

How to open a local electronics laboratory for remote access Part 2

Administration and
experiment start up




Outline

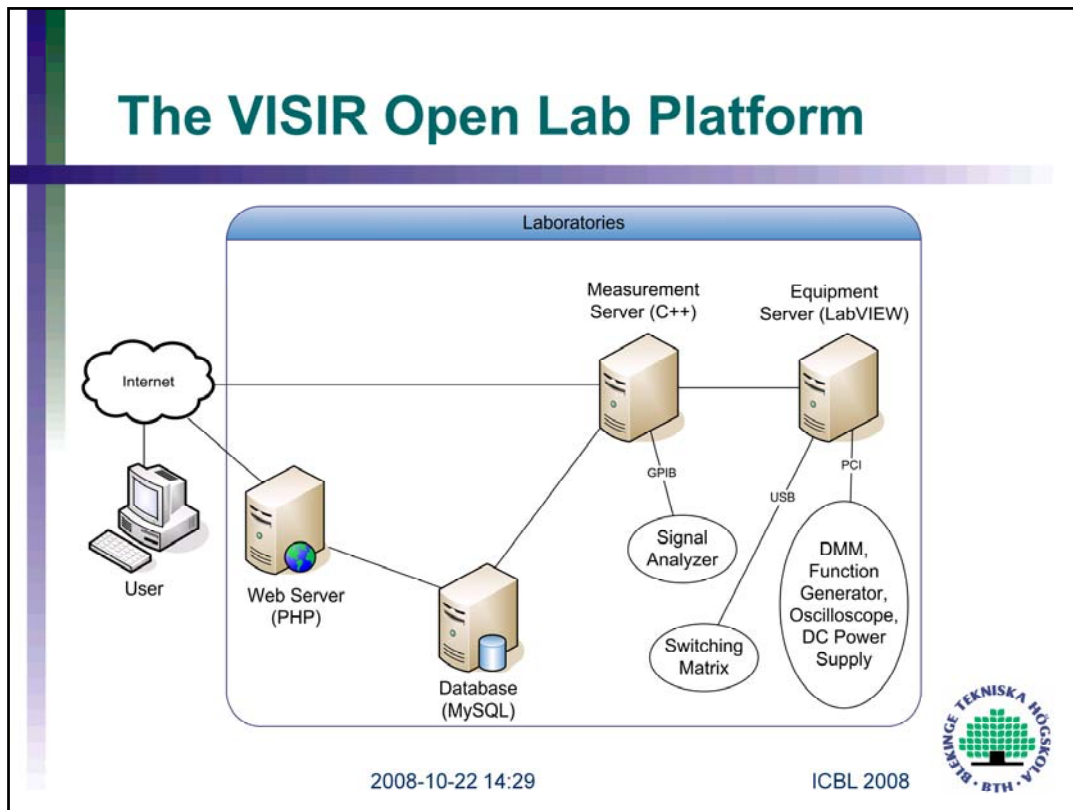
- Introduction
- Starting an experiment
- Administrator preparations
- Teacher preparations

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I will start with how to log in and start an experiment and then discuss what must be made to prepare labs.



As we saw in part 1, the VISIR laboratories are composed of four distinct parts – Experiment client, Web Interface, database, and lab equipment. The Equipment Server hosts the instruments in the electronics laboratory.

The Web Interface manages resources and keeps track of when and by whom the laboratory is used. Now we will concentrate on the web interface.

Terms used

- The term *laboratory* or *lab* is ambiguous, it can mean a room or a collection of experiments performed during a lab session
- A supervised *lab session* takes place in a laboratory or in a computer room
- Distant enrolled students can participate in a supervised lab session in an *open laboratory* using appropriate communication means or can perform experiments on their own

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Before the Internet appeared a scheduled supervised lab session took always place in a local laboratory where the students performed a number of experiments described in a lab instruction manual using the workbenches and a Component Set delivered by the instructor. The components of the Component Set are listed in the bill of materials of the lab instruction manual. Using an online workbench it is possible to move the lab sessions into a computer room or the students as well as the instructor can be scattered all over the globe.

