DURHAM COLLEGE
SUCCESS MATTERS

Faculty of Hosp & Hort Sci

Propagation of Vegetables for Field & Urban Agriculture

2023-24 Academic Year

Program Title	Ministry Title	Major	Year	Semester
HHS-Horticulture - Food and Farming	Food and Farming	AAGR	1	1

Course Code:	AGPV 1131	**Course Equiv. Code(s):**	N/A
Course Hours:	56	**Course GPA Weighting:**	4
Prerequisite:	N/A		
Corequisite:	N/A		
Laptop Course:	**Yes** [ ] **No** [X]		
Delivery Mode(s):	**In class** [X] **Online** [ ] **Hybrid** [ ] **Flexible** [ ] **HyFlex** [ ]		
Remote proctoring required	**Yes** [ ] **No** [X]		
Authorized by (Dean or Director):	Rebecca Milburn	**Date:**	August 2023

Prepared by		
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Course Description:

This course introduces the principles of the propagation of major horticulture field crops in the region. Basic coverage of vegetable crops including, but not limited to, legume, cole, root, tuber, leaf, stem perennial crops, summer and winter squash, peppers, sweet corn and tomatoes are presented. Production of selected herbs is introduced. Specialty crops of increasing importance particularly in ethnic markets are explored. Species that are particularly appropriate for community, home and balcony gardens are studied, also. Basic nutrition, water and growing condition requirements are addressed. Mainstream and organic production practices are covered in parallel as topics are developed. This course involves the lecture room, greenhouse, field or laboratory as appropriate from week to week. Harvesting and storage aspects of the production of vegetables are covered in a subsequent course.

Campus Closure Notice

In the event of a campus closure during which time classes cannot be conducted or attended in person, course delivery will be conducted remotely where possible. Should teaching and learning resume on campus, students may be organized into smaller groups for classroom delivery, in accordance with directions from public health authorities. In either situation, the learning plan sequence and/or evaluation methods may be adjusted to address topics requiring hands-on, practical learning activities.

Subject Eligibility for Prior Learning Assessment & Recognition (PLAR):

Prior Learning Assessment and Recognition (PLAR) is a process a student can use to gain college credit(s) for learning and skills acquired through previous life and work experiences. Candidates who successfully meet the course learning outcomes of a specific course may be granted credit based on the successful assessment of their prior learning. The type of assessment method (s) used will be determined by subject matter experts. Grades received for the PLAR challenge will be included in the calculation of a student's grade point average.

The PLAR application process is outlined in http://www.durhamcollege.ca/plar. Full-time and part-time students must adhere to all deadline dates. Please email: PLAR@durhamcollege.ca for details.

PLAR Eligibility

Yes [X] **No** [ ]

PLAR Assessment (if eligible):

- [ ] Assignment
- [ ] Exam
- [X] Portfolio
- [X] Other

The PLAR challenge will consist of evaluation methods similar to end-of-course assessments of students registered in the course. A comprehensive challenge test will include objective questions and performance-based demonstration of subject knowledge and application. A student must obtain at least 50% in this process to achieve credit.

Course Learning Outcomes

Course Learning Outcomes contribute to the achievement of Program Learning Outcomes for courses that lead to a credential (e.g. diploma). A complete list of Vocational/Program Learning Outcomes and Essential Employability Skill Outcomes are located in each Program Guide.

Course Specific Learning Outcomes (CLO)

Student receiving a credit for this course will have reliably demonstrated their ability to:

CLO1	Identify and discuss key economic sectors of the horticulture and agricultural industry.
CLO2	Apply information on vegetable propagation indicating awareness of industry terminology and classification techniques.
CLO3	Perform seed and asexual propagation with various and appropriate types of vegetables.
CLO4	Determine the appropriate growing conditions including water, soil, accessory materials and equipment for propagation of various types of vegetables.
CLO5	Select the suitable practices appropriate for garden or commercial production of vegetables including the fundamentals of plant nutrition and weed and pest management.
CLO6	Discuss principles of conventional and organic management practices.
CLO7	Recognize and identify a significant range of useful and problematic plant species associated with vegetable production.
CLO8	Apply and utilize various production techniques to extend the growing season of cold tolerant vegetables.
CLO9	Examine and discuss the tractor, tillage equipment and planters used in the Durham College garden.

Essential Employability Skill Outcomes (ESSO)

This course will contribute to the achievement of the following Essential Employability Skills:

- [X] EES 1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
- [X] EES 2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
- [ ] EES 3. Execute mathematical operations accurately.
- [X] EES 4. Apply a systematic approach to solve problems.
- [X] EES 5. Use a variety of thinking skills to anticipate and solve problems.
- [X] EES 6. Locate, select, organize, and document information using appropriate technology and information systems.
- [X] EES 7. Analyze, evaluate, and apply relevant information from a variety of sources.
- [X] EES 8. Show respect for the diverse opinions, values, belief systems, and contribution of others.
- [X] EES 9. Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.
- [X] EES 10. Manage the use of time and other resources to complete projects.
- [X] EES 11. Take responsibility for one's own actions, decisions, and consequences.

