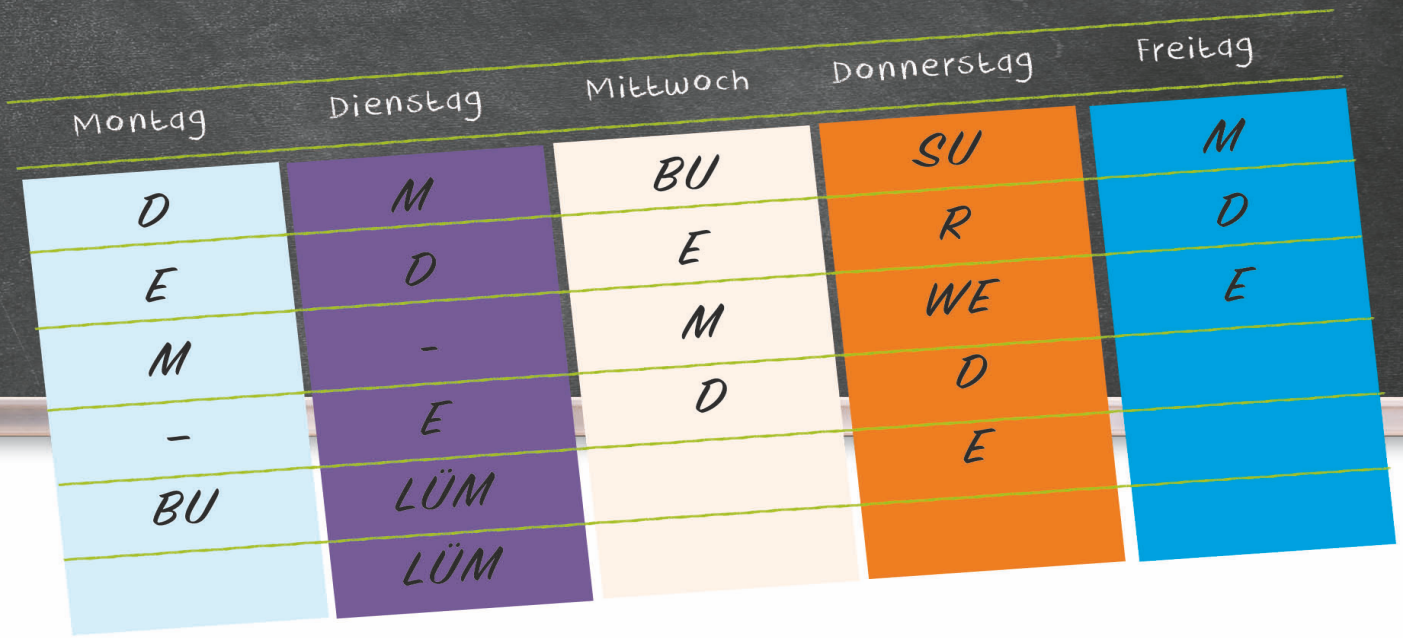
Untis
GRUBER & PETTERS

Untis
Timetable



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1 Master Data

1.1 Preface

Over the course of more than 40 years of development, Untis has become an extremely powerful tool. The large number of functions and possible settings, as well as the size of this manual, may have a daunting effect on newcomers to the application.

For this reason we would recommend that you first study the considerably shorter manual ' Getting Started '. 'Getting Started' uses easy-to-understand examples to guide you through all the steps of timetable creation with Untis, from installation , adding school data to your school's master data and entering lessons to the actual creation of the timetable using Optimisation , the diagnosis of the calculated timetable, possible manual changes and printing finished teacher, class and room schedules.

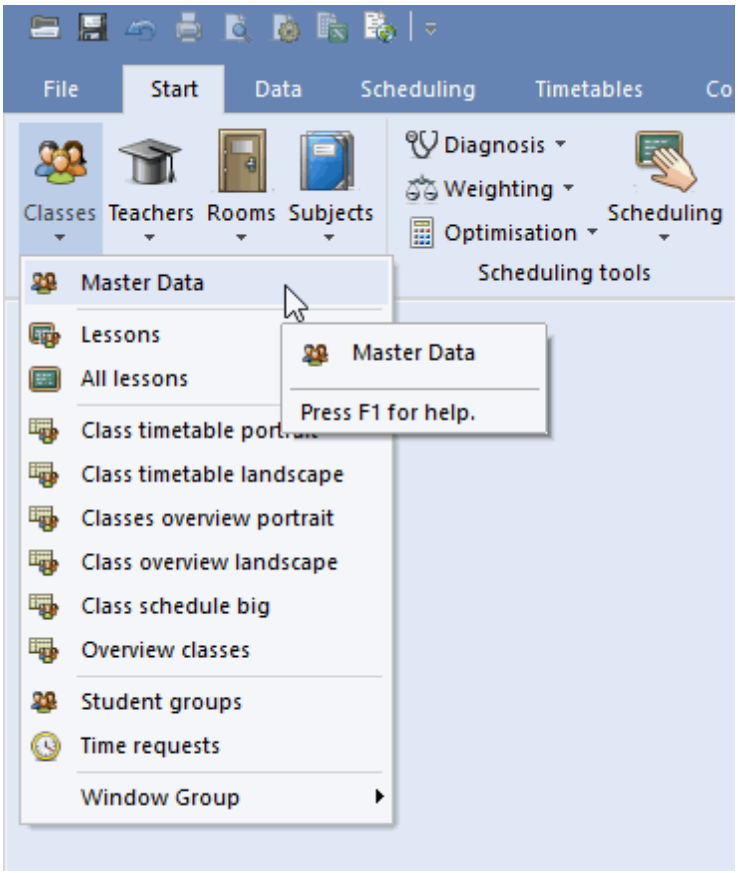
The structure of this manual is also based around this natural basic structure. However, it is intended to be more of a work of reference than a brief guide.

For this reason, use this manual when in the course of creating your timetable you encounter situations that are not dealt with in 'Getting Started', or when you wish to take the time to get to know Untis in greater detail in order to be able to work more effectively with the system.

1.2 Master data

This chapter describes the input and maintenance of master data and provides a detailed description of master data properties.

Master data are basic input details essential for the construction of school timetables. They include the particulars of teachers , classes , rooms and subjects which are used to form the lessons in the timetable, but also other important information such as departments or corridors. You can access the 'Master Data' either via the 'Data' tab, the most important elements can also be accessed via the 'Start' tab.



The master data categories 'Classes', 'Teachers', 'Rooms' and 'Subjects' are particularly important as they are the main building blocks for the construction of lessons. We will therefore refer to these types of master data as *elements* .

All master data are managed in so-called formats. Formats are windows designed for the input of new master data and the maintenance (i.e. modification) of existing master data. All master data formats are essentially very similar in use and structure. The following chapter describes the similarities between different master data formats.

1.3 Master data formats

Each type of master data element classes , teachers , rooms , subjects , students) is managed in its own window.

All master data windows consist of three sections: a toolbar , a grid view and a form view.

