Alaska Master Gardener Course Outline

Lesson 1: Introduction to Botany and Taxonomy

1. **Introduction to Botany and Taxonomy**
   Covering:
   1. The definition of "botany"
   2. Human relationships with plants
   3. Plant life cycles and bolting
   4. Overview of plant parts (roots, stems, leaves, modified parts, flowers, seeds)
   5. Physiological processes of plants (photosynthesis, respiration, transpiration)
   6. Factors that affect plant growth (light, temperature, water and humidity, nutrients)
   7. Plants in communities
2. **Botany Basics**
3. **Plant Identification**

Lesson 2: Soils and Plant Nutrients

1. **The Structure and Functions of Soil**
   Covering:
   1. Soil composition
   2. Soil functions within an ecosystem
   3. Stages of soil formation (weathering, organic matter and ecosystem development, horizon formation, soil and ecosystem maturation)
   4. Factors of soil formation (parent material, topography, climate, biology, time)
   5. Soil Life
   6. Organic Matter (composition, benefits, role in nutrient cycling, cation exchange capacity)
   7. Soil Water (saturation, field capacity, permanent wilting point)
   8. Compaction
   9. NRCS Yukon Flats region soil survey
2. **Plant Nutrition**
   Covering:
   1. Nutrient composition of plants
   2. Soil type and pH
   3. Common signs of a nutrient deficiency
   4. Nitrogen, phosphorous and potassium deficiencies
   5. Magnesium, calcium (blossom end rot) and sulfur deficiencies
   6. Iron, boron and other micronutreint deficiencies
   7. The "limiting nutrient" concept
   8. Nutrient deficiencies and pest/disease interactions
   9. Over-fertilization
3. **Soils and Fertilizers**

Lesson 3: Plant Propagation and Pruning

1. **Plant Propagation**
2. **Pruning**

Lesson 4: Composting, Soil Fertility and Water Quality

1. **Soil Fertility and Composting**
   Covering:
   1. Review of plant nutrients
   2. Chemical fertilizers (N-P-K)
   3. Organic fertilizers (bone meal, blood meal, Sul-Po-Mag, kelp meal and emulsion, feather meal, fish meal and emulsion)
   4. Review of pH and soil testing
   5. The nitrogen cycle (rhizobia and nitrogen fixation, synthetic nitrogen
   6. Composting (fast vs. slow, compost food web, raw materials, building and caring for a compost pile, using compost)
   7. Vermiculture (advantages, all about composting worms, worm foodstocks, materials and construction of worm bins, caring for worms)
   8. Lasagna Gardening (materials, advantages, building a lasagna, maintaining a lasagna)
2. **Composting**
3. **Your Yard and Water Quality**

Lesson 5: Vegetable Gardening

1. **Keys to Successfully Growing Vegetables in Alaska**
   Covering:
   1. Choosing a garden site
   2. Planning a garden
   3. Basic tools
   4. Soil preparation
   5. Direct seeding and transplanting
   6. Watering and irrigation
   7. Fertilization techniques (crop nutrient needs, side dressing, fertigation)
   8. Mulch (organic and plastic)
   9. Season extension (hoop houses, high tunnels and other plant covers)
   10. Growing Asparagus
   11. Harvesting
2. **Vegetable Gardening**

Lesson 6: Berries and Tree Fruit

1. **Growing Fruits and Berries in Alaska**
   Covering:
   1. What's a fruit?
   2. Reasons to grow fruits in Alaska
   3. Considerations for fruit growers
   4. About hardiness zones
   5. Apples and their relatives
   6. Siberian kiwi
   7. Strawberry
   8. Raspberry
   9. Native berries
2. **Home Orchards**
3. **Berry Crops**

Lesson 7: Landscape Gardening

1. **Landscaping with Annuals and Perennials**
   Covering:
   1. Functions of a Landscape
   2. Microclimates
   3. Herbaceous and Woody Perennials, Bulbs and Annuals
   4. Watering, Seed Starting, Transplanting and Autumn Cleanup
   5. Plant Selection
   6. Focal Points, Massing and Formal and Informal Design
   7. Plant Selection by Biology, Color, Texture and Foliage
   8. Designing and Caring for Container Gardens
   9. Landscape Change
2. **Edible Flowers for the Home Landscape**
3. **Herbaceous and Ornamental Plants**
4. **Woody Landscape Plants**

Lesson 8: Lawn Care

1. **Lawns for Alaska**
   Covers
   1. Deciding Which Grass to Plant
   2. Establishing a New Lawn
   3. Lawn Maintenance
   4. Lawn Renovation
2. **Lawns**

Lesson 9: Houseplants

1. **Houseplant Care and Propagation**
2. **Houseplants**

Lesson 10. Entomology and Vertebrate Pest Management

1. **Beneficial Insects**
2. **Basic Entomology**
3. **Vertebrate Pest Management**

Lesson 11: Plant Disease

1. **Plant Disease Diagnosis and Management**
2. **Plant Disease**
3. **Diagnosing Plant Problems**

Lesson 12: Weed Management, IPM, Pesticides

1. **Integrated Pest Management for Alaska**
   Covers:
   1. IPM Strategy tips
   2. The Diagnosis Tool Box
   3. Control Methods
2. **Risky Pests for Alaska**
3. **Integrated Pest Management**
4. **Weed Management**
5. **Understanding Pesticides**