ethical culture, course candidates will continue to critically inquire into and refine professional practice and ethical culture through the lens of the *Standards of Practice for the Teaching Profession*.

B. A Framework for Inquiry

The *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* are embedded throughout the Additional Qualification course guideline.

This Additional Qualification course supports critical reflective inquiry and dialogue informed by the following:

- analyzing, interpreting and implementing Ontario's curriculum, district school board policies, frameworks, strategies and guidelines related to the Broad Based Technology
- developing awareness of First Nations, Métis and Inuit ways of knowing and perspectives
- extending theoretical understanding to design, implement and assess practices and/or programs
- implementing pedagogical strategies and assessment and evaluation practices that are linked to expectations, meet the individual needs of students, and promote student learning
- creating holistic learning environments conducive to the intellectual, social, emotional, physical, linguistic, cultural, spiritual and moral development of students
- working collaboratively with school personnel, parents/guardians, caregivers, the community, local business and industry as it relates to Teaching Green Industries – Horticulture Management Science

- exercising leadership in accessing a variety of resources, including technological resources, within and beyond the educational system to enhance and support student learning
- refining professional practice through ongoing collaborative inquiry, dialogue and reflection
- modelling ethical practices and addressing ethical issues
- critically exploring and integrating environmentally sustainable practices
- fostering responsible, active environmental citizenship
- collaboratively developing and sustaining professional learning communities for enhancing professional knowledge and supporting student learning
- fostering leadership in the integration of information and communication technology to enhance teaching and learning
- critically exploring innovative strategies to create and sustain safe, healthy, equitable and inclusive learning environments that honour and respect diversity and foster student learning
- understanding the importance of critically examining qualitative and quantitative research related to professional practice
- critically exploring strategies to understand, gain insight into and support learners' well-being and mental health needs
- working collaboratively with interdisciplinary school teams to develop and implement Individual Education Plans (IEPs) of students
- exploring strategies that contribute to a culture that promotes openness to innovation and change
- demonstrating an awareness of emerging technologies related to Teaching Green Industries – Horticulture Management Science
- demonstrating an awareness of health and safety risks associated with Teaching Green Industries – Horticulture Management Science
- applying knowledge and skills to create and maintain a safe learning environment that addresses program needs: curriculum, material handling, tool handling and equipment storage, supervision, safety standards and practices that are respectful of the environment
- demonstrating technological literacy related to Teaching Green Industries – Horticulture Management Science

- writing technical reports and creating and managing portfolios
- demonstrating mathematical literacy in Teaching Green Industries – Horticulture Management Science
- demonstrating an understanding of business management and entrepreneurial practices related to Teaching Green Industries – Horticulture Management Science
- inquiring into practice through reflection, active engagement and collaboration
- understanding the various professional practices and career opportunities in Teaching Green Industries – Horticulture Management Science
- critically exploring the relationship between education, mental health and well-being
- identifying ways to modify expectations, instructional strategies and assessment practices in Teaching Green Industries – Horticulture Management Science.

C. Ontario Context: Curriculum, Policies, Legislation, Frameworks, Strategies and Resources

The Additional Qualification Course: Teaching Green Industries – Horticulture Management Science is aligned with current Ontario curriculum, relevant legislation, government policies, frameworks, strategies and resources. These documents inform and reflect the development and implementation of the Additional Qualification Course: Teaching Green Industries – Horticulture Management Science and can be viewed at www.edu.gov.on.ca.

Course candidates are also encouraged to critically explore the policies, practices and resources available at school and board levels that inform teaching and learning related to Teaching Green Industries – Horticulture Management Science.