Grid view

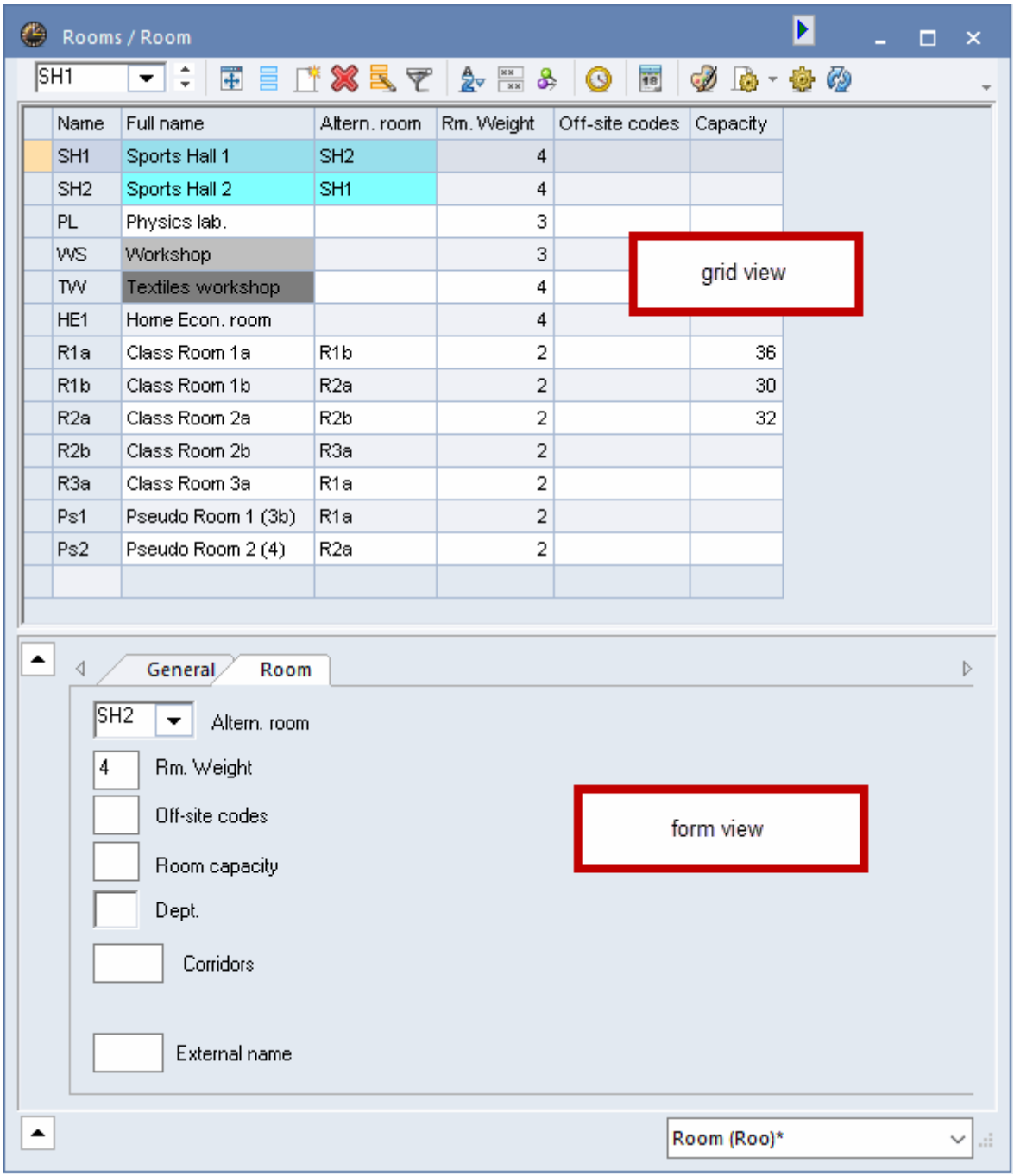
The grid view is a table with individual rows. Each row represents one element. The grid view displays all the attributes for the element activated (by the user) in the corresponding format. The activated attributes in the example are the fields name, full name, alternative room, room weighting, off-site code and capacity.

Form view

The form view concentrates on one element, and displays the one element with its attributes. In the example above, the form view displays the name of the selected room, the (more informative) full name of

the room, the room capacity etc.

Note:
You can hide and display the form view using the button at the bottom left of the screen.



The following topics are covered later:

1.3.1 Toolbar functions

You will find the following buttons in many Untis windows:

Resize the window
This function adjusts the size of a window to match the table it contains.

Grid adjustment (display fields))
The functions of the grid adjustment dialogue are described in detail in chapter Displaying/hiding columns .

New
This button opens a new element. You will find more information in the chapter Data input .

Delete
This function deletes the active element. You can also mark several elements with the cursor and then use this button to delete them.

Serial change
Use this function to systematically change the contents of a field in all rows of the grid view in a single operation. This function is described in detail in the chapter Serial change .

Filter
When you click this button, a filter line is displayed and you can filter by the selected element. For more detailed information on filtering please go to filtering .

Sort
This function effects automatic permanent sorting and is explained in chapter Sorting .

Show all fields with content
This a very useful function that is used to temporarily activate all columns which contain at least one entry. Clicking on this button a second time restores the window to its original state

Lock this display
If this function is active (button pressed) the view in question will not be affected by events taking place in other windows. Automatic synchronisation is deactivated.

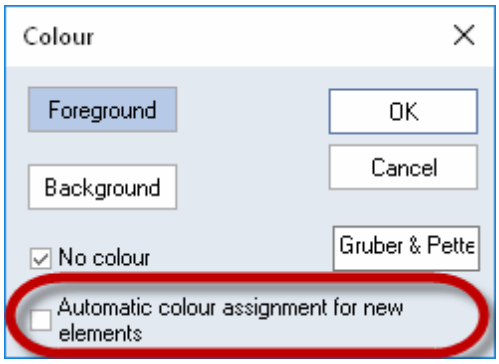
Time requests
This functions is used to enter time requests. The increments for time requests for elements range from '-3' (total block) to '+3', which indicates a strong desire for the element to be scheduled. Since time requests are of major significance for all elements and for lessons there is a chapter Time requests dedicated to this subject under User tips .

Colour coding

Use this button to assign any desired foreground and background colour to an element or lesson. These colours will be used to for screen element display (but not printing), for standard timetable printing and for the display of planning tools (Scheduling dialogue , Scheduling timetable). Other Untis modules such as the Cover planning module also display elements in colour at the appropriate places.

Tip: Colouring several elements
You can specify the colour coding for several elements in one operation by first marking them (with the cursor) and then clicking on the <Colour coding> button.

Additionally, in the 'Colour' dialogue you can define that new elements automatically are assigned a colour .



Page layout

This option allows you to change the settings for printing and to view the results at the same time. For more detailed information please go to Printing .

Settings

The <Settings> button allows you to change the font type, size and similar settings.

Refresh window

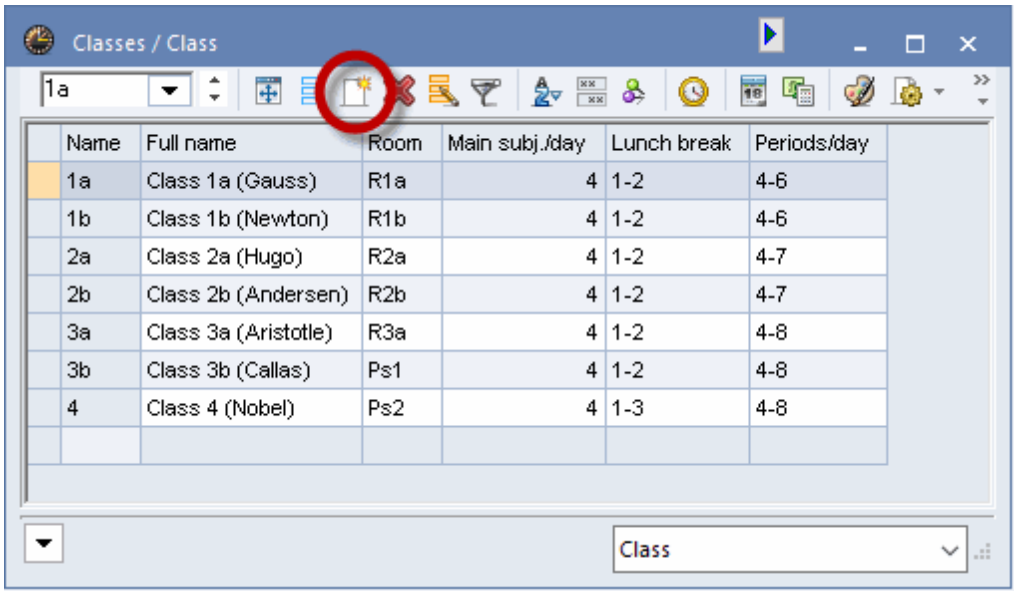
Refreshes the format. Alternatively, you can press F5.

1.3.2 Data input

A new data element is always entered into the master data formats in the last line of a grid view.

As an alternative, you can click on the <New> button in the window's toolbar, which will then position the cursor in the last line of the grid view.

Warning: Confirming input
Always confirm your input with <ENTER> or <TAB> as otherwise the final entry may in some circumstances not be saved.



If you wish to make further entries, move the cursor to the relevant field using the mouse or cursor keys and enter the desired data.

Note: Changing the (short) name
You can change the (short) name of an element by double-clicking on the 'Name' field of the element concerned.

1.3.3 Editing formats

There is a large number of columns in every master data window. However, no school ever needs all the columns. For this reason you can specify which columns should be displayed and which should not.

You can also determine the sort order of the rows and columns.

1.3.3.1 Displaying/hiding columns

Basically you have two different ways of influencing how columns are displayed: either using <Grid adjustment> or via the form view .