Evaluation Criteria:

The Course Learning Outcomes and Essential Employability Skills Outcomes are evaluated by the following evaluation criterion.

Evaluation Description	Course Learning Outcomes	EESOs	Weighting
Assignment: Four lab reports, worth 5 per cent each. Please see below for lab topics, dates of introduction of each lab exercise & due dates for each lab report	CLO2, CLO3, CLO4, CLO5, CLO6, CLO7, CLO8	EES1, EES2, EES4, EES5, EES6, EES7, EES8, EES9, EES10, EES11	20
Test: Week 5: Mid-term test	CLO1, CLO2, CLO4, CLO5, CLO6, CLO7	EES1, EES2, EES4, EES5, EES7, EES11	20
Assignment: Week 12: Take home assignment	CLO2, CLO4, CLO5, CLO6	EES1, EES2, EES4, EES5, EES6, EES7, EES10, EES11	20
Test: Week 10	CLO2, CLO4, CLO5, CLO8	EES1, EES2, EES4, EES5, EES10	20
Exam: Week 14: Final test	CLO2, CLO4, CLO5, CLO6, CLO7, CLO9	EES1, EES2, EES4, EES5, EES7, EES11	20
Total			**100%**

Notes:

1. An interim mark will be determined for all first-year students to identify their academic progress. This mark will be based on the results of grades processed up to the mid-term date.
2. Assignments are to be submitted on the due date at the beginning of class, unless otherwise directed by the professor. Late assignments will be penalized 20% per calendar day, and will be graded "0" within 3 days, acknowledging the importance placed on deadlines within the workplace.
3. All assignments must be neat and legible or type written.
4. Tests will be closed book with questions of multiple choice True or False and written answers.
5. Tests will be written at the beginning of that week's scheduled lecture class unless otherwise notified by the instructor.
6. The format of tests will be discussed in the week prior to its scheduled dates. Dates will be announced in class as well as posted on DC Connect one week prior.
7. In class activities occur in class and will only be given once. They cannot be made up or supplemented. Any missed in-class activities, such as midterm tests, will be assigned a mark of "0" unless prearrangements have been made with the professor or documentation required by the School is presented to explain the substantive reason for the unexpected absence.

Required Text(s) and Supplies:

Recommended Resources (purchase is optional):

1. OMAFRA Vegetables - Leafy Greens: Celery, Endive, Lettuce, Parsley, Specialty Greens, Spinach, Swiss Chard
   http://www.omafra.gov.on.ca/english/crops/hort/greensalad_crops.html
2. OMAFRA Vegetables - Brassicas: Broccoli, Cabbage, Cauliflower, Horseradish, Kale, Kohlrabi, Radish, Rutabaga, Specialty Crucifers

http://www.omafra.gov.on.ca/english/crops/hort/cole_crops.html

3. OMAFRA Vegetables - Legumes: Beans, Peas
   http://www.omafra.gov.on.ca/english/crops/hort/legume_crops.html
4. OMAFRA Vegetables - Roots and Bulbs: Carrot, Garlic, Horseradish, Leek, Onion, Parsnip, Radish, Rutabaga, Shallots, Sugarbeet, Sweet Potato, Table Beet
   http://www.omafra.gov.on.ca/english/crops/hort/root_crops.html
5. OMAFRA - Vegetables: Potatoes
   http://www.omafra.gov.on.ca/english/crops/hort/potatoes.html
6. OMAFRA - Vegetables: Tomatoes, Peppers, Eggplant
   http://www.omafra.gov.on.ca/english/crops/hort/tomatoes_peppers.html
7. OMAFRA - Vegetables: Sweet Corn
   http://www.omafra.gov.on.ca/english/crops/hort/sweet_corn.html
8. OMAFRA Vegetables - Cucurbits: Cucumber, Muskmelon, Watermelon, Pumpkin, Squash
   http://www.omafra.gov.on.ca/english/crops/hort/vine_crops.html
9. OMAFRA - Fresh Market Bell Pepper Enterprise Budget
   http://www.omafra.gov.on.ca/english/busdev/facts/08-055.htm
10. Budgeting Tools
    http://www.omafra.gov.on.ca/english/busdev/bear2000/Budgets/budgettools.htm
11. OMAFRA Specialty Vegetables
    http://www.omafra.gov.on.ca/CropOp/en/spec_veg/index.html
12. ONvegetables, Information for Ontario commercial vegetable growers
    http://onvegetables.com/
13. http://www.omafra.gov.on.ca/english/busdev/facts/08-055.htm
14. Identification Guide to the Weeds of Quebec
15. Noxious Weeds in Ontario
    http://www.omafra.gov.on.ca/english/crops/facts/noxious_weeds.htm
16. Vesey's Seeds Catalogue
    http://www.veseys.com/ca/en/store/vegetables