Main VISIR laboratory types of users

- An *administrator* introduces courses and authorizes a teacher for each course
- A *teacher* schedules lab sessions, collects component sets, and authorizes students
- Authorized *students* are entitled to perform experiments in their courses
- *Guests* are entitled to perform experiments for guests when the laboratory is free

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The administrator's role

- Make sure resources are available
- Add courses
- Authorize a teacher in charge of each course

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There is one main administrator who is the manager of the laboratory. He or she guarantees together with laboratory staff that the laboratory is up and running. The main administrator may authorize other administrators. An administrator introduces courses and authorizes teachers for each course.

The teacher's role

- For each of the teacher's courses s/he must
 - Schedule lab sessions or other events in the laboratory
 - Authorize students enrolled in the course
 - Add a Component Set to each lab
 - Create rules for the virtual instructor

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The teacher schedules lab sessions or other events of a course he or she will be teaching. S/he authorizes students who are enrolled in the course to make seat reservations and to participate in the lab sessions or other events of the course. The teacher must create rules for the virtual instructor for each experiment of the labs. If such rules are missing for an experiment and there are no other applicable rules made for other experiments this experiment can not be performed.

Enrolled students activities

- Participating in supervised lab sessions
- Making a seat reservation in scheduled lab sessions of their courses
- Making experiments alone or together with others
- Reserving time for future own experiments

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Students that are enrolled in a course are entitled to participate in the lab sessions of that course. They are also entitled to perform experiments on their own or together with others before the course ends. Distant students can work together using appropriate communication means. Students can also make time reservations for future own experiments. However such reservations have lower priority than reservations made by teachers.

Login Screen

OpenLabs Electronics Laboratory

Multi-lingual support

MAIN MENU
+ Start
+ About
+ Demo
+ FAQ

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Login

E-Mail user@distsec

Password

Login

If this is your first visit, you will have to activate your account.

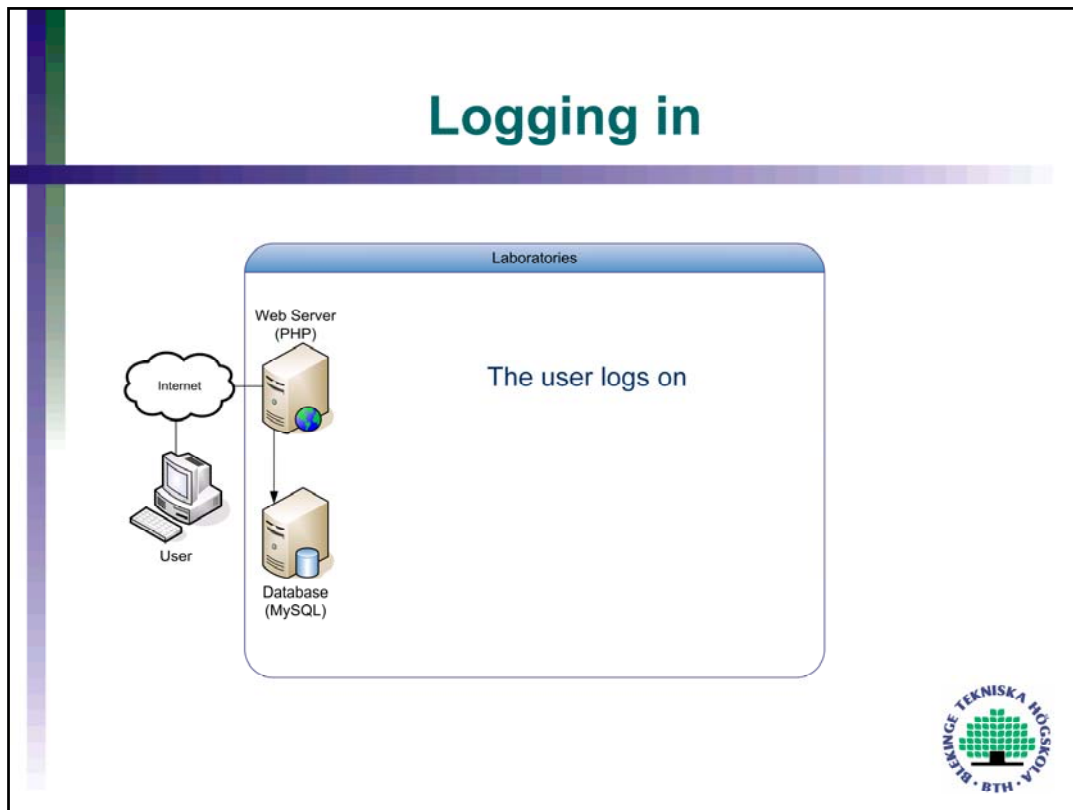
If you have any questions about this page or the laboratory, contact the [administrator](#)