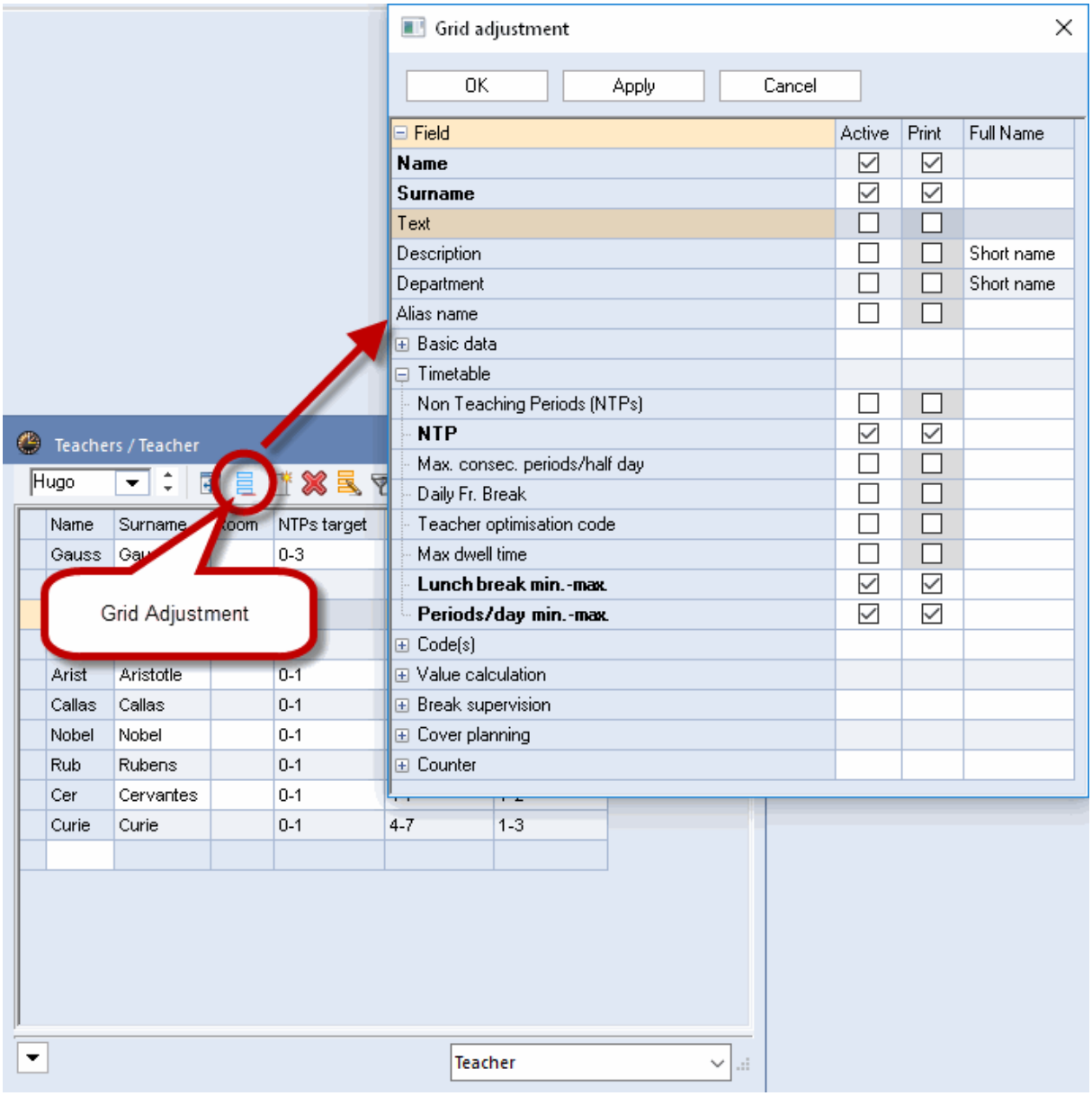
Tip: Show all fields with content
Clicking on the <Show all fields with content> button displays all columns which contain at least one entry. This function is particularly useful for tracking down any data entry fields.

Grid adjustment

Click on the <Grid adjustment> button and check the columns (under 'Active') that you wish to display.

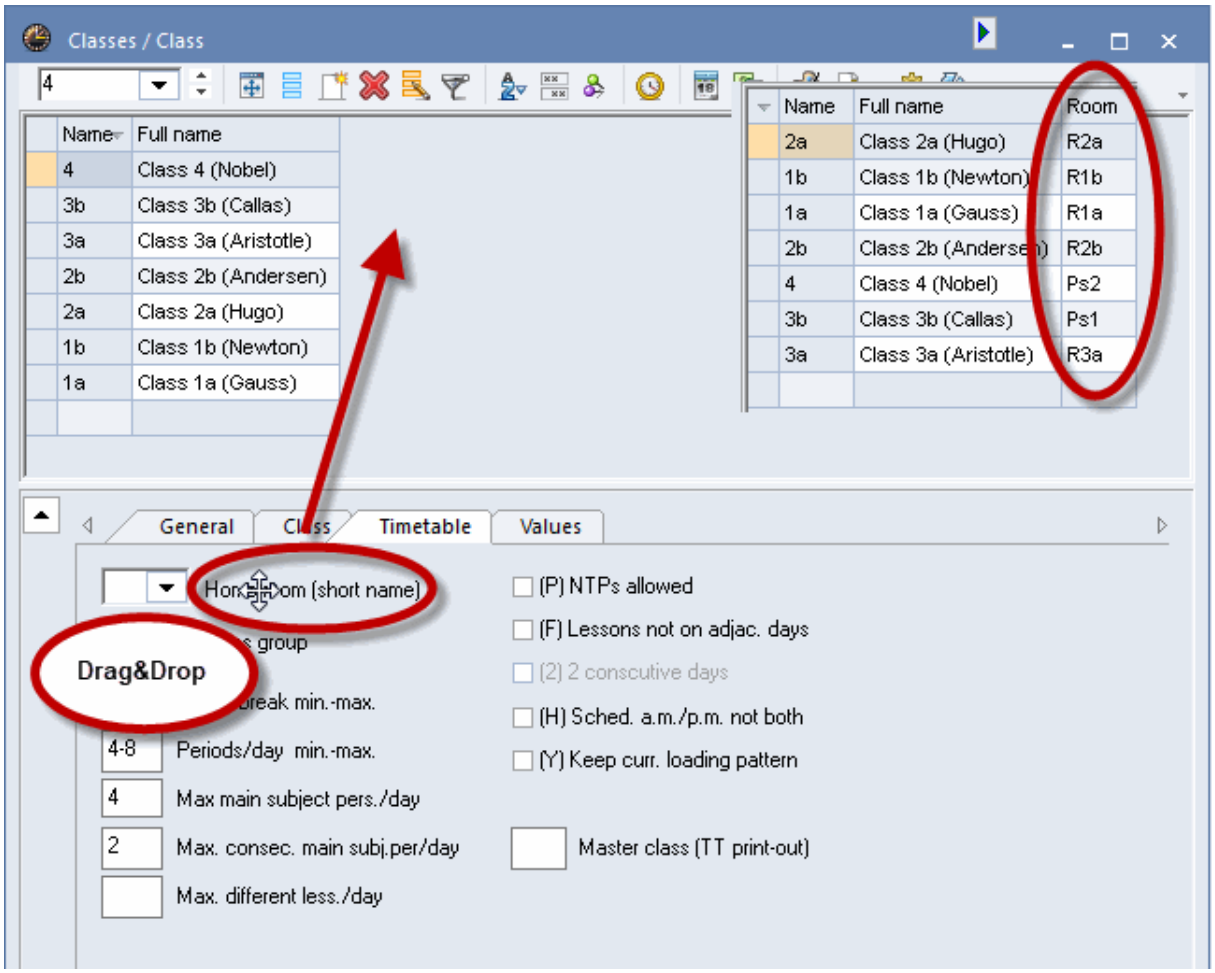
Note: Additional possibilities
You can use <Grid adjustment> to determine whether a column should be included in printing and

whether the short name or full name of the element in question should be used.



From the form view

Move the cursor in the form view to the desired item until a four-headed arrow is displayed. You can now use drag&drop to drag this item into the grid view, where it will be displayed as a column.



If you wish to hide the column, hold the <CTRL> key pressed and drag it from the grid view at the top to the form view at the bottom.