Policies and Expectations for the Learning Environment:

General Policies and Expectations:

General College policies related to	General policies related to
+ Acceptable Use of Information Technology + Academic Policies + Academic Integrity + Standards for Student Conduct for all Learning Environments can be found at https://durhamcollege.ca/wp-content/uploads/Standards-of-Student-Conduct-for-all-Learning-Environments.pdf + Information about academic policies and procedures can be found on-line at https://durhamcollege.ca/about/governance/policies	+ attendance + absence related to tests or assignment due dates + excused absences + writing tests and assignments + classroom management can be found in the Program Guide (full time programs only) in MyDC https://durhamcollege.ca/mydc/

All students at Durham College have the responsibility to familiarize themselves with and abide by the college's Academic Integrity Policy. Students are expected to complete and submit their own work in an honest manner, in accordance with the policy. Durham College has zero tolerance for breaches of academic integrity. All suspected breaches of academic integrity will be investigated and documented following procedures outlined in the policy, and should a breach be confirmed, appropriate penalties will be levied. Breaches of academic integrity refer to a variety of practices including, but not limited to:

• copying another person's work;
• using unauthorized materials or resources during an evaluation;
• obtaining unauthorized copies of evaluations in advance;
• collaborating without permission;
• colluding or providing unauthorized assistance;
• falsifying academic documents or records;
• misrepresenting academic credentials;
• buying, selling, stealing, soliciting, exchanging or transacting materials or information for the purpose of academic gain;
• bribing or attempting to bribe personnel;
• impersonation;
• submitting the same work in more than one course without authorization;
• improper use of computer technology and the internet;
• depriving others of academic resources;
• misrepresenting reasons for special consideration of academic work;
• plagiarizing or failing to acknowledge ideas, data, graphics or other content without proper and full acknowledgement;
• any unauthorized use of generative or other artificial intelligence.

If you have questions or concerns about what constitutes appropriate academic conduct or research and citation methods, and what your responsibilities are towards academic integrity, please visit the Academic Integrity website on MyDC, reach out to Student Academic Learning Services (SALS), or speak with your professor or Student Advisor.

Course Specific Policies and Expectations:

1. In process activities occur in class and will only be given once. They cannot be made up or supplemented. Any missed in-class activities will be assigned a mark of "0".

2. All written assignments must be type written. Specific requirements regarding format and referencing will be presented in class.

STUDENT CONDUCT: Students are expected to conduct themselves in a professional manner while on and off campus. Students are expected to comply with the program's professional conduct, appearance, and safety expectations found in the Program Guide and to understand and comply with off-site policies and procedures. It is everyone's responsibility to have respect for their peers.

ELECTRONIC DEVICES: Electronic communication devices will be turned off and not used in the classroom unless part of the objectives or learning activities of a course or lesson. Students who disrupt a class to the detriment of the other members of the class will be asked to leave.

MISSED TESTS: With prior notification of missed tests, alternate times or dates can be arranged. A missed test for substantive reasons, can be written within 5 days of original test date with a doctor's note (or other professional or supervisory letter). For missed tests for substantive reasons (and with documentation) that cannot be written soon, the mark for that test will be calculated from the marks on the other two tests. Missed tests with no notification and no substantive reason will get a mark of 0.

PEER INTERACTION AND FEEDBACK: Students are expected to participate with their peers in active learning activities and demonstrations. These demonstrations provide students with opportunities for written/verbal feedback from their peers, instructor, and others on the application of learned course material.

LAB SCHEDULES, DETAILS & LEARNING OUTCOMES are subject to change based on weather, crop readiness, unforeseen circumstances and access to appropriate course materials. All learning outcomes will be met with alternate planning and lab adjustments.

General Course Outline Notes:

1. Students should use the course outline as a learning tool to guide their achievement of the learning outcomes for this course. Specific questions should be directed to their individual professor.
2. The college considers the electronic communication methods (i.e. DC Mail or DC Connect) as the primary channel of communication. Students should check the sources regularly for current course information.
3. Professors are responsible for following this outline and facilitating the learning as detailed in this outline.
4. Course outlines should be retained for future needs (i.e. university credits, transfer of credits etc.)
5. A full description of the Academic Appeals Process can be found at https://durhamcollege.ca/about/governance/policies/academic-policies .
6. Faculty are committed to ensuring accessible learning for all students. Students who would like assistance with academic access and accommodations in accordance with the Ontario Human Rights Code should register with the Access and Support Centre (ASC). ASC is located in room SW116, Oshawa Campus and in room 180 at the Whitby Campus. Contact ASC at 905-721-3123 for more information.
7. Durham College is committed to the fundamental values of preserving academic integrity. Durham College and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments could be subject to submission either by themselves or by the faculty member for a review of textual similarity to Turnitin.com. Further information about Turnitin can be found on the Turnitin.com Web site.