D. Theoretical Foundations of Teaching Green Industries – Horticulture Management Science

- understanding theories of student development (social, emotional, physical, intellectual, linguistic, cultural, spiritual and moral)

- understanding Ontario curriculum, resources and government policies, frameworks and strategies related to Teaching Green Industries – Horticulture Management Science
- understanding learning theories and the particular learning needs of the adolescent in the Intermediate and Senior Divisions
- critically exploring a variety of conceptual frameworks related to Teaching Green Industries – Horticulture Management Science
- reflecting on teaching practice and engaging in professional dialogue regarding the relationship between theory and practice
- integrating the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* as the foundation for teacher professionalism within the Additional Qualification Course: Teaching Green Industries – Horticulture Management Science
- critically exploring the significance of relevant legislation including the Ontario Human Rights Code, Ontarians with Disabilities Act, and the Accessibility for Ontarians with Disabilities Act (AODA) and associated responsibilities within professional practice
- recognizing teachers' legal obligations and ethical responsibilities according to current provincial legislation
- critically inquiring into the dimensions associated with creating and sustaining safe learning environments
- critically exploring holistic and inclusive educational programs that build on learners' abilities and empower them to reach their learning goals
- critically exploring problem solving processes, methods and approaches as they relate to Teaching Green Industries – Horticulture Management Science
- critically exploring the fundamental technological concepts in Teaching Green Industries – Horticulture Management Science.

E. Program Planning, Development and Implementation

- applying the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* to inform a program planning framework
- critically exploring the influence of society's diverse and changing nature on student learning and well-being

- deepening understanding of program planning, development, implementation strategies and frameworks related to Teaching Green Industries – Horticulture Management Science
- deepening understanding of differentiated instruction, universal design and the tiered approach in program planning, development and implementation
- critically exploring learning resources (for example, print, visual, digital) that support student learning
- understanding the types of secondary school pathways (including apprenticeship, college, university, workplace) and their relationship to students' post-secondary goals and career opportunities
- critically exploring how students' lived experiences, development, strengths, interests and needs can inform program planning, development and implementation
- integrating culturally responsive pedagogy within program planning and development
- critically exploring strategies that support learners' well-being and mental health needs
- planning instructional strategies that integrate students' learning styles, strengths and experiences
- demonstrating leadership in implementing local and provincial guidelines and policies that support safe and effective learning environments
- inspecting and reporting on the learning environment, facilities, equipment needs, resources and state of maintenance and repair for delivering Teaching Green Industries – Horticulture Management Science
- applying the theoretical foundations of Teaching Green Industries – Horticulture Management Science by incorporating the broad-based pedagogical approach that embeds problem solving and the fundamental technological concepts
- identifying the safe, ethical and legal use of technology in Teaching Green Industries – Horticulture Management Science programs
- critically exploring and integrating multiple formal and informal assessment methods and data to inform program planning and support student learning.

F. Learning Environments and Instructional Strategies

- creating and sustaining positive, ethical, equitable, accepting and safe learning environments
- critically exploring strategies for fostering a collaborative community of empowered learners
- fostering engaging, trusting and inviting learning environments that promote student voice, leadership, critical inquiry and self-regulation
- critically exploring a variety of instructional strategies to support student learning
- developing strategies to create a positive and collaborative learning environment to support student learning
- cultivating safe, ethical and respectful practices in the use of technology in purposeful and legal ways
- integrating information and communication technologies that support student learning
- providing leadership in adapting instruction to meet the needs of all learners
- critically exploring strategies that engage students as active citizen in supporting environmental, social and economic sustainability
- using pedagogies that reflect the professional identity of educators as described in the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* and in the *Foundations of Professional Practice*
- creating inclusive learning environments that reflect the ethical standards and standards of practice
- implementing safe and effective management of a variety of technical learning environments
- planning, organizing and implementing effective health, safety, sanitation and environmental standards in the Teaching Green Industries – Horticulture Management Science facility
- demonstrating an understanding of facility design and maintenance practices as per industry standards

- understanding and complying with workplace health and safety legislation and standards related to Teaching Green Industries – Horticulture Management Science.

