

## Syllabus

### **SG0070.1 Upgraded biofuels, 7.5 credits**

#### **Förädlade biobränslen**

The course is given as course independent of study programme

Syllabus discontinued 29 August 2012

Version 1 in Slukurs. Corresponds to version 1 in Ladok

#### **Syllabus approved**

19 November 2009

The version applies to students admitted from spring 2010

The version is not a module version

#### **Subjects**

Forest science

#### **Education cycle**

Second cycle

#### **Modules**

Title	Code	Credits
Single module	0101	7.5

#### **Advanced study in the main field**

Second cycle, has only first-cycle course/s as entry requirements (A1N)

#### **Grading scale**

5:Pass with Distinction, 4:Pass with Credit, 3:Pass, U:Fail

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**

Swedish

**Prior knowledge**

The equivalent of 120 credits including 90 credits in Forest Science.

**Objectives**

The aim of the course is to give the students advanced knowledge about upgrading and characterisation of solid fuels.

After passing the course the students will have

- describe and use different techniques for sampling and sample preparation of disjointed biomass and upgraded solid biofuels.
- account for important quality parameters for the fuel raw material and its significance for different upgrading techniques.
- describe and partly apply different techniques for upgrading of biofuels and also formulate parameters that are of importance for the physical and chemical properties of the upgraded fuels.
- apply basic methods of analyses for the characterisation of upgraded biofuels and evaluate and critically examine the analytical results by comparison with approved quality standards.
- describe different techniques of combustion for upgraded solid biofuels.
- account for and evaluate different climate related environmental problems arising during production and use of upgraded biofuels in comparison to fossil fuels.
- present the results from the designed experiments orally and in written.

**Content**

During the lectures different raw materials, production techniques and processes for production of upgraded fuels are discussed together with methods for characterisation of physical and chemical properties of the fuels. Further the building and function of different plants for production and combustion of solid biofuels. During the laboratory work pelletizing experiments are demonstrated where the effect of various experimental parameters on the pellet quality is evaluated. In addition, the most common methods for characterisation of pellet quality are applied. The group activities outside the schedule are used for compilation and evaluation of the results from the laboratory work. Finally, the work shall result in a written report that is presented orally

## **Implementation**

### **Scheduled activities**

Lectures

approx. 40 Hours

Study visit

approx. 10 Hours

Compulsory

Laboratory work (in groups)

approx. 40 Hours

Compulsory

### **Group activities, not scheduled**

Report writing and preparing seminar

approx. 25 Hours

### **Individual studies, not scheduled**

Literature studies

approx. 85 Hours

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## **Total**

**approx. 200 Hours**

## **Formats and requirements for examination**

Passed written examination, passed laboratory work, passed oral and written report of laboratory/group work and participation in compulsory parts. The requirements for the different grades of the course appears from the grade criteria, that is shown in an annex to the syllabus. Actual information of grade criteria should be available latest at the start of the course.

- If the student fails a test, the examiner may give the student a supplementary assignment, provided this is possible and there is reason to do so.
- If the student has been granted special educational support because of a disability, the examiner has the right to offer the student an adapted test, or provide an alternative assessment.

- If changes are made to this course syllabus, or if the course is closed, SLU shall decide on transitional rules for examination of students admitted under this syllabus but who have not yet passed the course.
- For the examination of a degree project (independent project), the examiner may also allow the student to add supplemental information after the deadline. For more information on this, please refer to the regulations for education at Bachelor's and Master's level.

### **Additional information**

- The right to take part in teaching and/or supervision only applies to the course date to which the student has been admitted and registered on.
- If there are special reasons, the student may take part in course components that require compulsory attendance at a later date. For more information on this, please refer to the regulations for education at Bachelor's and Master's level.

### **Responsible department**

Department of Forest Biomaterials and Technology

### **Supplementary Information**

*Finalized by:* Arbetsutskott skogsmästare