Learning Plan

The Learning Plan is a planning guideline. Actual delivery of content may vary with circumstances.

Students will be notified in writing of changes that involve the addition or deletion of learning outcomes or evaluations, prior to changes being implemented, as specified in the Course Outline Policy and Procedure at Durham College.

Week/ Module	Hours: 2 Delivery: Online
1	**Course Learning Outcomes** CLO1, CLO2
	Essential Employability Skills
	Taught: EES1, EES2 **Practiced:**
	Intended Learning Objectives/Topics Course Outline Review Lab Manual Discuss expected Learning Outcomes
	Intended Learning Activities Skill Development Discussion and development of learning enviroment
	Resources and References No lecture Week 1
	Evaluation

Week/ Module	Hours: 2 Delivery: Lab
1	**Course Learning Outcomes** CLO2, CLO3, CLO4, CLO5
	Essential Employability Skills
	Taught: EES8, EES9, EES10 **Practiced:** EES8, EES9, EES10
	Intended Learning Objectives/Topics Critical Thinking Respond to written messages in a manner that ensures effective communication. INTRODUCTION and planning/ prep for WEEK 2 Lab (see week 2 Lab Intended Learning Objectives)
	Intended Learning Activities Skill Development
	Resources and References No Lab Week 1
	Evaluation