G. Reflecting, Documenting and Interpreting Learning

- collaboratively integrating fair and equitable, transparent, valid and reliable assessment and evaluation methods that honour the dignity, emotional wellness and cognitive development of all students
- critically exploring and collaboratively integrating assessment, evaluation and reporting practices that align with the principles and processes of Ontario’s curriculum, frameworks and policy documents
- using assessment for the following three purposes: to provide feedback to students and to adjust instruction (assessment for learning); to develop students’ capacity to be independent, autonomous learners (assessment as learning); to make informed judgements about the quality of student learning (assessment of learning)
- critically exploring the use of baseline data as well as current assessment data to reflect on how the students are progressing and the effectiveness of the learning strategies used.

H. Shared Responsibility for Learning

- critically exploring and collaboratively integrating a variety of effective communication and engagement strategies for authentic collaboration with parents/guardians, school/board personnel and community agencies
- critically exploring and engaging in strategies and opportunities for professional collaboration that supports student learning and well-being
- collaboratively designing programs that address biases, discrimination and systemic barriers in order to support student learning, well-being and inclusion
- fostering and sustaining a positive, inclusive educational culture in which all perspectives are encouraged, valued and heard
- understanding and respecting the importance of shared responsibility and partnership as conveyed in the standards and the Foundations of Professional Practice

- developing strategies to establish links between the school community, industry and the Teaching Green Industries – Horticulture Management Science program
- critically exploring sector-specific learning opportunities in other curriculum areas
- critically exploring professional collaboration within interdisciplinary teams to support student learning, self-advocacy and transitions.

I. Research, Professional Learning and the Scholarship of Pedagogy

- critically exploring past, present and evolving practices in Teaching Green Industries – Horticulture Management Science
- critically exploring professional practice through ongoing inquiry into theory and pedagogy/andragogy
- engaging in professional learning through research, scholarship and leadership
- integrating research and the scholarship of pedagogy/andragogy into teaching practice
- collaborating in research and the scholarship of pedagogy/andragogy
- critically exploring knowledge-creation and mobilization as professional practice.

5. Instructional Practice in the Additional Qualification Course: Teaching Green Industries – Horticulture Management Science

Candidates will collaboratively develop with course instructors the specific learning inquiries, learning experiences, and forms of assessment and evaluation that will be used throughout the course.

In the implementation of this Additional Qualification course, instructors use strategies that are relevant, meaningful and practical in providing candidates with learning experiences about instruction, pedagogy and assessment and evaluation. These include but are not limited to: experiential learning, small group

interaction; action research; presentations; independent inquiry; problem solving; collaborative learning and direct instruction.

Instructors model the *Ethical Standards of the Teaching Profession* and the *Standards of Practice for the Teaching Profession*, honour the principles of adult learning, recognize candidates' experience and prior learning and respond to individual needs. Important to the course are opportunities for candidates to create support networks and receive feedback from colleagues and instructors and share the products of their learning with others. Opportunities for professional reading, reflection, dialogue and expression are also integral parts of the course.

Instructors model effective instructional and assessment strategies that can be replicated or adapted in a variety of classroom settings.

A. Experiential Learning

Candidates will be provided with opportunities to engage in experiential learning related to key concepts and aspects of Teaching Green Industries – Horticulture Management Science as collaboratively determined by both the instructor and course candidates. The intent of the experiential learning opportunities is to support the application and integration of practice and theory within the authentic context of teaching and learning. Candidates will also engage in critical reflection and analysis of their engagement in experiential learning opportunities related to Teaching Green Industries – Horticulture Management Science. The professional judgment, knowledge and pedagogy of candidates will be enhanced and refined through experiential learning and inquiry.

The College's standards resources help to support experiential learning through various forms of professional inquiry.

6. Assessment and Evaluation of Candidates

At the beginning of the course, candidates will collaboratively develop with course instructors the specific learning inquiries, learning experiences, and forms of assessment and evaluation that will be used throughout the course. Instructors will provide opportunities for regular feedback regarding candidates' progress throughout the course.

