

Hydroponics for Home Gardeners
 Draft Syllabus
Summer 2015

2 credits or Certificate of Completion

Class size: 12 preferred and 16 maximum

Prerequisite: HS advanced biology however, a college level biology course and gardening experience will benefit the student.

Date: June 15 – July 9, 2015, **on campus (June 22nd – July 2nd)**

Time: Monday – Thursday, 9 AM – 12:30 PM

Lecture: 9 – 10:30 AM

Lab: 10:45 AM – 12:30 PM

Location: 118 Jeffords Hall and Room 012 Jeffords basement floor.

Text: *Botany for Gardeners*, 3rd edition, Brian Capon, ISBN 978-1-60469-095-8 and *Hydroponics for the Home Grower*, Howard Resh, 2015, ISBN 978-1-4822-3925-6.

Course Concept: The course introduces the home gardener to hydroponic horticulture with an emphasis on vegetable plant production. During June 15th - 18th, students will prepare for both lecture and lab with readings and assignments to familiarize themselves with fundamental plant science processes. On June 22nd to July 2nd, students will meet on campus. The morning will be split between lecture and lab sessions with one or two field trips. Students will learn basic hydroponic cultural practices for small scale systems. Topics include plant development, environmental conditions and control, water quality, irrigation practices, nutrient formulations, integrated pest management, crop planning, harvest and storage. Students will learn how to set-up, operate and trouble shoot three hydroponic systems. Lab demonstrations and techniques will be based on tomato, lettuce and basil crop systems. Hydroponic cultivation for individual medical purposes will be discussed. The final week, July 6 – 9th, students will complete their individual hydroponic design project with budget. Final project submittal deadline is July 9th.

LECTURE *Tentative*

Date	Topics
M. June 15	Syllabus review, Intro to Botany. Read <i>Botany for Gardeners</i> (BFG), chapters 1- 4, Plant cell structure, Organization of plant tissue: Stems, leaves, roots and flower <i>Homework: See Blackboard</i>
T. June 16	Read BFG, chapters 7 & 8, Control of Growth and Metabolism & water, mineral and photosynthesis.
W. June 17	Read: <i>TBD</i> . Production schedule for tomato, basil and lettuce.
Th. June 18	Quiz: TBA Reading: <i>See Blackboard</i> <i>Homework:</i> 1) Select a small-scale production system for a mini-presentation on Thurs. 6/25. 2) Read <i>Hydroponics for the Home Grower</i> (HHG), chapters 12, 13, 15 & 22. Small & large hydroponic

	units.
M. June 22, <i>On campus</i>	Syllabus review, Intro to Hydroponic Systems, <i>Homework:</i> HHG chapters 5, 14, & 23. <i>TBA</i> Lighting systems.
T. June 23	Environmental Factors: Light (quality, energy, photoperiodism & systems), Temperature (heating & cooling) and carbon dioxide. <i>Homework:</i> HHG chapters 6, 11 & 16. Look at tomato grafting video.
W. June 24	Environmental Control Systems, Root Substrates, Water Quality and Irrigation <i>Homework:</i> Preparation for tomorrow's presentation.
Th. June 25	Student presentations on specific crop hydroponic production systems. <i>Homework:</i> Read HHG chapters 7 – 10.
M. June 29	Quiz: <i>TBA</i> Plant Nutrition, pH adjustment, nutrient fertigation, selecting fertilizers and nutrient monitoring <i>Homework:</i> Read <i>TBA</i> Controlled Environment Agriculture Integrated Pest Management (IPM).
T. June 30	Insect and disease control and best practices <i>Homework:</i> Research identification and control of two pests for your specific production system.
W. July 1	Field trip <i>Homework from 6/30 due.</i>
Th. July 2, <i>Last class on campus</i>	Quiz. <i>TBA</i> Production planning, Guest Speaker: Hydroponic <i>Cannabis</i> production <i>Homework:</i> Create a production planning schedule and materials & supply list for specific crop.
M. July 6 -8	Prepare individual hydroponic system project prospectus. Refer to Blackboard for criteria.
Th. July 9	Final Date to submit hydroponic system project.

LABORATORY *Tentative*

Date	Topics
M. June 22	Introduction to Bato Bucket system Set-up two Nutrient Film Technique (NFT) hydroponic systems
T. June 23	Plant Basil in NFT troughs; plant lettuce in NFT rack. Seed germination and propagation techniques Measuring light
W. June 24	Tomato Grafting Monitoring tools for temperature, light and pH Pruning and pollinating fruiting crops
Th. June 25	Field trip <i>Homework:</i> Create a spreadsheet for nutrient fertigation schedule for specific crop and methods for monitoring fertigation system.

M. June 29	Review Fertilizer Solution Analysis Make up Fertilizers for three hydroponic systems Testing effluent for pH and EC
T. June 30	Insect and Disease identification on herbaceous plants at campus nursery and Jeffords Garden Scout hydroponic systems
W. July 1	Field trip
Th. July 2	Harvest and Storage Practices Lab Quiz