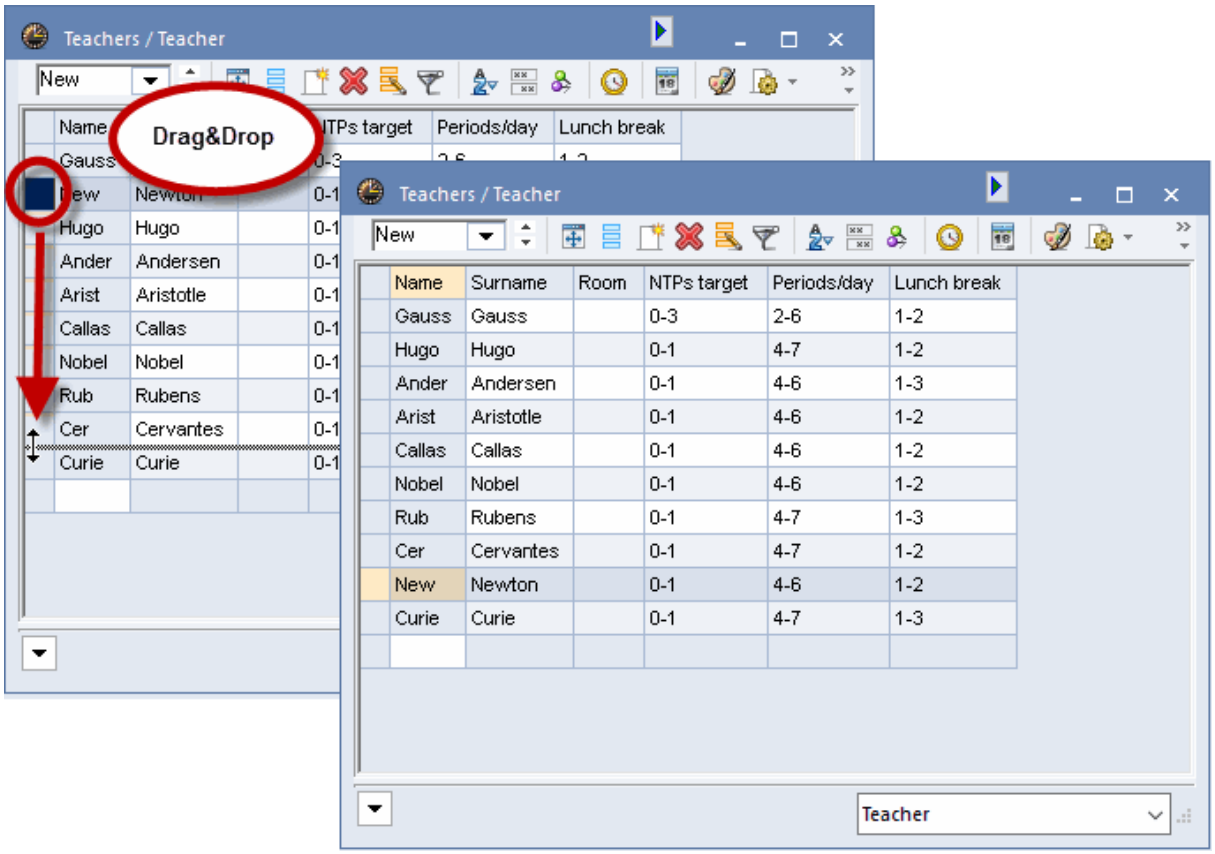
1.3.3.2 Sorting

There are three sorting options available to you.

Manual sorting using drag&drop

If you wish to re-order elements, simply click in the first (grey) column of the element that you wish to rearrange and hold the left mouse button pressed. Now drag the element to the desired position in the list.

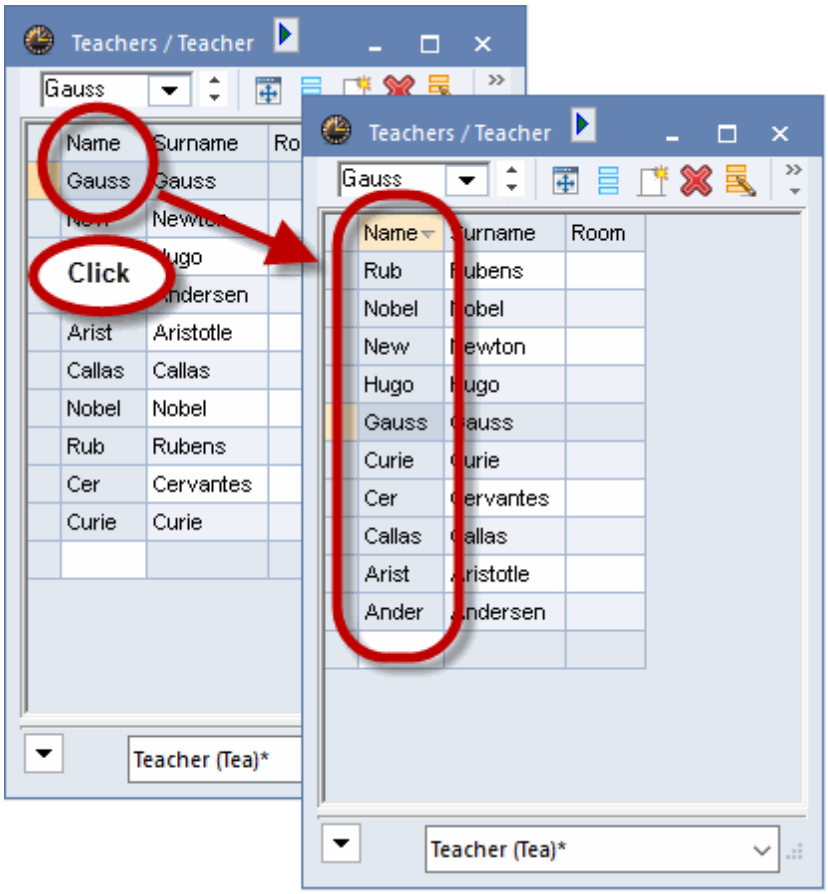
You can also change the order of the columns using drag&drop.



Automatic temporary sorting

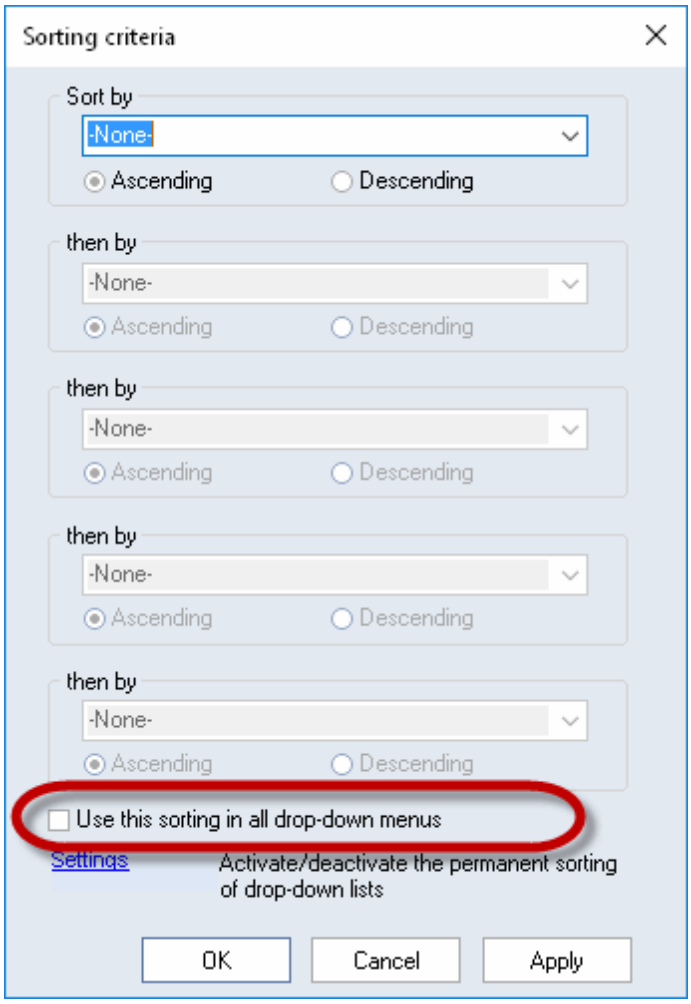
Clicking on the column heading will temporarily sort the table by the contents of the column in ascending order. A further click on the column will sort the data by this column in descending order.

Warning: Temporary
After closing and reopening the window, the original order will be restored.



Automatic permanent sorting

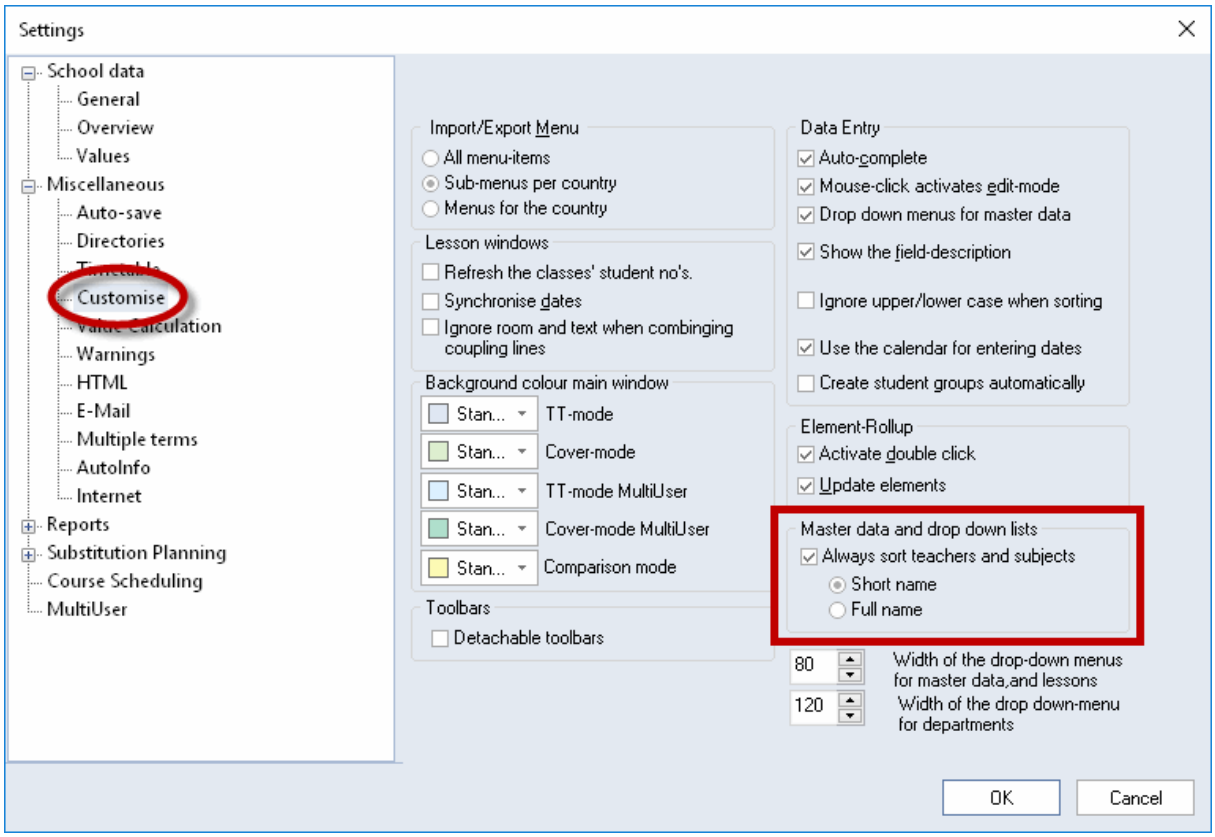
Clicking on the <Sort> button opens an additional window where you can specify up to five different sort criteria hierarchically.