A balanced approach to candidate assessment and evaluation is used. It includes the combination of candidate self and peer assessment, as well as instructor evaluation. The assessment and evaluation strategies reflect effective, collaborative and inquiry-based practices. A variety of assessment approaches will be used that enable candidates to convey their learning related to course inquiries. The course provides opportunities for both formative and summative assessment and evaluation.

Central to candidates enrolled in Additional Qualification courses is the opportunity to be engaged in relevant and meaningful inquiries. Assignments, artefacts and projects enable candidates to make connections between theory and practice. At the same time, assignments must allow candidates flexibility, choice and individual inquiry opportunities.

Part of the evaluation process may include a major independent project or action research component over the duration of the course. This project is an opportunity for candidates to illustrate a high level of professional knowledge, communication skills, pedagogy, ethical practices and instructional leadership. Similarly, if a portfolio assignment is used it will also include reflections and analysis of a candidate's learning over time.

A final culminating experience in the course is recommended. This experience may take the form of a written assessment, a research paper, a performance, an inquiry project or a product that is original, meaningful and practical.

The following list of assessment strategies which are reflective of experiential learning is not exhaustive; it is intended to serve as a guide only.

- a) Performance assessment: designing a sample unit which includes a culminating activity and appropriate assessment and evaluation tools, incorporates a variety of technologies and resources relevant to the study of Teaching Green Industries – Horticulture Management Science, and is based on Ministry of Education expectations
- b) Written assignment: reflecting critically on issues arising from articles, publications, research and/or other resources related to the teaching or practice to Teaching Green Industries – Horticulture Management Science
- c) Presentation: developing a digital story, presenting an issue related to the teaching and learning related to Teaching Green Industries – Horticulture Management Science

- d) Portfolio: creating a portfolio of practical resources, artefacts, photographs and recording critical reflections for one or several components related to Teaching Green Industries – Horticulture Management Science
- e) Action research: engaging in action research by reflecting and acting upon a specific inquiry into teaching practice related to Teaching Green Industries – Horticulture Management Science
- f) Independent project: addressing any aspect of the course that is approved by the instructor
- g) Instructional resource: developing a meaningful resource that will support instruction and pedagogy related to the teaching and learning of Teaching Green Industries – Horticulture Management Science
- h) Reflective writing: reflecting on professional practice through journal-writing, or writing a case or vignette that will support instruction and pedagogy related to the teaching and learning of Teaching Green Industries – Horticulture Management Science
- i) Case inquiry: writing or exploring a case related to collaboration and shared partnerships, with parents, colleagues, and community organizations
- j) IEP development: collaboratively develop an IEP related to Teaching Green Industries – Horticulture Management Science with the family, student and school team
- k) Facilitating a Learning Experience: developing and implementing an engaging learning experience that reflects differentiated instruction and universal design and the tiered approach.

7. Demonstrated Knowledge and Skill in Teaching Green Industries – Horticulture Management Science

Successful candidates will be able to demonstrate technical knowledge and skill in the following:

Teaching Green Industries - Horticulture Management Science		
Area of Inquiry	Technical Knowledge (Fundamentals/Foundations)	Technical Proficiencies (Skill Proficiencies)
Species Classification and Geographical Regions	<p>Be able to describe:</p> <ul style="list-style-type: none"> plant material used in the greenhouse, nursery production and in the landscape garden. <p>Be able to interpret:</p> <ul style="list-style-type: none"> plant hardiness zones and select species applicable to specific hardiness zones select plant species for specific site conditions. 	<p>Be able to apply:</p> <ul style="list-style-type: none"> plant identification for horticultural crops (including common and botanical names, cultivar, trademark and variety names) plant selection for specific plant hardiness zones differentiating between Canadian and USDA hardiness.
Factors Affecting Growth and Product Quality	<p>Be able to identify and describe:</p> <ul style="list-style-type: none"> environmental and biological (biotic and abiotic) factors affecting plant growth and development. <p>Be able to interpret:</p> <ul style="list-style-type: none"> the abiotic, biotic and cultural factors in the horticultural industry and their interconnections such as soil, nutrients, sunlight soil function relating to plants (for example, types of soil, soilless mixes, nutrients) plant science knowledge (parts of the plant, photosynthesis, respiration, transpiration, life cycles) industry standard formulae and acronyms including N-P-K (Nitrogen-Phosphorous-Potassium) 	<p>Be able to perform and analyze:</p> <ul style="list-style-type: none"> abiotic factors tests (for example, fertilizer tests, pH tests) on the growth and post-harvest quality of the crop biotic factors that affect the growth and post-harvest quality of the crop (for example, pest damage) <p>Be able to apply:</p> <ul style="list-style-type: none"> Integrated Pest Management techniques and determine its effectiveness (for example, pest identification, pest counts, pest trap techniques, using Integrated Pest Management scopes).

	<p>ratios for plant fertilizers, macro and micro nutrients, pH</p> <ul style="list-style-type: none"> integrated pest management strategies. 	
Designs, Process and Systems	<p>Be able to interpret:</p> <ul style="list-style-type: none"> various greenhouse structures and how their structural features relate to greenhouse management (for example, temperature control, moisture and ventilation, light and CO₂ modification, use of black out curtains to control photoperiod). <p>Be able to identify:</p> <ul style="list-style-type: none"> advanced systems, processes and techniques in horticulture (for example, automation, irrigation, biotechnology, climate control systems). 	<p>Be able to create:</p> <ul style="list-style-type: none"> greenhouse design / layout garden or nursery crop production layout for a particular crop (for example, Easter lilies, Vegetable plants or Christmas Trees). <p>Be able to create management strategies for:</p> <ul style="list-style-type: none"> irrigation systems for a greenhouse, garden or nursery pest management for a greenhouse, garden or nursery growing environment for a greenhouse, garden or nursery.
Numeracy Literacy Research Communication	<p>Be able to demonstrate:</p> <ul style="list-style-type: none"> key terminology in the horticultural industry and written communication (for example, plant information, plant physiology, fertilizers) mathematical concepts and calculations (for example, area, volume, fertilizer calculations, invoicing, caliper size of trees). <p>Be able to interpret:</p> <ul style="list-style-type: none"> Latin (botanical) species and genus names of common trees used in horticulture 	<p>Be able to use and apply:</p> <ul style="list-style-type: none"> measurement and calculations needed in fertilizer applications, crop yields, billing, sales. <p>Be able to calculate:</p> <ul style="list-style-type: none"> mathematical concepts and calculations (for example, area, volume, fertilizer calculations, invoicing, caliper size of trees).

	<ul style="list-style-type: none"> • technical issues of current significance in Horticultural management and science • dimensions in both metric and imperial in horticulture such as container use, building projects, yield. 	
Design Production	<p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • pruning techniques for crop production • plant propagation techniques for crop production • watering and fertilizer regimes for crop production • soil requirements for crop production. 	<p>Be able to create:</p> <ul style="list-style-type: none"> • a Greenhouse, Garden or Nursery Crop and use various biological techniques to enhance crop growth (for example, watering, crop rotation, fertilization, lighting requirements) • a plan or design for horticulture that enhances biodiversity such as growing native plants, heritage seeds collection. <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • competence in the various techniques for the propagation of plants (for example, seeding, cuttings, micro-propagation, separation, division, grafting, budding and layering) • post-harvest techniques for horticultural crops such as desiccation prevention, storage, watering and fertilization care of plants.
Plant and Animal Management Strategies	<p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • Integrated Pest Management strategies • plant anatomy, function and 	<p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • diagnostic procedures for determining plant health both abiotic and biotic (for example,

