

## **NRM 152**

### **Plant Propagation Practicum**

1 credit practicum (0+0+3)

Prerequisites: NRM 150 and 151

Location: West Ridge Horticulture Greenhouse (Arctic Health) and the UAF Georgeson Botanical Garden

Time: TBA (3.5 day intensive practicum)

Instructor: Dr. Patricia S. Holloway

Office: 104AH Arctic Health Building; Georgeson Botanical Garden (Fairbanks Experiment Farm)

Office hours: TBA

Telephone: (907)474-6686

Email: [psholloway@alaska.edu](mailto:psholloway@alaska.edu)

**Textbook:** none; we will use lots of handouts and lab instructions.

**Required tools:** a sharp knife, also recommended (bring lunch and water bottles)

**The weather:** this course requires work in labs, barns, dirty seed cleaning rooms, and outdoors. Dress appropriately for the weather. Unless there is an earthquake or other disaster, we will work indoors and out regardless of the weather.

#### **Course Description:**

Methods of plant propagation useful in horticulture, botany, forestry, agronomy, revegetation and land reclamation projects and plant research. The practicum will emphasize hands on applications of propagation methods for commercial, educational and research applications. Emphasis will include horticultural seed production, landscape seeding and restoration practices, intermittent mist propagation systems, spore propagation and commercial micro-propagation (tissue culture).

**Prerequisites: NRM 150 and 151 (0+0+3).**

#### **Goals and Objectives:**

The propagation of plants by seeds, cutting, grafting and more is the foundation of plant-based natural resources management. This course is part three of a three-part series exploring the theory and methods of propagating plants. The Practicum is designed to provide hands on practical experience with the tools, equipment, and specialized methods used in the science and industry of plant propagation.

#### **Student Learning Outcomes:**

It is expected that you will become familiar with the practice of plant propagation sufficient for entry level work in a commercial greenhouse/nursery or fields that require information on revegetation and reclamation such as mining, highway and forest

revegetation; propagation of plants for home and garden use; and sharing propagation information with others. You will learn about the specialized equipment used in plant propagation such as seed germination testing equipment, seed harvesting, cleaning and processing equipment, intermittent mist propagation benches, and the laboratory equipment and methods used in micro-propagation (tissue culture).

**Instructional Methods:** The course will be a 3.5 day intensive, hands on practicum that will take place in a laboratory, outdoors and in a greenhouse. It will involve:

- 1) Short introductory oral demonstrations
- 2) Audio/video demonstrations where the equipment is not locally available,
- 4) Hands on application of propagation methods in greenhouse and field as both teams and individually.

**Evaluations:**

1.	Participation in all exercises	100 points	A=90-100%
2.	Propagation bibliography	30	B=80-89%
3.	Propagation lab activities	up to 50	C=70-79%
			D= 60-69%
			F= below 60%

**Propagation bibliography:** (One each day, three total) Take one activity that you are particularly interested in each day (3 total). Search on the web for professional/scientific sites, references. List 5 references you have found (using citation style for Plant Propagation) and write one short paragraph on what the site/reference covers. These sites/references must be professional sites, not general gardening information. For instance, do not use Wikipedia. Find a site such as a university site, seed testing labs, state regulatory agencies, etc. You can also cite a research or professional paper. Include a short paragraph stating conclusions of a study, or what a person can find on that site. This is a working bibliography that will be shared with your fellow students. Put it into a Word Document and email it to me by the end of the week.

**Lab Activities:** Occasionally, there will be a worksheet that needs to be filled out (i.e. seed quality lab), an activity that requires collection of information (TTC lab). Complete the exercise and hand in your results. The number varies with the class and activity, so points are variable.

**Participation:** You will receive 10 points for active participation in each exercise. You must demonstrate active participation by showing up, interacting with students and the instructor in all exercise, completing the projects and cleaning up after yourself!

**Course Policies:**

**Disability Services**

The UAF Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course

materials. Your instructor will work with the [Office of Disability Services](#) (208 WHIT, 907-474-5655) to provide reasonable accommodation to students with disabilities.

**Incomplete grades:** Because of the nature of this course, incompletes are not possible. If it is possible, you will be withdrawn (depends on registrar's calendar) from the class and given preferential entrance into future classes.

**Audits:** Auditing the class is accepted but not recommended. You must complete all work, including attendance, participation and reports. They simply won't be graded. If reports, etc. are not completed, the instructor will initiate a withdrawal from the class.

### **TENTATIVE LAB SCHEDULE (the order may change depending on plant availability)**

The course will consist of 7 half day sessions (4 hours each) in which the following will be introduced as hands on activities:

1. **Monday morning** Seed cleaning, processing, testing and germination using threshers, clippers, air seed cleaners, gravity separators; setting up a germination test (AFES farm) Cone seed extraction. Cone seed collection and extraction in forestry, forest tree seed germination and production
2. **Monday Afternoon:** Seed stratification, scarification, plug production; mechanized seeders (WR Greenhouse)
3. **Tuesday Morning** Collecting and processing cuttings, specialized stems, division, layering (farm) Fern spore collection, processing, germination (farm)
4. **Tuesday Afternoon:** Hardwood cuttings, herbaceous stem cuttings, intermittent mist propagation systems, propagation boxes. Leaf, leaf-bud cuttings, foliar embryos, layering, bulbs, corms, tubers, root cuttings, air layering (greenhouse)
5. **Wed Morning:** Grafting and Budding (greenhouse)
6. **Wed Afternoon:** Micro-propagation: Tissue culture (greenhouse)
7. **Thurs Morning:** Micro-propagation: Tissue culture (greenhouse)