Select which fields the view is to be sorted by. When the option 'Use this sorting in all drop-down menus' is checked, the sort setting will be used at all points in the application where these elements are listed.

Permanent sorting via ‚Settings‘

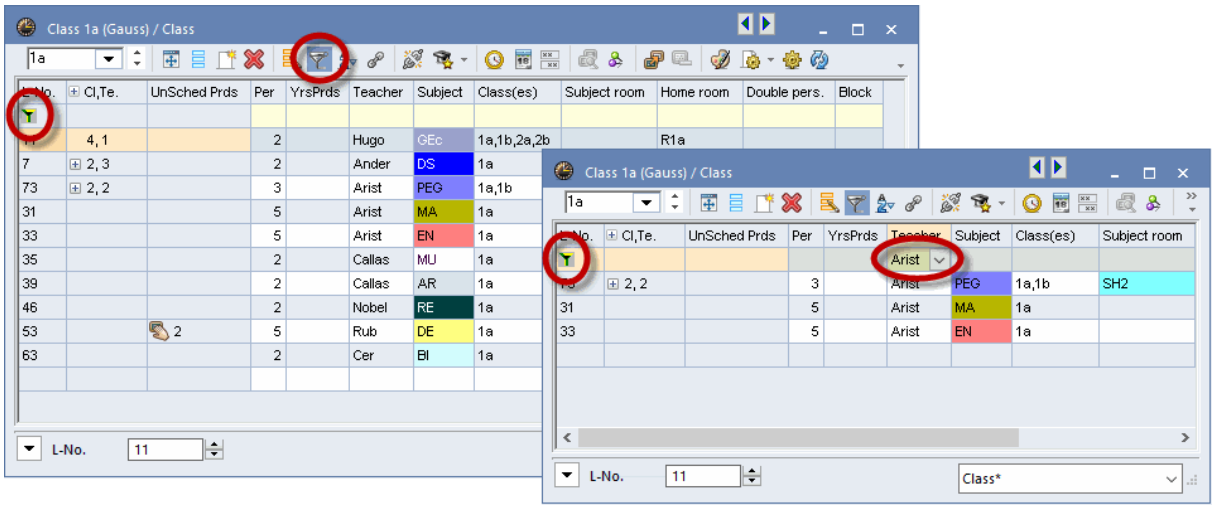
You can activate permanent sorting by clicking on <Settings> | Miscellaneous | Customise | 'Always sort teachers and subjects'



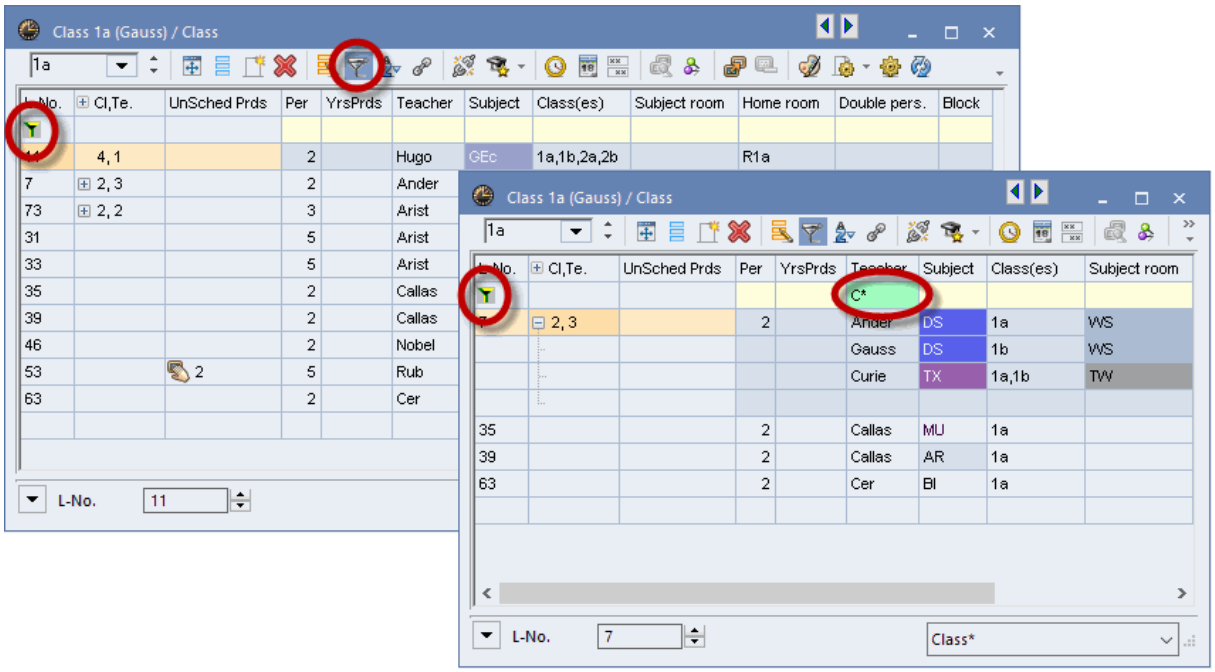
1.3.3.3 Filtering

If you wish to filter a specific format according to one or several criteria you can do this easily and quickly using the filter function.

Clicking on the <Filter> button displays a row with the filter icon between the column headings and the table contents. You can enter the filter condition in the corresponding row of this column by which you wish to filter.
You can also define several conditions at the same time (mathematical AND relation).

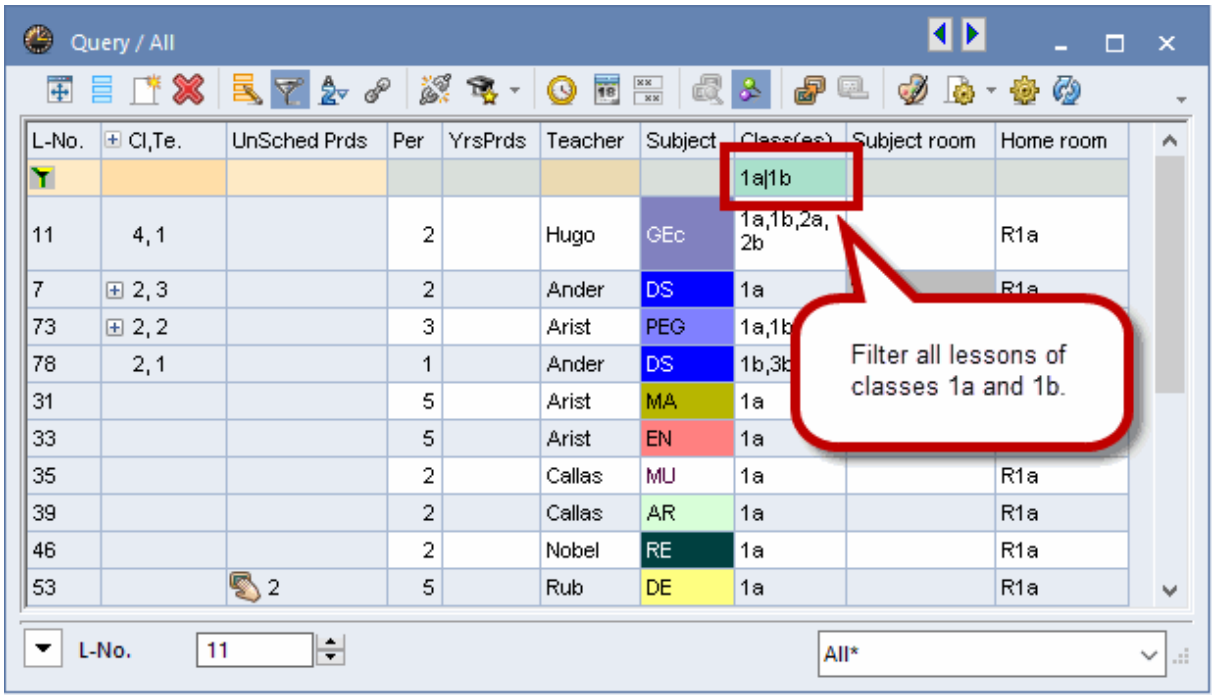


Note: Wildcards
You can also use the wildcards '?' and '*' to represent any character or any string of characters.



