Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

SLUkurs

Syllabus

PFG0044 Forest Genetics and Treee Breeding, 4.0 credits

Syllabus approved

2013-12-10

Subjects

Biology

Education cycle

Third cycle

Grading scale

Pass / Failed
The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

Language

English

Prior knowledge

General forestry, basic statistics and genetics or equivalent.

Objective, including learning outcomes

The objective of the course is to give an overview of basic and advanced tree breeding principles and procedures including selection, mating, progeny testing,

propagation, and deployment. Emphasis will be on the biological and basic statistical aspects of Forest Genetics with strong coverage given in the practical and applied areas.
The course will combine lectures and discussions. The instructor will present concepts for development followed by discussion for members of the class. Pertinent publications will be assigned, and numerous handouts will be given during the semester. Students are expected to become familiar with current literature. Normally, discussions will be rather general, and it will be the student's responsibility to seek out the necessary details of the subject matter covered. This is a reading course. With widespread reference reading, much of the value of the course will be obtained.

Content

The course will cover the following topics:
1 - Variation in forest trees, population genetics, tree improvement and forest productivity
2 - Genetic concepts, gene action, measuring inheritance, variances, heritabilities, and combining abilities
3 - Geographic variation, land races, exotics in forestry
4 - Breeding strategies, hybrids
5 - Selection for growth and quality, pest resistance
6 - Deployment - seed orchards, clonal forestry
7 - Genetic testing, experimental design and field trials
8 - Use of genetic test data, GxE, gain estimates, selection, deployment strategies
9 - Gene conservation, biological diversity, advanced-cycle breeding and risk management
10 - Wood properties
11 - Economics of tree improvement
12 - Summary and discussion of topics

Requirements for examination

Requirements for examination:
Passed exercises and passed examination in written form.

Additional information

Responsible department

Department of Forest Genetics and Plant Physiology