Course Syllabus

Department: Conservation / Horticulture

Date: November 27, 2012

I. Course Prefix and Number: HRT 111

   Course Name: Tree Culture & Maintenance
   Credit and contact hours: 3 credit hours and 3 contact hours

Catalog Description including pre- and co-requisites:
This course introduces individuals to the care of trees and shrubs in the landscape based on industry standards. Topics include: woody plant anatomy, tree and shrub pruning, planting and aftercare, diagnosis of weak/strong tree structure, monetary evaluation of ornamental trees, introduction to climbing, rigging and cabling, root structure, construction vulnerabilities of trees, diagnosis of damaged trees and standard and specifications. Hands-on tree analysis and fault remediation of community trees will be emphasized. Spring. Pre and co-requisites: none

Relationship to Academic programs and curriculum:
This course is an elective course primarily for horticulture the Horticulture AAS degree and the Certificate but can also be used as an elective for AAS Natural Resources Conservation students. This course may also be taken as an elective for students outside of the horticulture and conservation programs and may also benefit the general public in planning, care and preservation of community and homeowner trees.

II. Course Student Learning Outcomes:
Upon the completion of this one semester course students will be able to:

A. Identify and explain the basic vascular system of woody plants including how they are affected by tree maintenance practices.

B. Explain the industry standards regarding proper pruning methods.

C. Identify weak versus strong tree structure and branch attachment as part of diagnosis.

D. Explain how trees benefit the environment and society.

E. Calculate the monetary value of trees.

F. Identify proper care of tree roots when considering planting techniques, construction, soil compaction and deicing salts.

G. Explain tree climbing with safety ropes.

H. Demonstrate the use of technical arboriculture equipment i.e Resistographs™
III. Assessment Measures (Summarize how the college and student learning outcomes will be assessed):

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<thead>
<tr>
<th>List identified College Learning Outcomes(s)</th>
<th>Specific assessment measure(s)</th>
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<tbody>
<tr>
<td>Critical Thinking</td>
<td>Students will develop a plan of action based on conclusions from learned analysis. They will be required to develop a graded action plan for remediation of faults in street trees.</td>
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<td>Oral Communications</td>
<td>Students will give two oral reports to the class; presenting their information contained in two graded research papers.</td>
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<tr>
<td>Citizenship</td>
<td>Students will analyze community street trees applying knowledge gained in class to remediate problems with those trees. They will be required to remediate identified problems, while under supervision, on graded exercises.</td>
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IV. Instructional Materials and Methods:

Types of Course materials:
- Text books
- Visual images presented in class with follow up information accessibility
- In-class lectures and workshops developed by instructor that relate to the specific topic to be covered.
- Trees and shrubs on campus and in the community used for observation and hands-on laboratory.
- Library resources

Methods of instruction (e.g. Lecture, Labs, Seminars …):
- Outdoor, hands-on, experiential learning of arboricultural methods and practices
- Lectures with handouts, power point, videos, and visual examples
- Demonstrations of charts and diagrams
- Workshops of guided learning and practice in techniques and equipment usage

V. General Outline of Topics covered
1. Introduction to the world of arboriculture
   a. Professional certifications, publications and resources
   b. Advantages of trees
   c. Monetary evaluation of trees in the landscape
2. Introduction to pruning
   a. Pruning objectives, strategies and dosage
   b. Inspection and evaluation before pruning and climbing
   c. Shearing and special forms

3. Plant selection, placement and management
   a. Good urban design and management
   b. Species and cultivar selection
   c. Selecting good nursery plants
   d. Tree form and habit

4. Tree structure and strength
   a. Branch orientations, unions, bark ridges and protection zones
   b. Branch origins and stem attachments
   c. Weak versus strong structure

5. Tree tissue and compartmentalization
   a. Living and nonliving tissue
   b. Compartmentalization of Decay in Trees (CODIT) model
   c. Best management practices related to tree biology

6. Pruning cuts
   a. Reduction, heading and removal cuts
   b. Consequences of flush cuts and wound dressings

7. Pruning tools
   a. Personal Protective Equipment (PPE)
   b. Cutting tools and other equipment
   c. IPM and GDD
      i. Integrated Pest Management as it relates to arboriculture
      ii. Growing Degree Days (GDD) and plant/insect phenology as they relate to arboriculture

8. Timing of pruning
   a. Pruning cycles and growth rate control
   b. Proper timing for deciduous and coniferous species
   c. Pruning flowering, fruiting and small ornamental trees

9. Analysis and remediation of a portion of Canandaigua’s young street trees
   a. On-site tour with resulting:
      i. Report of species identification, requirements, growth rate, and maladies
      ii. On-site remediation by pruning, weeding, stake/wire removal, etc.

10. Tree roots
a. Anatomical features and functions of woody and non-woody roots including mycorrhizae
b. Root pruning for transplanting and construction remediation

11. Transplanting trees and shrubs
   a. Bare root, ball and burlap and container grown nursery stock
   b. Post-planting care: staking, watering and mulching

12. Shrub pruning and care

13. Tree diagnosis
   a. Standards and specifications- American National Standards Institute (ANSI) for the green industry
   b. Tools used for diagnosis including Resistograph™ operation

14. Climbing exercise/Chipper operation demonstration