



BIOR43 Plant systematics 7,5 credits

Schedule and course introduction spring semester 2012

version 2011-11-30

Welcome to BIOR43 Plant systematics!

Course structure. The course is net-based and run at 25% of full time during the period 16 January–3 June. The studies are divided into teaching blocks (sessions), each consisting of introduction, specific pages to be read in the textbook, and assignments to be full-filled such as questions to be answered and/or exercises to be worked through etc. We have scheduled nine teaching blocks, each corresponding to two weeks of work (see overview, below). The assignments are compulsory and will be corrected and graded. The participants are also expected to present a final literature project and participate at three IRL ("in real life") meetings. Beside the text book (see below) we use teaching material and resources available via internet. As active student you have access through "Student in Lund" (STiL) to the on-line library resources of Lund University.

Webb-based teaching platform. The course is net-based, which means that you perform most of the work from home using electronic communication to keep contact with teachers and other students. The teaching platform is called LUVIT, and it allows communication, such as presentation of texts and other media, downloading of exercises, chats etc through a course-specific website. You need to have a net-connected computer and a printer. You reach the start page via <http://luvit.ced.lu.se/LuvitPortal>
For logging in, you use your email address as "user name" and a specific password that you get at the start of the course. At the start page you can find out if you already use a recommended web-browser or if you have to get updated.

In-real life meetings in Lund. The three IRL meetings are compulsory. These are scheduled to three Saturdays: 11 February, 24 March, 12 May, between 10.00 to 18.00. We are going to visit the Lund Botanical Museum, the Lund Botanical Garden as well as the Ecology Building. We organize food at self-cost during these meetings (if nothing else is stated). Partially, the food is selected for educative purpose relating to cultural plants.

The first IRL-meeting will thus take place Saturday 11 February at the Botanical Museum and the Ecology Building. The main objectives of this meeting are to introduce the course and the textbook, to explain how to use LUVIT, to learn more about scientific collections, and not the

least, to learn to know each other. At the end of the meeting we will have a dinner together, so book also part of the evening for this meeting. If you need a place to stay over-night, we recommend the youth hostel "Tåget" ("The Train") which is located by the city centre, close to the railway station.

<http://www.svenskaturistforeningen.se/upptack/Omraden/Skane/Vandrarhem/STF-Vandrarhem-Lund/>

Literature. We use the following textbook:

Judd WS, Campbell CS, Kellogg EA, Stevens PF, Donoghue MJ. 2007. Plant Systematics: A Phylogenetic Approach, third edition. Sinauer. ISBN 978-0-87893-407-2.

NOTE THAT YOU SHOULD HAVE THE THIRD EDITION FROM 2007. You should try to get the book as soon as possible. It may be hard to find in bookshops and orders via internet are sometimes surprisingly slow.

We also recommend the following literature (which is not compulsory):

Heywood, V. H., Brummit, R. K., Culham, A. & Seberg, O. 2007. Flowering plant families of the world. Firefly books, New York. ISBN 978-1-55407-206-4

Widén, M. & Widén, B. (Eds.) 2008. Botanik - systematik, evolution, mångfald. Studentlitteratur, Lund. ISBN 978-91-44-04304-3. [If you can read Swedish]

Work load. The course is given at 25% of full time. You should plan to spend some 10 hours per week for reading and exercises. Since the course is carried out in interaction with other participants and the teachers, you have to take active part in the course throughout the whole semester.

Grading. The assignments are compulsory and will be commented and evaluated, and the results will be used for the final grading, replacing a final exam. To receive high pass you are advised to deliver the assignments according to schedule. Therefore, you need to inform the course leaders if you get sick or for some other reason need to postpone an assignment or miss a course meeting. You will have to do an extra assignment if you miss a course meeting.

Membership in Student Union. It is no longer compulsory to be member of the Student Union. Still, it is worthwhile to consider becoming a member since the union is looking after the student's interests and organizes most of the social activities for students in Lund.