<https://openlabs.bth.se/electronics/index.php?sel=login>

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Everybody who wants to perform experiments in the laboratory needs to log in. In the next few slides I will demonstrate how a student enrolled in a course starts up an experiment.



The student logs on. The user id. and user type are stored in the database.

Successful log in

OpenLabs Electronics Laboratory

MAIN MENU

- Start
- About
- Demo
- FAQ

Logout

STUDENT

- Guest course integrator
- Guest course op. amp.


Welcome

Courses the student are enrolled in

Welcome to the distance electronics laboratory.


Here you will find the resources needed to experiment in electronics via the internet. We have developed a system where you can make electronic experiments, right here in your browser. We supply basic equipment, such as oscilloscope, multimeter, function generator and power supply. With these and a number of electronic components you can build circuits on our virtual breadboard. None of the measurements are simulated. The circuits you build will be formed and measured on, and the real measurement results will be displayed.

Interested? Go to our demo page.



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Now I am logged in as a student. A student can only see the courses s/he is enrolled in.

Student's course screen

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MAIN MENU

- + Start
- + About
- + Demo
- + FAQ

STUDENT

- + Guest course integrator
- + Guest course op. amp.

Logout

Guest course op. amp.

[Start Experimenting](#)

Starting an experiment without a reservation gives you one hour of experimentation time. Experimenting without a reservation has lower priority and you will be kicked out if a reservation needs your seat.

My ongoing reservations

No ongoing reservations

My reservations

Start	End	
2008-09-08 08:00:00	2008-09-08 11:00:00	Cancel

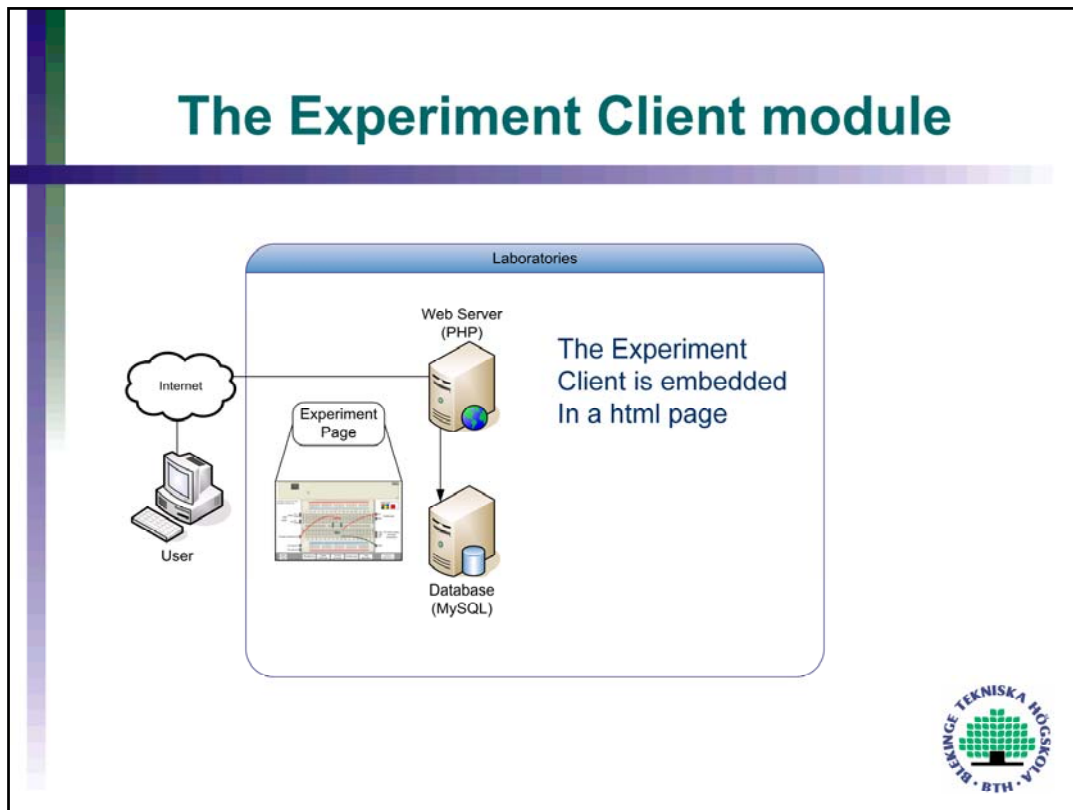
[Make new reservation](#)