Week/ Module	Hours: 2 Delivery: In Class
2	**Course Learning Outcomes** CLO2, CLO4, CLO5
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES5, EES6, EES7 **Practiced:** EES1, EES2, EES4, EES5, EES6, EES7
	Intended Learning Objectives/Topics Crop establishment - transplanting & direct seeding; classification of vegetables and the horticultural industry in Canada. Students will: 1. Study the techniques of direct seeding and transplanting vegetables; the field equipment used, and other factors for successful crop establishment. 2. Look at the various ways of classifying vegetables. 3.Learn the scope of the horticultural industry in Canada, Ontario & Durham region. 4. Discuss the course outline and expectations for labs.
	Intended Learning Activities PowerPoint/lecture/discussion Active Learning
	Resources and References PP lecture Designated internet hyperlinks
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** Lab
2	**Course Learning Outcomes** CLO2, CLO3, CLO4, CLO5
	Essential Employability Skills
	Taught: EES1, EES8, EES9, EES10, EES11 **Practiced:** EES1, EES8, EES9, EES10, EES11
	Intended Learning Objectives/Topics Hoop House, field and raised beds Topic: Fall direct seeding of cool season vegetables for late fall harvest Students will examine and utilize the planting parameters for one or more of the following crop groupings. Planting will occur into the hoop house and available container gardens. Species are likely to include: Beets, green onions, head lettuce, radishes, spinach, turnips, carrots and arugula. Students will: 1. Prepare beds for planting (weed, dig, incorporate amendments. 2.Seed designated crops by hand in raised beds. 3. Utilize the 1-row seeder to plant carrots in the hoop house. 4. Use the 6-row seeder to plant arugula in the field. 5. Describe and chronicle field/lab activities for a lab report.
	Intended Learning Activities PowerPoint/lecture/discussion Active Learning Develop skills applicable to vegetable production Interact with others within groups in ways that contribute to effective working relationships
	Resources and References Cold frames, hoop house field; planting tools Designated internet hyperlinks Lab Exercise 1 on DC Connect - please read before the lab.
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** In Class
3	**Course Learning Outcomes** CLO2, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES2, EES4, EES5, EES6, EES7 **Practiced:** EES2, EES4, EES5, EES6, EES7
	Intended Learning Objectives/Topics Soils, Tillage and Crop Nutrition Students will: 1. Learn about soil texture, pH and other important facets of soil for growing crops. 2. Learn about tillage systems and equipment used for vegetable production. 3. Asses the nutrients required for crops; sources of nutrients and application equipment and methods. 4. Investigate the roles of the major nutrients.
	Intended Learning Activities PowerPoint/lecture/discussion Active Learning Videos of tillage equipment and techniques
	Resources and References Power Point lectures Designated internet hyperlinks
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** Lab
3	**Course Learning Outcomes** CLO2, CLO3, CLO4, CLO5
	Essential Employability Skills
	Taught: EES7, EES8, EES9, EES10 **Practiced:** EES7, EES8, EES9, EES10
	Intended Learning Objectives/Topics 1.Transplant vegetables in the field and raised beds. 2. Compare and contrast the effectiveness of using transplants compared to direct-seeding. 3. Make observations and take measurements on crops from both labs 1 & 2 for Lab Reports. 4. Thin seeded material if needed and weed if necessary.
	Intended Learning Activities Planting vegetables and developing vegetable production skills Interact with others within groups in ways that contribute to effective working relationships Utilize maturity indexes to determine harvest readiness Apply various manual harvesting techniques to modest sized food production systems
	Resources and References Cold frame, raised beds and planting tools Designated internet hyperlinks Lab Exercise 2, assigned on DC Connect - please read before lab.
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** In Class
4	**Course Learning Outcomes** CLO2, CLO4, CLO5, CLO6, CLO7, CLO8
	Essential Employability Skills
	Taught: EES2, EES4, EES5, EES6, EES7, EES8 **Practiced:**
	Intended Learning Objectives/Topics Crop protection, mulching, irrigation, weeds, insects and diseases Students will: 1. Study the production practices that assist with the basics of integrated pest management 2. Explore the principles and practices of the use of mulches in vegetable production 3. Investigate the principles, methods and use of irrigation at various stages in plant development 4. Learn the most common pests and diseases encountered in vegetable production in Ontario.
	Intended Learning Activities PowerPoint/lecture/discussion Active Learning Videos of mulch application and irrigation equipment equipment and techniques
	Resources and References Proposed field trip
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** Lab
4	**Course Learning Outcomes** CLO2, CLO4, CLO5, CLO6, CLO7, CLO8
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES6, EES7, EES8, EES9, EES10 **Practiced:** EES1, EES2, EES4, EES6, EES7, EES8, EES9, EES10
	Intended Learning Objectives/Topics Continue observations for Labs 1 and 2 Students will: 1. Erect season extension structures and observe cold tolerance of arugula and effectiveness of structures as compared to outdoor growing over the next few weeks. 2. Make observations and take measurements as required for labs1, 2 & 3. 3. Thin crops if needed and weed in raised beds.
	Intended Learning Activities Interact with others within groups in ways that contribute to effective working relationships Utilize maturity indexes to determine harvest readiness Apply various manual harvesting techniques to modest sized food production systems
	Resources and References Designated internet hyperlinks Laboratory exercise 3 and instruction posted on DC Connect
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** In Class
5	**Course Learning Outcomes** CLO1, CLO2, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES1, EES2, EES7, EES8, EES9 **Practiced:** EES1, EES2, EES7, EES8, EES9
	Intended Learning Objectives/Topics Asparagus, Rhubarb and Brassicas Students will: 1. Study the establishment, production techniques, crop nutrition and pests & diseases of asparagus. 2. Study the establishment, production techniques, crop nutrition and pests & diseases of rhubarb. 3. Discuss the crop establishment, production techniques, crop nutrition and pests & diseases of key brassicas such as cabbage, broccoli and cauliflower..
	Intended Learning Activities PowerPoint/lecture/discussion Active Learning
	Resources and References Designated internet hyperlinks PowerPoint presentation
	Evaluation **Weighting** Test: Week 5: Mid-term test 20