	<p>classification</p> <ul style="list-style-type: none"> • environmental requirements for optimal plant growth • plant growth regulators • plant propagation • postharvest technology procedures • plant biotechnology and genetically modified organisms • greenhouse structures • nursery production • vegetable production • fruit and nut production. 	<p>pest scouting, plant quality, nutrient analysis, soil testing, plant tissue analysis)</p> <ul style="list-style-type: none"> • environmentally sustainable growing techniques (for example, composting, soil management, advanced water runoff and recycling systems) • proper use and safe handling of herbicides, fungicides and insecticides.
Technical Skills		<p>Be able to demonstrate and apply:</p> <ul style="list-style-type: none"> • pruning techniques (such as renewal pruning, heading back, evergreen trees) • best management practices in horticulture such as water management, composting, mulching techniques • build support mechanisms for Greenhouse, Garden or Nursery Crop production such as trellis systems • environmental sustainable techniques such as water management, composting, mulching techniques • marketing techniques for a horticultural crop.
Technology and the Environment	<p>Be able to analyze:</p> <ul style="list-style-type: none"> • how horticultural crop production impacts environmental sustainability (such as water 	

	<p>quality, species diversity & monocultures and pesticides & biodiversity)</p> <ul style="list-style-type: none"> the advantages and disadvantages of using a natural product versus a manufactured product in horticulture (such as natural and chemical fertilizers). <p>Be able to describe:</p> <ul style="list-style-type: none"> legislation, regulations, standards, and guidelines relating to environmental protection that affect operations in horticulture science and management (for example, The Pesticide Act, Ontario Green Energy Act). 	
Technology and Society	<p>Be able to identify:</p> <ul style="list-style-type: none"> related industries affected by the horticultural industry (for example, lighting, fertilizer, biological and substrate suppliers, alternative energy sources) traditional and value added products created from horticulture <p>Be able to analyze:</p> <ul style="list-style-type: none"> the impact of horticulture on Ontario's regional economies the use of horticultural products in Canada and the global marketplace the historical importance of horticulture in the development of Ontario. 	
Local / Global	Be able to identify and describe:	

Industries	<ul style="list-style-type: none"> • the significance of each horticultural company, destination, or attraction within a specific region relating to the opportunities and activities that each offers to the local region • the significance of the horticultural industry from a national and global perspective • professional organizations associated with horticulture (for example, Ontario Greenhouse Vegetable Growers [OGVG], The Ontario Greenhouse Alliance [TOGA], The Ontario Fruit and Vegetable Growers' Association [OFVGA], The Ontario Greenhouse Marketers Association [OGMA], Flowers Canada) • function and roles of Landscape Ontario and Canadian Nursery Landscape Association (CNLA). 	
Professional Practice	<p>Be able to identify and to describe:</p> <ul style="list-style-type: none"> • industry associations, government departments, and non-governmental organizations that are involved with matters that affect horticultural science or management (for example, Farm Safety Association, Ministry of the Environment) • common industry hazards in the greenhouse, garden or nursery environment and sources of information about accident 	<p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • safe procedure for environmental and site-related hazards in horticulture such as pesticides and apply appropriate safety measures for avoiding them • safe procedure for handling horticultural plants such as balled and burlapped trees, lifting techniques, greenhouse transportation.

	<p>prevention</p> <ul style="list-style-type: none"> the Occupational Health and Safety Act, mandatory Personal Protective Equipment (PPE) and Safe Practices Certified Landscape Technician (CLT) certification processes. 	
Career Opportunities	<p>Be able to identify:</p> <ul style="list-style-type: none"> careers in horticultural science and management that require postsecondary education and to describe the educational programs of study, the training and the certification(s) needed for entry into the various programs (for example, apprenticeships, training, colleges and universities, applied degrees). 	<p>Be able to create, maintain, and use:</p> <ul style="list-style-type: none"> an up-to-date portfolio that includes marketing and other materials that provide evidence of their skills and achievements in areas related to horticulture science and management (for example, Passport to Safety certificate, technical reports, competency checklists, Ontario Skills Passport Work Plan), and explain why having a current portfolio is important for career development and advancement. <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> Essential Skills (for example, reading text, writing, document use, computer use, oral communication, numeracy, thinking skills) and Work Habits (for example, initiative, organization, accountability, ethical conduct) that are important for success in the horticultural science or horticulture management career paths, as identified in the Ontario