Teacher scheduled reservations

Start	End	Booked	Max	
2008-09-09 08:00:00	2008-09-09 12:00:00	0	16	Reserve Seat

Name of the course selected

“ My reservations” lists future time reservations I have made. When such a time reservation occurs it will be moved to “My ongoing reservations”.



When I select the "Start Experimenting" link in the preceding slide the web browser reads an HTML page containing the experiment client module as an embedded object.

The virtual breadboard is displayed

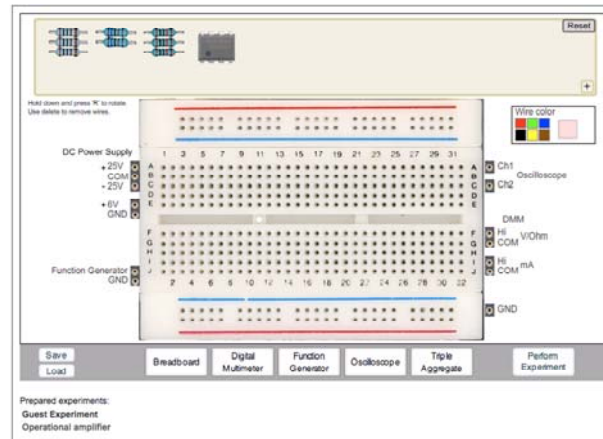
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Now the virtual breadboard is displayed on the client computer screen. The lab sessions defined for the course are listed under the heading of “Prepared experiments”.

The heading “Prepared experiments” requires an explanation. The goal of the research is to create a workbench that mimics the workbench in a local laboratory for electrical experiments where students perform experiments described in lab instruction manuals during a supervised lab session using components originating from a supplied set. In principle it would be possible for a lab instructor not only to deliver a component set to each workbench in a local laboratory but to wire a circuit or parts of a circuit on the breadboards of the workbenches before a lab session starts. This possibility is seldom used because it would require extra working hours for the instructor. However, the VISIR platform supports such prepared experiments without extra hours for the instructor. Thus the heading “Prepared experiments” indicates the list could be more than a list of labs.

The component set is displayed



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When the student selects a lab the component set belonging to that lab is displayed and the student can start experimenting using the lab instruction manual. The virtual breadboard emulates a detachable one. A circuit can be saved and restored using the save/load buttons.

Administrator's course page

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[Logout](#)

MAIN MENU

- + Start
- + About
- + Demo
- + FAQ

ADMIN

- + Wiki Pages
- + Admin courses
- + Users

TEACHER

- + Guest Course
- + Guest course integrator
- + Guest course op. amp.
- + Test

STUDENT

- + Guest Course
- + Guest course integrator
- + Guest course op. amp.
- + Test

Courses			
Course name	Start	End	Max Users
<u>Eikretsteori (ET1107)</u>	2008-08-01	2008-10-30	10
<u>Guest course op. amp.</u>	2008-08-01	2008-11-30	20
<u>Guest course integrator</u>	2008-08-01	2008-11-30	20
<u>Example course</u>	2008-09-01	2009-06-01	10
<u>Test</u>	2001-01-01	2010-01-01	10
<u>Regression Test</u>	2008-01-01	2018-01-01	10
<u>Guest Course</u>	2001-01-01	2020-01-01	10


[Add course](#)

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A course will not be visible for others than administrators before the start and after the end.