Week/ Module	Hours: 2 Delivery: Lab
5	**Course Learning Outcomes** CLO1, CLO2, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES5, EES6, EES7, EES8, EES9, EES10 **Practiced:** EES1, EES2, EES4, EES5, EES6, EES7, EES8, EES9, EES10
	Intended Learning Objectives/Topics Students will 1. Make observations and measurements for Labs 1, 2 & 3. Harvest radishes and arugla if they are ready for harvest. 3. Look at asparagus, rhubarb and brassicas in the field. Plant cover crops with 6-row seeder?
	Intended Learning Activities Apply a systematic approach to answer questions Use a variety of thinking skills to answer questions Select, organize, and document appropriate information
	Resources and References N/A
	Evaluation
Week/ Module	**Hours:** 2 **Delivery:** In Class
6	**Course Learning Outcomes** CLO2, CLO4, CLO5, CLO6, CLO7
	Essential Employability Skills
	Taught: EES1, EES2, EES7, EES8, EES9 **Practiced:** EES1, EES2, EES7, EES8, EES9
	Intended Learning Objectives/Topics Practical application of knowledge gleaned in lectures to this point. Collection of information. Written work from information collected.
	Intended Learning Activities Skills development
	Resources and References PP lecture notes Designated hyperlinks.
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** Lab
6	**Course Learning Outcomes** CLO2, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES4, EES5, EES6, EES7, EES8, EES9, EES10 **Practiced:** EES4, EES5, EES6, EES7, EES8, EES9, EES10
	Intended Learning Objectives/Topics Students will: 1. Collect data on the cold weather tolerance of vegetable species that have been planted in the previous labs 2. Observe frost or freeze damage 3. Harvest radishes, spinach and arugula or appropriate crops. 4. Plant cover crops in the field.
	Intended Learning Activities Develop vegetable production skills Interact with others within groups in ways that contribute to effective working relationships
	Resources and References Designated internet hyperlinks Laboratory exercises and instruction posted on DC Connect
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** In Class
7	**Course Learning Outcomes** CLO1, CLO2, CLO4, CLO5, CLO6, CLO7, CLO9
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES5, EES6, EES7, EES11 **Practiced:** EES1, EES2, EES4, EES5, EES6, EES7, EES11
	Intended Learning Objectives/Topics Root crops, potatoes and alliums. Students will: 1.Study the various root crops grown in Ontario - methods of establishment, crop nutrition, cultural notes and major pests. 2. Investigate production of potatoes, from cutting seed pieces through time to harvest. 3. Consider the various allium crops grown in Ontario - their differences with regard to establishment, fertility, cultural practices and pests.
	Intended Learning Activities Develop vegetable production skills. Interact with others within groups in ways that contribute to effective working relationships.
	Resources and References PowerPoint lecture Designated internet hyperlinks. Introduction of Take-Home Assignment, posted on DC Connect
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** Lab
7	**Course Learning Outcomes** CLO2, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES5, EES6, EES7, EES8, EES9, EES10, EES11 **Practiced:** EES5, EES6, EES7, EES8, EES9, EES10, EES11
	Intended Learning Objectives/Topics Students will: 1. Separate garlic cloves for planting next week. 2. Record observation and data on cold/frost tolerance of vegetables involved in lab exercises. 3. Learn the technique for producing seed potato pieces. 4. Plant radishes and lettuce in black troughs for Lab Exercise 4, Fertilizers. 5. Plant sweet potatoes for slip production. 6. Seed basil, cilantro, dill & parsley in cell trays to pot up later for production.
	Intended Learning Activities 1. Seed radishes and lettuce in the greenhouse . 2. Communicate clearly and concisely in the written form. 3. Develop vegetable production skills.
	Resources and References Designated internet hyperlinks Laboratory exercises and instruction posted on DC Connect
	Evaluation **Weighting** Assignment: Four lab reports, worth 5 per cent each. Please see below for lab topics, dates of introduction of each lab exercise & due dates for each lab report 5

Week/ Module	**Hours:** 2 **Delivery:** In Class
8	**Course Learning Outcomes** CLO2, CLO3, CLO4, CLO5, CLO6, CLO7, CLO8
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES6, EES7, EES8 **Practiced:** EES1, EES2, EES4, EES6, EES7, EES8
	Intended Learning Objectives/Topics Leafy Greens, Herbs & Specialty Crops Students will: 1. Study the production techniques for various leafy green crops. 2. Examine time of planting and harvest of designated vegetables in this group 3. Discuss options for plant nutrition and other best practices for mainstream and organic production systems 4. Investigate herb crops typically gown in Ontario - establishment, cultural notes, fertility and pests. 5. Discover the specialty crops now grown in Ontario as ethnic markets expand.
	Intended Learning Activities Vegetable production techniques Active Learning
	Resources and References Designated internet hyperlinks PowerPont/lecture discussion
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** Lab
8	**Course Learning Outcomes** CLO2, CLO3, CLO4, CLO5, CLO6, CLO7, CLO8
	Essential Employability Skills **Taught:** EES1, EES2, EES4, EES5, EES6, EES7, EES8, EES9, EES11 **Practiced:** EES1, EES2, EES4, EES5, EES6, EES7, EES8, EES9, EES11
	Intended Learning Objectives/Topics Students will: 1. Record observations, growth data and frost hardiness of planted and transplanted crops for lab exercises 2. Plant garlic in raised beds and cover with straw mulch. 3. Begin fertilizer treatments on radishes and lettuce. 4. Be introduced to the Leafy Green Machine; first groups Wrap up Season Extension experiment, depending on weather, will seed in LGM.
	Intended Learning Activities Develop vegetable production skills Interact with others within groups in ways that contribute to effective working relationships Communicate clearly and concisely in the written form.
	Resources and References Designated internet hyperlinks Laboratory exercises and instruction posted on DC Connect
	Evaluation **Weighting** Assignment: Four lab reports, worth 5 per cent each. Please see below for lab topics, dates of introduction of each lab exercise & due dates for each lab report 5