Data filter: 'or' requirement

You have the possibility to introduce within a field an 'or' requirement when you filter. If you want to filter, for instance, the window 'Classes | All lessons' by classes 1a or 1b, press and hold down the <Ctrl> key, click on the two classes in the combo box and press <ENTER>.

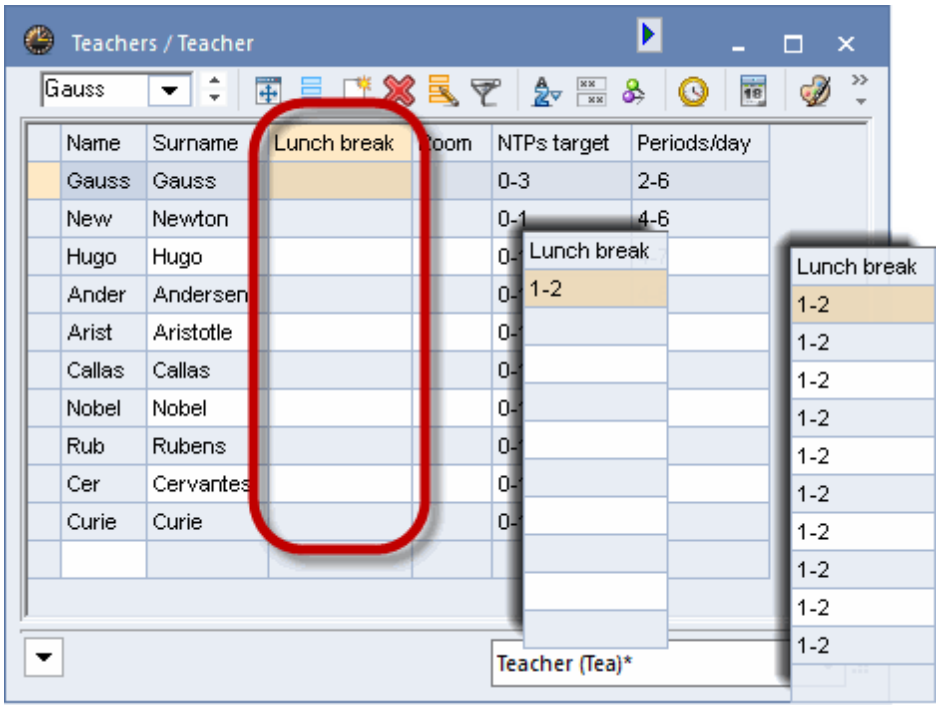


1.3.3.4 Serial change

Untis provides two ways of making serial changes.

Cursor marking

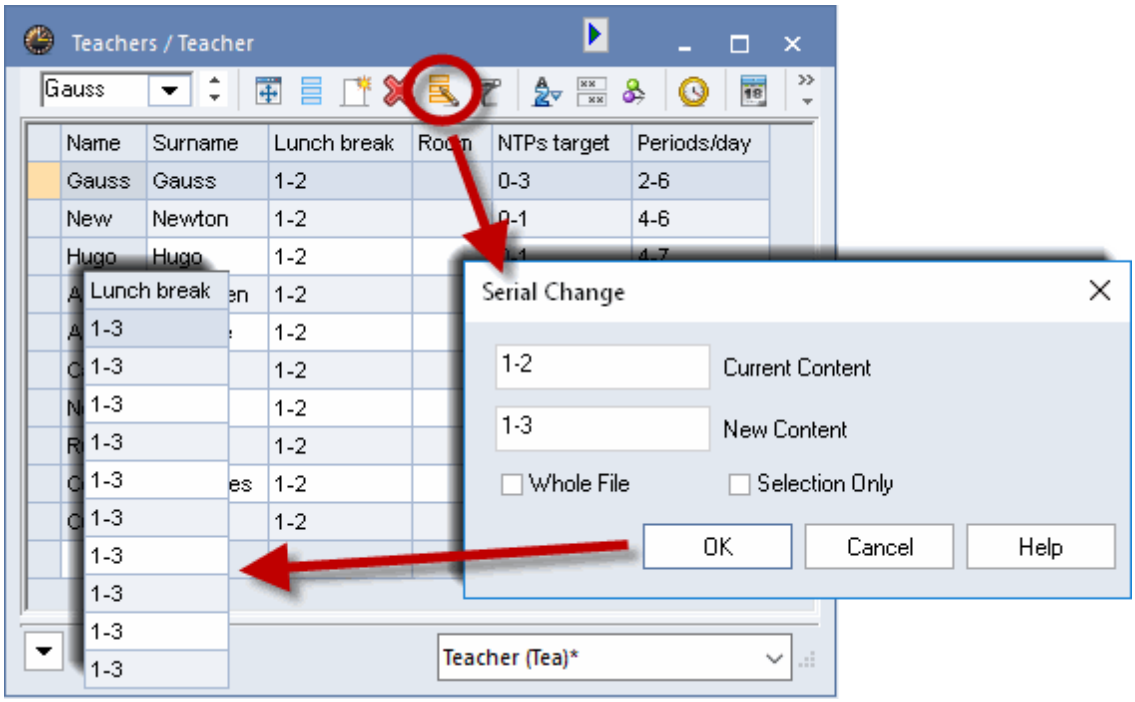
Move the cursor over (i.e. mark) the desired range so that the fields are highlighted in yellow. Now enter the desired value without clicking. This will be entered into each marked field.



Note: Marking
You can also mark fields using the keyboard: <SHIFT>+<Down arrow> or <SHIFT> +<Up arrow>. Additionally you can also hold down the <CTRL> key to mark cells which are not right underneath each other.

Serial change function

You will find the <Serial change> button in the toolbar of the window. Clicking on this button opens the serial change dialogue allowing you to enter the value to be changed in the 'Current content' field and the new (desired) value in the 'New content' field.



The change is always only effected for elements displayed in the current window. If you wish the change to apply to all elements of this type, check the option 'Whole file'.

If you have flagged elements with the ' Marked (m) ' code, you can limit the changes to those elements only.

Note: Setting/removing check marks
It is also possible to set or remove check marks. The value 'x' represents a check mark. Leave the field empty, if no check mark is to be set.

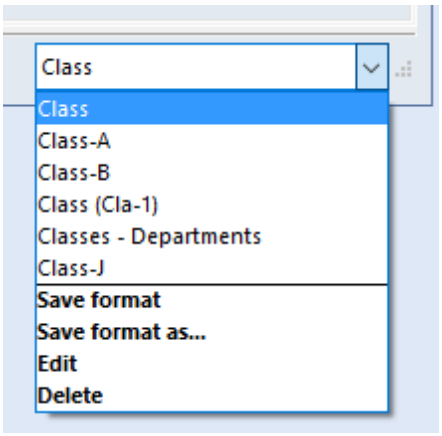
1.3.4 Managing formats

You can change or delete existing views or create new ones. In addition, you can also define specific views as standard views and add selected views to the menu for master data.

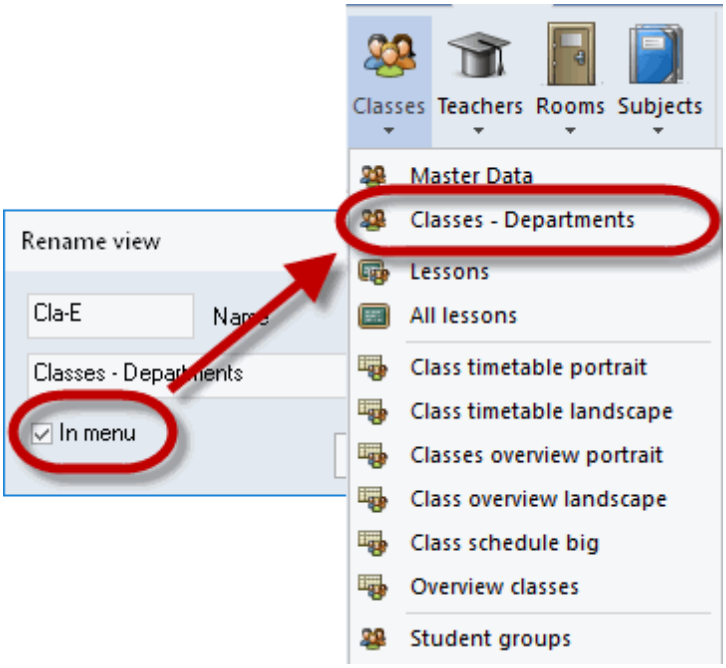
You will find the control elements for managing views in the drop-down list at the bottom right of each window or via the menu item 'Master Data | Master data formats'.