Adding a course

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Logout  

MAIN MENU

- + Start
- + About
- + Demo
- + FAQ

ADMIN

- + Wiki Pages
- + Admin courses
- + Users

TEACHER

- + Guest Course
- + Guest course integrator
- + Guest course op. amp.
- + Test

STUDENT

- + Guest Course
- + Guest course integrator
- + Guest course op. amp.
- + Test

Edit course

Name

Start



End

Max Users





Adding a teacher responsible for the example course

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Logout  

- MAIN MENU
 - Start
 - About
 - Demo
 - FAQ
- ADMIN
 - Wiki Pages
 - Admin courses
 - Users
- TEACHER
 - Guest Course
 - Guest course integrator
 - Guest course op. amp.
 - Test
- STUDENT
 - Guest Course
 - Guest course integrator
 - Guest course op. amp.
 - Test

Edit course

Name:

Start:


End:

Max Users:

Responsible for course

E-Mail	User Type
<input type="text"/>	<input type="text"/>
E-Mail: <input type="text"/>	User Type: <input type="text" value="Teacher"/>



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This form will be displayed when you click on the course name in the course list. Here it is possible to update course data or to remove the course and to add teachers.

Teacher course overview

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Logout  

MAIN MENU
→ Start
→ About
→ Demo
→ FAQ

TEACHER
→ Guest course integrator
→ Guest course op. amp.


STUDENT
→ Guest course integrator
→ Guest course op. amp.

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Guest course op. amp.

Start 2006-09-01
End 2006-11-30
Max Users 20
Max Seats 16
LMS link [Copy this](#)

Experiments


Name
Lab session on op. amp. 

Add Experiment

Reservations

Make teacher scheduled reservation

Users

E-Mail	User Type	Activated	Enabled
ingvar.gustavsson@bth.se	Teacher	.	

E-Mail Separate multiple users by newline

User Type

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All users listed in the “User” frame are entitled to perform experiments of the labs of the course. Thus students added will show up in the “User” list.

Adding students

E-Mail

```
student1@bth.se
student2@bth.se
student3@bth.se
student4@bth.se
student5@bth.se
student6@bth.se
```

Separate multiple users by newline

User Type

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Adding Lab sessions

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MAIN MENU

- Start
- About
- Demo
- FAQ

TEACHER

- Guest course integrator
- Guest course op. amp.

STUDENT

- Guest course integrator
- Guest course op. amp.

Logout

Add Experiment

Start client in teacher mode
Then, add the components you need and make the setup you would like. Then save the circuit and post it on this page

Name

Experiment File

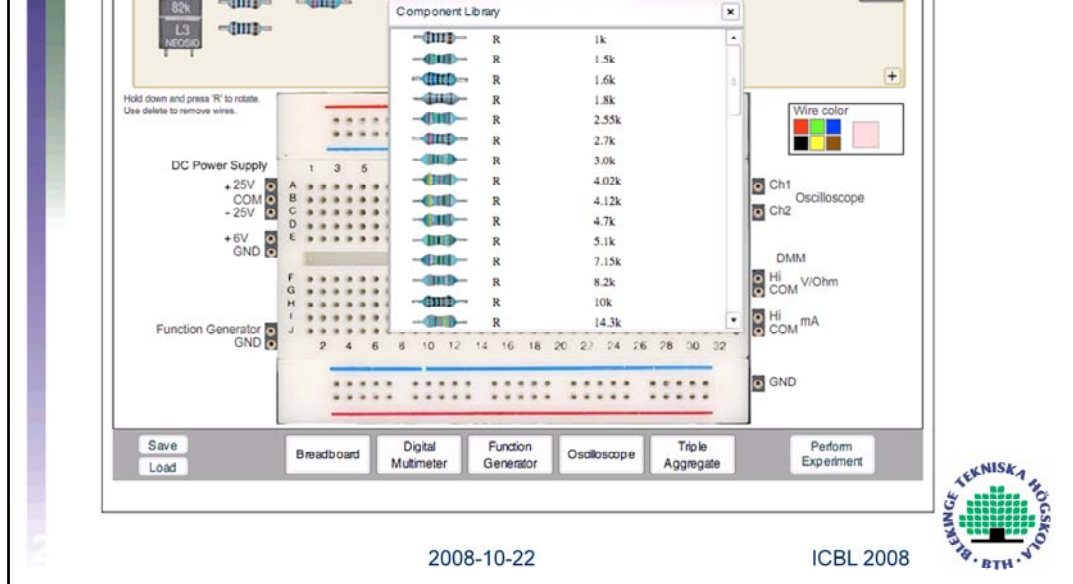
If you have any questions about this page or the laboratory, contact the [administrator](#)