Week/ Module	**Hours:** 2 **Delivery:** In Class
9	**Course Learning Outcomes** CLO1, CLO2, CLO4, CLO5, CLO6, CLO7
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES5, EES8 **Practiced:** EES1, EES2, EES4, EES5, EES8
	Intended Learning Objectives/Topics Topic: Tomatoes, Peppers & Eggplant Students will: 1. Study the production techniques for various solanaceous crops. 2. Examine time of planting and harvest of designated vegetables in this group 3. Discuss options for plant nutrition and other best practices for mainstream and organic production systems
	Intended Learning Activities PowerPoint/lecture/discussion Active Learning
	Resources and References Designated internet hyperlinks PowerPoint lecture.
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** Lab
9	**Course Learning Outcomes** CLO2, CLO3, CLO4, CLO5, CLO7
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES5, EES6, EES7, EES8, EES9, EES10 **Practiced:** EES1, EES2, EES4, EES5, EES6, EES7, EES8, EES9, EES10
	Intended Learning Objectives/Topics Students will: 1. Seed parsley peas and regular peas for shoot production. 2. Make fertilizer applications to radishes and lettuce and observe plant growth differences. 3. LGM - second group will seed in the LGM. 4. Check progress of potatoes and sweet potatoes. 5. Pot up any of the herbs from Week 7 that are large enough to transplant. 6. Wrap up Season Extension experiment - report due next week.
	Intended Learning Activities Develop vegetable production skills Interact with others within groups in ways that contribute to effective working relationships Learn about potting up from plug trays and appropriate container sizes.
	Resources and References Designated internet hyperlinks
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** In Class
10	**Course Learning Outcomes** CLO2, CLO4, CLO5
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES6, EES7, EES9 **Practiced:** EES1, EES2, EES4, EES6, EES7, EES9
	Intended Learning Objectives/Topics Topic: Legumes; Cover Crops Students will: 1. Study the production techniques for various legumes. 2.Consider the various legumes grown in Canada. 3. Study the various crops used as cover crops in Ontario. 4. Explore the functions of rotational & companion crops Test
	Intended Learning Activities PowerPoint/lecture/discussion Active Learning
	Resources and References Designated internet hyperlinks PowerPoint lecture
	Evaluation **Weighting** Test: Week 10 20

Week/ Module	Hours: 2 Delivery: Lab
10	**Course Learning Outcomes** CLO1, CLO2, CLO4, CLO5, CLO6, CLO7
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES5, EES7, EES10 **Practiced:** EES1, EES2, EES4, EES5, EES7, EES10
	Intended Learning Objectives/Topics 1. Plant micro-greens 2. Complete Fertilizer Experiment, taking last measurements and harvest data. 3. Pot up any herbs from Nov 2 if needed. 4. Check progress of potatoes, sweet potatoes and pea shoots.
	Intended Learning Activities Develop vegetable production skills Interact with others within groups in ways that contribute to effective working relationships
	Resources and References Material posted on DC Connect
	Evaluation **Weighting** Assignment: Four lab reports, worth 5 per cent each. Please see below for lab topics, dates of introduction of each lab exercise & due dates for each lab report 5
Week/ Module	**Hours:** 2 **Delivery:** In Class
11	**Course Learning Outcomes** CLO2, CLO4, CLO5, CLO6, CLO9
	Essential Employability Skills
	Taught: EES1, EES2, EES6, EES7, EES8, EES9, EES11 **Practiced:** EES1, EES2, EES6, EES7, EES8, EES9, EES11
	Intended Learning Objectives/Topics Topic: Vine Crops (Cucurbitaceae) Students will: 1. Study the production techniques for various vine crops. 2. Examine times of planting & use of plastic mulch. 3. Discuss options for plant nutrition and other best practices for mainstream and organic production systems
	Intended Learning Activities PowerPoint/lecture/discussion Active Learning
	Resources and References Designated internet hyperlinks PowerPoint lecture.
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** Lab
11	**Course Learning Outcomes** CLO2, CLO4, CLO5, CLO6, CLO9
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES5, EES6, EES7, EES8, EES9, EES11 **Practiced:** EES1, EES2, EES4, EES5, EES6, EES7, EES8, EES9, EES11
	Intended Learning Objectives/Topics Students will: 1. Transplant LGM plugs into growth chamber (Group 1). 2. Seed the next grouping of micro-greens and observe progress of last week's plantings. 3. Pot up any remaining herbs. 4. Check progress of all crops started in greenhouse.
	Intended Learning Activities Develop vegetable production skills Interact with others within groups in ways that contribute to effective working relationships
	Resources and References Designated internet hyperlinks Laboratory exercises and instruction posted on DC Connect
	Evaluation