Drop-down list

Use the drop-down list at the bottom right of the window to switch between the existing views for this window or to save, rename or delete changed views.
The 'Save view as...' option creates a new view that is then displayed in the upper section of the list.



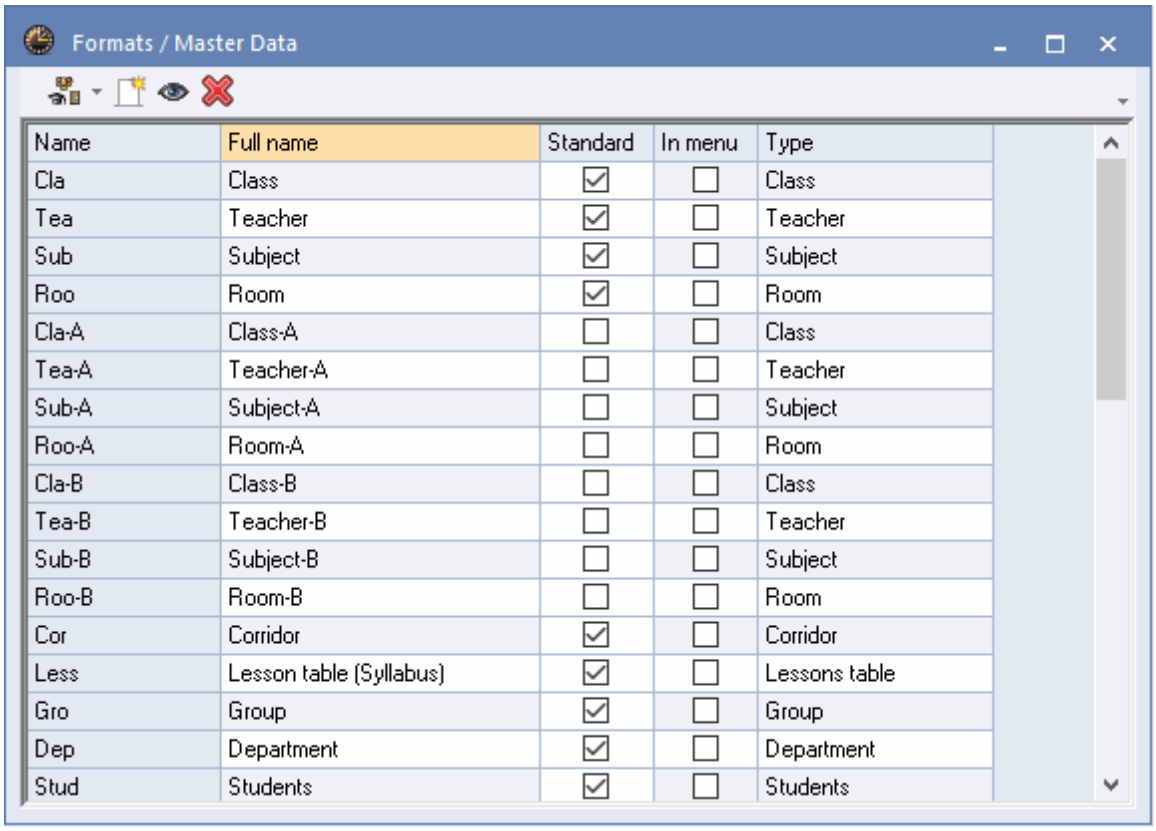
If you want to add a view to the menu, just go to 'Edit'.



Note: Modified view
Once you modified a view, a '*' (asterisk) will be displayed next to the name of the view at the bottom right of the window. You can now save this view or create a new view using 'Save view as...'.

Master data formats / Lesson formats

You can display a complete list of all master data views via the menu item 'Master Data | Master data formats' ('Lessons | Overview formats') .



Name	Full name	Standard	In menu	Type
Cla	Class	☑	☐	Class
Tea	Teacher	☑	☐	Teacher
Sub	Subject	☑	☐	Subject
Roo	Room	☑	☐	Room
Cla-A	Class-A	☐	☐	Class
Tea-A	Teacher-A	☐	☐	Teacher
Sub-A	Subject-A	☐	☐	Subject
Roo-A	Room-A	☐	☐	Room
Cla-B	Class-B	☐	☐	Class
Tea-B	Teacher-B	☐	☐	Teacher
Sub-B	Subject-B	☐	☐	Subject
Roo-B	Room-B	☐	☐	Room
Cor	Corridor	☑	☐	Corridor
Less	Lesson table (Syllabus)	☑	☐	Lessons table
Gro	Group	☑	☐	Group
Dep	Department	☑	☐	Department
Stud	Students	☑	☐	Students

In the 'Standard' column you can select which view should be opened as the default view .

If you wish to add further views to the master data menu, simply check the box for the corresponding view in the 'In menu' column.

You can use the toolbar in this window to create a new view (the active view in the table will be used as a template), or to open or delete an existing view.

1.3.5 Printing

There are two places where you can make settings for printing.

1. Page layout

Every master data and lessons window contains the <Page layout> button. This is where you can make settings for printing and at the same time view the results.

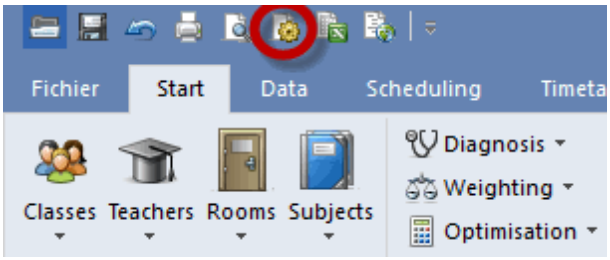
2. Print selection dialogue

When a format is active (i.e. has been clicked), you can access the print selection dialogue by clicking on the <Print> or <Print preview > buttons in the Qucik Access toolbar.

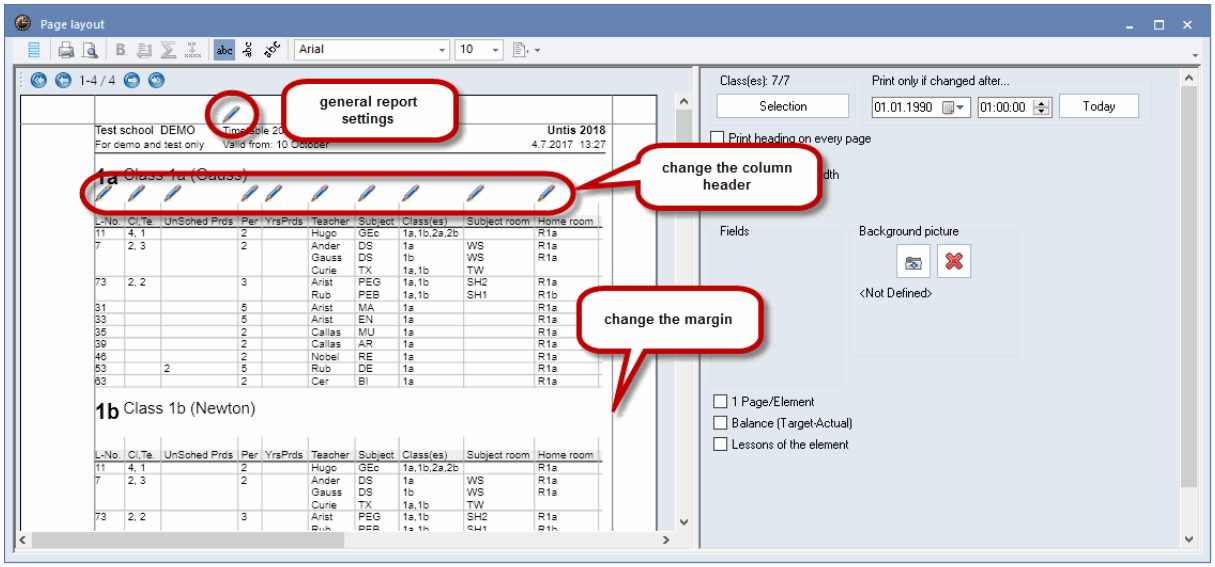
Note: Copying via the clipboard
You can mark part of the table or the whole table and use <CTRL>+C and <CTRL>+V to copy it into a word processor or spreadsheet.