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Usually there are a number of labs in each course. A lab instruction manual and a component set belong to each lab. The lab instruction manuals are not stored in the laboratory. Use the link “Start client in teacher mode” to create the component set of the lab. How to create this set will be shown in the next slide.

The “Experiment File” contains either a Component Set or a prepared circuit.

Creating and saving Component set



By clicking the + sign in the lower right corner of the component box the Component Library is displayed. The Component Library contains a description of each component defined for the VISIR platform. The description includes a photo of the component. The Component Library is a part of the VISIR open source distribution. All members of the VISIR group are welcome to add new components. The teacher is supposed to create a Component Set for each lab session of his or her course. Finally the teacher presses the save button to store the Component set. Please note that it is possible to store not only a component set but a wired circuit.

Scheduling experiments

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MAIN MENU

- + Start
- + About
- + Demo
- + FAQ

Logout

TEACHER

- + Guest course
- + integrator
- + Guest course op. amp.

STUDENT

- + Guest course
- + integrator
- + Guest course op. amp.

Schedule							
Time:	Mon 2008-09-08	Tue 2008-09-09	Wed 2008-09-10	Thu 2008-09-11	Fri 2008-09-12	Sat 2008-09-13	Sun 2008-09-14
00:00	16	16	16	16	16	16	16
01:00	16	16	16	16	16	16	16
02:00	16	16	16	16	16	16	16
03:00	16	16	16	16	16	16	16
04:00	16	16	16	16	16	16	16
05:00	16	16	16	16	16	16	16
06:00	16	16	16	16	16	16	16
07:00	16	16	16	16	16	16	16
08:00	15	16	16	16	16	16	16
09:00	12	16	16	16	16	16	16
10:00	12	16	16	16	16	16	16
11:00	16	16	16	16	16	16	16
12:00	16	16	16	16	16	16	16
13:00	16	16	16	16	16	16	16
14:00	16	16	16	16	16	16	16
15:00	16	16	16	16	16	16	16
16:00	16	16	16	16	16	16	16
17:00	16	16	16	16	16	16	16
18:00	16	16	16	16	16	16	16
19:00	16	16	16	16	16	16	16
20:00	16	16	16	16	16	16	16
21:00	16	16	16	16	16	16	16
22:00	16	16	16	16	16	16	16
23:00	16	16	16	16	16	16	16

<< Current week >>

Number of free seats for every hour



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Just click the hour wanted if there is a seat available. The next slide will show how you can select number of hours and number of student seats.

Reservation details

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Logout  

MAIN MENU


- + Start
- + About
- + Demo
- + FAQ

TEACHER

- + Guest course integrator
- + Guest course op. amp.

STUDENT

- + Guest course integrator
- + Guest course op. amp.



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Teacher scheduled reservation


2008-09-14 8:00

Hours

Number of seats

2008-10-22



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Students can then sign up

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Logout  

MAIN MENU
+ Start
+ About
+ Demo
+ FAQ

STUDENT
+ Guest course integrator
- Guest course op. amp.

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Guest course op. amp.
Start Experimenting
Starting an experiment without a reservation gives you one hour of experimentation time. Experimenting without a reservation has lower priority and you will be kicked out if a reservation needs your seat.

My ongoing reservations
No ongoing reservations


My reservations

Start	End	
2008-09-08 08:00:00	2008-09-08 11:00:00	Cancel

[Make new reservation](#)

Teacher scheduled reservations

Start	End	Booked	Max	
2008-09-09 08:00:00	2008-09-09 12:00:00	0	16	Reserve Seat

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The teacher scheduled lab sessions show up in the students' course view and the student can do seat reservations.