Week/ Module	**Hours:** 2 **Delivery:** In Class
12	**Course Learning Outcomes** CLO2, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES1, EES2, EES7, EES8, EES9, EES11 **Practiced:** EES1, EES2, EES7, EES8, EES9, EES11
	Intended Learning Objectives/Topics Topic: Sweet Corn; Crop Budgeting 1. Study the production techniques for sweet corn and other types of corn. 2. Examine time of planting to achieve continual harvest. 3. Discuss options for plant nutrition and other best practices for mainstream and organic production systems 4. Learn the fixed and variable costs for crop budgeting. 5. Study several sample worksheets for crop budgeting.
	Intended Learning Activities PowerPoint/lecture/discussion Active Learning
	Resources and References Designated internet hyperlinks PowerPoint lecture/discussion. PDF's on crop budgeting posted on DC Connect.
	Evaluation **Weighting** Assignment: Week 12: Take home assignment 20

Week/ Module	Hours: 2 Delivery: Lab
12	**Course Learning Outcomes** CLO4, CLO9
	Essential Employability Skills
	Taught: EES7, EES8, EES9, EES10 **Practiced:** EES7, EES8, EES9, EES10
	Intended Learning Objectives/Topics Students will: 1. LGM - Group 2 transplant plugs into growth chamber. 2. Evaluate production potential of species of vegetables being grown in greenhouse 3. Seed last grouping of micro-greens and evaluate last week's production.
	Intended Learning Activities Develop vegetable production skills Interact with others within groups in ways that contribute to effective working relationships
	Resources and References Designated internet hyperlinks Laboratory exercises and instruction posted on DC Connect
	Evaluation **Weighting** Assignment: Four lab reports, worth 5 per cent each. Please see below for lab topics, dates of introduction of each lab exercise & due dates for each lab report 5
Week/ Module	**Hours:** 2 **Delivery:** In Class
13	**Course Learning Outcomes** CLO2, CLO4, CLO5, CLO6, CLO7
	Essential Employability Skills
	Taught: EES1, EES2, EES6, EES8, EES11 **Practiced:** EES1, EES2, EES6, EES8, EES11
	Intended Learning Objectives/Topics Topics: Urban Agriculture Students will: 1. Explore the challenges and innovations for growing in an urban environment. 2. Study current trends and trendsetters in urban agriculture. 3. Explore options for growing in an urban environment - allotment gardens, community gardens, going vertical
	Intended Learning Activities PowerPoint/lecture/discussion Active Learning
	Resources and References Designated internet hyperlinks PowerPoint lecture.
	Evaluation

Week/ Module	Hours: 2 Delivery: Lab
13	**Course Learning Outcomes** CLO4, CLO9
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES6 **Practiced:** EES1, EES2, EES4, EES6
	Intended Learning Objectives/Topics Complete and submit Lab Exercise 4
	Intended Learning Activities Develop vegetable production skills Interact with others within groups in ways that contribute to effective working relationships
	Resources and References Designated internet hyperlinks Laboratory exercises and instruction posted on DC Connect
	Evaluation
Week/ Module	**Hours:** 2 **Delivery:** In Class
14	**Course Learning Outcomes** CLO1, CLO2, CLO4, CLO5, CLO6, CLO7, CLO9
	Essential Employability Skills
	Taught: EES1, EES2, EES4, EES5, EES6, EES7 **Practiced:** EES1, EES2, EES4, EES5, EES6, EES7
	Intended Learning Objectives/Topics Final test
	Intended Learning Activities Apply a systematic approach to answer questions Use a variety of thinking skills to answer questions Select, organize, and document appropriate information
	Resources and References Designated internet hyperlinks Material posted on DC Connect, Weeks 5 to 13
	Evaluation **Weighting** Exam: Week 14: Final test 20

Week/ Module	Hours: 2 Delivery: Lab		
14	**Course Learning Outcomes** CLO1, CLO2, CLO3, CLO4, CLO5, CLO6, CLO7, CLO8, CLO9		
	Essential Employability Skills		
	Taught: EES1, EES2, EES4, EES5, EES6, EES7, EES10	**Practiced:**	EES1, EES2, EES4, EES5, EES6, EES7, EES10
	Intended Learning Objectives/Topics .		
	Intended Learning Activities .		
	Resources and References No lab		
	Evaluation		

This course supports the following program(s) and program learning outcomes.

AAGR: Horticulture - Food and Farming	#1. Apply the appropriate theory and principles to the production of crops grown under mainstream and organic management systems including varietal differences for end use or storage. #2. Compare and contrast soils and nutritional and watering requirements for plants and crops in field, garden and container production systems. #5. Evaluate potential entrepreneurial opportunities in value added agriculture and agri tourism by utilizing the fundamentals of business management, business plans, finance, marketing and accounting. #7. Integrate natural biological cycles and controls in managing plant pathogens, weeds, insect pests and parasites. #11. Develop and communicate principles and key messages of artisan agriculture to consumers, industry representatives and the media. #12. Develop an integrated farm management plan that accounts for ecological farm practices, environmental protection, biodiversity and wildlife preservation.