		Skills Passport.
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Appendix 1

The *Ethical Standards for the Teaching Profession*

The *Ethical Standards for the Teaching Profession* represent a vision of professional practice. At the heart of a strong and effective teaching profession is a commitment to students and their learning. Members of the Ontario College of Teachers, in their position of trust, demonstrate responsibility in their relationships with students, parents, guardians, colleagues, educational partners, other professionals, the environment and the public.

The Purposes of the Ethical Standards for the Teaching Profession are:

- to inspire members to reflect and uphold the honour and dignity of the teaching profession
- to identify the ethical responsibilities and commitments in the teaching profession
- to guide ethical decisions and actions in the teaching profession
- to promote public trust and confidence in the teaching profession.

The Ethical Standards for the Teaching Profession are:

Care

The ethical standard of *Care* includes compassion, acceptance, interest and insight for developing students' potential. Members express their commitment to students' well-being and learning through positive influence, professional judgment and empathy in practice.

Respect

Intrinsic to the ethical standard of *Respect* are trust and fair-mindedness. Members honour human dignity, emotional wellness and cognitive development. In their professional practice, they model respect for spiritual and cultural values, social justice,

confidentiality, freedom, democracy and the environment.

Trust

The ethical standard of *Trust* embodies fairness, openness and honesty. Members' professional relationships with students, colleagues, parents, guardians and the public are based on trust.

Integrity

Honesty, reliability and moral action are embodied in the ethical standard of *Integrity*. Continual reflection assists members in exercising integrity in their professional commitments and responsibilities.

The Standards of Practice for the Teaching Profession

The *Standards of Practice for the Teaching Profession* provide a framework of principles that describes the knowledge, skills, and values inherent in Ontario's teaching profession. These standards articulate the goals and aspirations of the profession. These standards convey a collective vision of professionalism that guides the daily practices of members of the Ontario College of Teachers.

The Purposes of the Standards of Practice for the Teaching Profession are:

- to inspire a shared vision for the teaching profession
- to identify the values, knowledge and skills that are distinctive to the teaching profession
- to guide the professional judgment and actions of the teaching profession
- to promote a common language that fosters an understanding of what it means to be a member of the teaching profession.

The Standards of Practice for the Teaching Profession are:

Commitment to Students and Student Learning

Members are dedicated in their care and commitment to students. They treat students equitably and with respect and are sensitive to factors that influence individual student learning. Members facilitate the development of students as contributing citizens of Canadian society.

Professional Knowledge

Members strive to be current in their professional knowledge and recognize its relationship to practice. They understand and reflect on student development, learning theory, pedagogy, curriculum, ethics, educational research and related policies and legislation to inform professional judgment in practice.

Professional Practice

Members apply professional knowledge and experience to promote student learning. They use appropriate pedagogy, assessment and evaluation,

resources and technology in planning for and responding to the needs of individual students and learning communities.

Members refine their professional practice through ongoing inquiry, dialogue and reflection.

Leadership in Learning Communities

Members promote and participate in the creation of collaborative, safe and supportive learning communities. They recognize their shared responsibilities and their leadership roles in order to facilitate student success. Members maintain and uphold the principles of the ethical standards in these learning communities.

Ongoing Professional Learning

Members recognize that a commitment to ongoing professional learning is integral to effective practice and to student learning. Professional practice and self-directed learning are informed by experience, research, collaboration and knowledge.