For more information, see:

<http://studentlund.se/inskrivning/>

<http://www.luna.lu.se/english>

At the moment we have still place for more students, so if you know someone else who would like to participate, please contact the director of studies,

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Teachers are:

Nils Cronberg, senior lecturer in Botany

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Overview of the course

This overview is based on the schedule from last year, small changes may occur since we are updating each block before it is published.

Block 1

Goals

Focus of this block is basic concepts, some of which may be repetition.

You should

1. become acquainted with basic principles and methods for phylogenetic analyses
2. be able to account for the floral morphology and life-cycle of angiosperms.
3. understand how a floral formula is constructed.
4. know what APGIII is and how it is constructed.
5. become introduced to LUVIT as a platform for netbased studies.

Block 2

Goals

This studyblock is dealing with botanical terminology, including morphology, anatomy, embryology, cytology, palynology and chemistry. We also deal with general rules for naming species and the use of resources such as botanical collections and databases.

1. To repeat and deepen basic knowledge about botanical terminology.
2. To know the procedures for application of scientific names on plants.
3. To visit the Lund Botanical Museum and get an introduction to the use of botanical collections.
4. To use certain netbased resources and taxonomic databases.

Block 3

Goals

In this block you will learn about the history of plant systematics and the major elements of the tracheophyte systematics.

1. To understand how plant systematics has developed as a scientific subject.
2. To understand the current view of the tracheophyte phylogeny and evolution.
3. To critically consider the gaps in knowledge and missing fossils that complicates phylogenetic reconstruction.

4. To learn about the major groups that are placed in the phylogenetic lines that tentatively are known as "ANITA" and "Magnoliids" and recognize the most important characteristics of these groups.

Block 4

Goals

This block contains an overview of molecular methods and a systematic part dealing with monocotyledons.

1. To learn to know the major groups that belong to the monocotyledons and recognize their most important features.
2. To understand and exemplify the vast importance of monocotyledons as cultivated plants.
3. To test how to display angiosperm phylogenies with the program Phylomatic.

Block 5

Goals

In this block you will get an overview of evolutionary processes in plants and study the phylogeny of the basal eudicotyledons.

1. To understand how evolutionary processes shaped plant biodiversity as we see it today .
2. To understand the mechanisms of different reproductive barriers.
3. To critically consider different species concepts.
4. To get an overview of the diversity of cultural plants among monocots, what they look like and, in some cases, what they taste like.
5. To visit a molecular lab and get some insights about the methods and equipments that are used.
6. To learn to know the most important groups of basal eudicotyledons and their most important characteristics.
7. To practice the use of interactive determination keys.

Block 6

Goals

In this block you learn the systematics of basal eudicotyledons and get an overview of molecular methods as tools in plant systematics.

1. To understand how molecular methods are applied in phylogeny and systematics.
2. To critically consider advantages and restrictions of molecular methods.
3. To test a netbased tool for identification of DNA-sequences.
4. To learn to know the major plant groups that are placed among the basal rosids, the majority of fabids and their most important characteristics.

5. To get an introduction to the UN strategy for conservation of plant biodiversity.

Block 7

Goals

This study block deals with the systematics and diversity of rosids (second part, including the remaining fabids and the malvids).

1. To know which major groups that belongs to the rosids and their most important characteristics.
2. To consider the evolution of fruit types in relation to dispersal biology.
3. To consider the evolution of wind- resp. insectpollination.
4. To exemplify ornamental plants among the rosid families.

Block 8

Goals

This studyblock deals with the systematics and diversity of asterids, primarily the lamiids.

1. To know which groups of plants belong to the asterids, and to recognize their most important characteristics.
2. To consider the drastic systematic changes that have been imposed to certain families.
3. To prepare an assignment dealing with "DNA barcoding" of plants, a method to characterize species using universal DNA sequences.
4. To participate the third course meeting, which includes demonstrations of asterids in the Botanical Garden and a presentation of edible fruits.

Block 9

Goals

In this study block you will make a final assignment. You are going to advantage of the skills you have acquired during the course for to describe a plant family in a comprehensive and interesting fashion.

You are also supposed to read in the text book about the second, very large group among the asterids, called the campanulids.