APBI 322 - Horticultural Techniques – Winter Session 2014 Jan-April 2015

Instructor: Dr. David McArthur
Office: room 133 MCML Bldg (office hours: Monday/Wednesday 11-12)
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TA: Gwen Huber
Lecture: MWF 9-10 am (rm 154 MCML Bldg)
Lab: Wednesday 1-4 (Horticulture Bldg [TBA when in MCML 258])

Course Description: APBI 322 introduces the student to a variety of horticultural activities/techniques and their scientific underpinnings (with some economic consideration). Some emphasis is placed on the set-up and hands-on applications such as propagation (including budding/grafting), pruning (e.g. fruit systems), mixing soil/artificial media and balancing fertilizers/nutrients levels (includes the use of hydroponics and tissue culture). These horticulture techniques will be suitable/adaptable for use in diverse crop systems (garden, orchard, nursery and glasshouse). Some consideration will be given to the anatomical/physiological plant processes being affected/manipulated by the techniques used (e.g. altered source-sink relations, plant hormones, callus growth, adventitious root development etc). Field trips will be short/local (e.g. UBC Farm) due to time constraints, but will comprise a component of the course and where possible hands-on application of various techniques will be demonstrated and practiced in the field by students.

Course Objectives: Students will be expected to be familiar with commercially important horticulture activities/techniques and the fundamental principles that underlie them. Students will be expected to interact respectfully with others in our community-of-learners, including colleagues, instructors, farmers, and professional horticulturists.

Evaluation Scheme:

Early spot quiz	5%
Midterm exam 1 (TBA)	20%
Midterm exam 2 (TBA)	25%
Participation in all activities (& attendance)	10%
Labs: written & practical Assignments	40%
No final examination	
Total	100 %

Students will be examined on class & lab theoretical material and also assessed on both written and practical assignments (re. specialized crop production and propagation and greenhouse crop maintenance). Short spot quizzes (5%) will be completed at the beginning of classes (random dates) & attendance monitored (5%; marks will be deducted for missing classes/labs).
A course fee for materials ($35) will be applied mainly for "take-home" projects.

Course lecture material will be on Connect and this will be the base material for quizzes/examinations. Recommended Textbook: Hartmann and Kester's Plant Propagation – softcover and hardcover editions will be placed on reserve at Woodward Library. Suggested readings to be advised.

Tentative Schedule (subject to change)

Week 1. Introduction and Course Overview
Starting with seed & plant morphology
(suggested reading H & K: Chpt 2 pp 14-27; Chpt 7: 200-240)
Lab: (start 1:00 pm in rm 258 MCML – to be confirmed shortly): Background lecture on Horticulture Materials, Root Media & Fertilizers; followed by Tour of Horticulture Greenhouse (suggested reading H & K: Chpt 3 pp 49-62)
Juvenile/mature plants: Shoots/Roots – morphology
Week 2. Juvenile/mature plants: Shoots/Roots Morphology/Physiology
Seeds for Propagation; designing hanging baskets
Lab: start bedding plants, dormancy (Part-1),
Week 3. Shoots/Roots – Components for Vegetative Propagation; morphology & physiology that influences growth form & physiology
I. Canopy Management of Tree Fruits and Grapevines (Winter/Summer Pruning)
Lab: Cuttings and Shoot/Leaf Propagation (Part 1); follow-up on seed germination
(Lab may be rescheduled for field pruning depending upon weather)
Week 4. Potting & Fertilizer Requirements
II. Canopy Management of Tree Fruits, Berries and Grapevines (Winter/Summer Pruning)
Lab: Pruning and Shaping a Canopy - UBC Farm;
Or - Follow-up on seed germination & evaluation of seed viability; Follow-up on vegetative propagation (Part 2)
Week 5. Shoot Physiology – Factors Involved in the Formation of a Graft Union; rootstocks
Grafting: examples Fruit Trees and/or Winegrapes
Lab: Pruning and Shaping a Canopy - UBC Farm;
Week 6. Establishing Desired Shoot Form and Flowering in Ornamentals (trees/bulbs)
Vegetative propagation
Lab: forcing bulbs and flowering branches
Update/complete activities; Potting & Fertilizer Requirements
Week 7. Midterm Break.
Week 8. Midterm (weeks 1 to 6) Monday Feb 26th.
Lab: Update/complete Greenhouse Activities; Potting & Fertilizer Requirements
Week 9. Compare & contrast conventional, IPM and organic horticulture pest control
Lab: Biological Pest-Control Agents
Week 10. Plant Hormones and Growth Regulators
Lab: gibberellins; inhibitors
Hydroponics
Tissue Culture (Tour of tissue culture facility in LFS)
Week 11. Environmental Effects on Plant Growth (light period, temperature, air)
Lab: Completing Greenhouse Activities (hanging baskets etc)
Week 13. Course Overview
Lab: Completing Greenhouse Activities
Lab Reports, Assignments– details & due dates to follow
Final Examination Period