1.3.5.1 Page layout

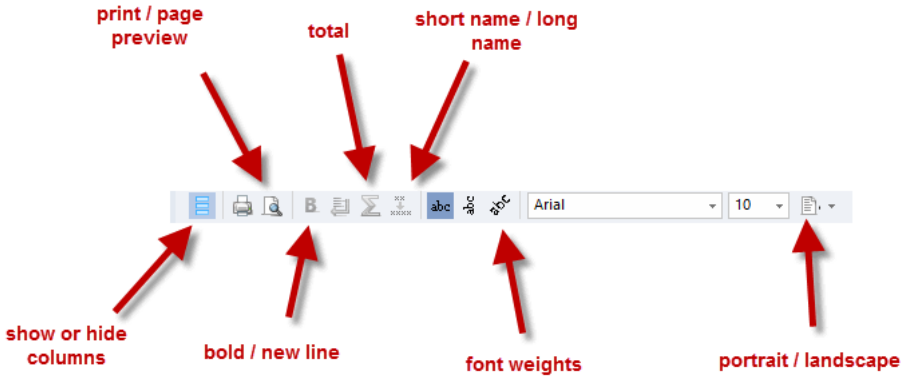
All formats (master data, lessons, cover planning) now provide the <Page layout> button with which you can prepare the relevant list for printing. You will find the button in the toolbar of the relevant window or in the Quick Access toolbar.



The figure shows a list of lessons for class 1a. The print layout toolbar as well as the selection windows of the right part of the page layout allows you to make all printing-related settings.
If you wish to print a column in bold, click in the column and then on the <B> button. Now the column will be printed in bold. There are many possibilities more to modify the print layout.

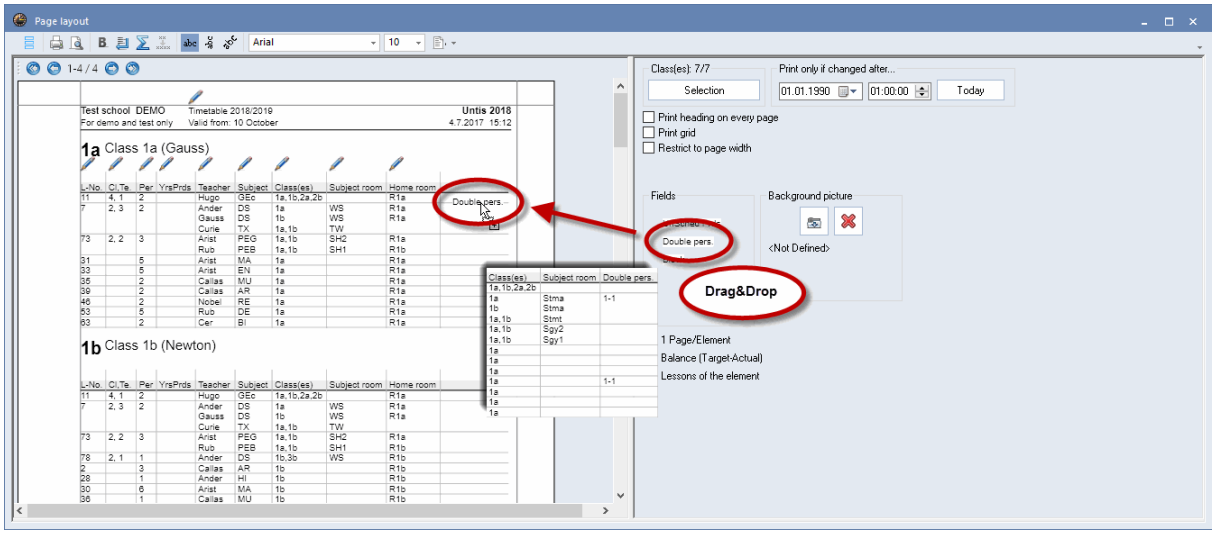


The meaning of the individual buttons is shown in the figure:



D

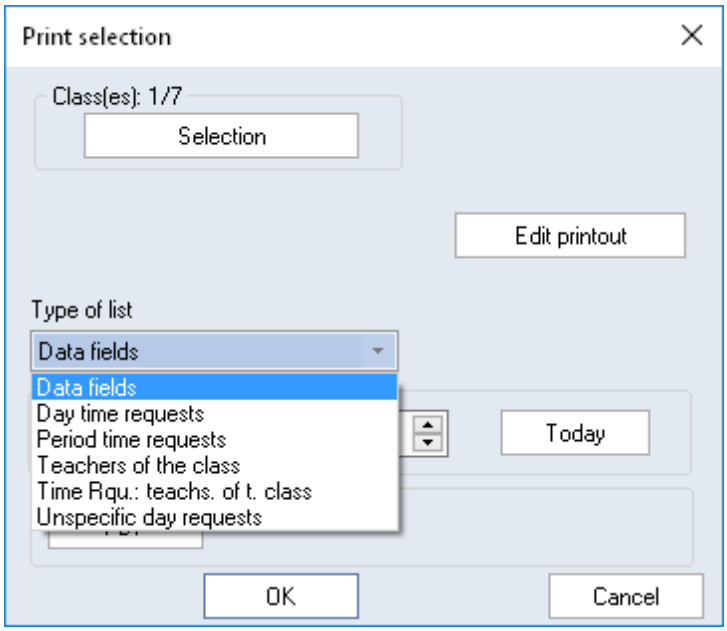
You also can hide or show columns via drag&drop.



1.3.5.2 Print selection dialogue

This dialogue appears when you press the <Print preview> or <Print> button.

Please note that further print fnctions are available via the selection list depending on the type of format.



These print functions are described in detail in the relevant chapter.

1.4 Master data properties

In principle, all you need to do to generate a timetable automatically is to enter a name in the *Name* field. As a general rule, it is always preferable to leave a field empty if its meaning is at all unclear rather than to restrict the optimisation algorithm by entering a large amount of unnecessary data.

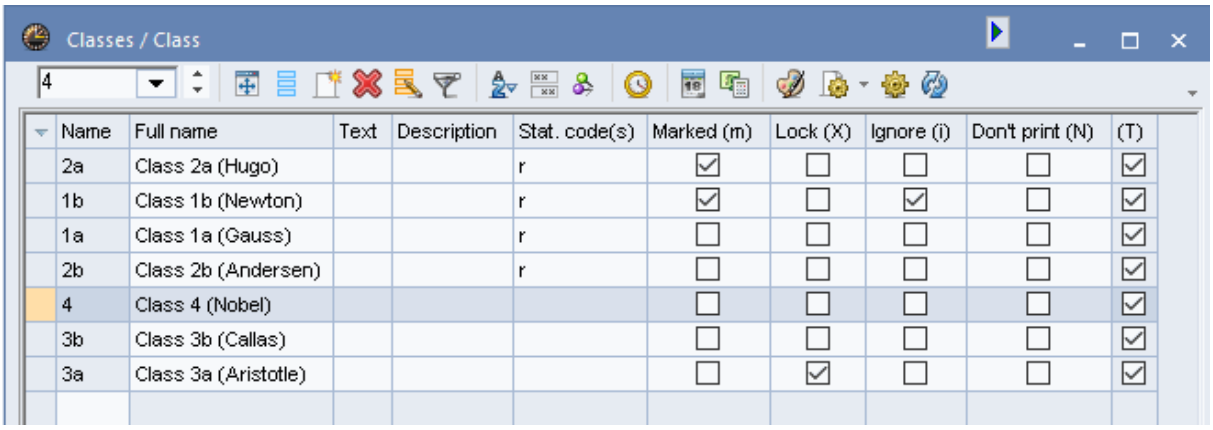
Note: Do not enter too much at the beginning
If you are unfamiliar with the application, we would recommend that you only enter master data in the small number of fields displayed in the standard grid view. All other input options should only be used at a later date (after initial optimisation results have been obtained).

There are properties that apply to all types of master data (element-independent properties) as well as properties specific to a particular type element. You will find information on this latter type in the relevant chapters dealing with

Rooms
Classes
Teachers
Subjects

1.4.1 Input fields for all master data

The following fields are found in all types of master data.



Name	Full name	Text	Description	Stat. code(s)	Marked (m)	Lock (X)	Ignore (i)	Don't print (N)	(T)
2a	Class 2a (Hugo)			r	☑	☐	☐	☐	☑
1b	Class 1b (Newton)			r	☑	☐	☑	☐	☑
1a	Class 1a (Gauss)			r	☐	☐	☐	☐	☑
2b	Class 2b (Andersen)			r	☐	☐	☐	☐	☑
4	Class 4 (Nobel)				☐	☐	☐	☐	☑
3b	Class 3b (Callas)				☐	☐	☐	☐	☑
3a	Class 3a (Aristotle)				☐	☑	☐	☐	☑

Name

This is the unique (short) name. The short name is used by the application internally to identify the element concerned. A name must be specified for every element.

Note: No duplicate names
It is theoretically possible to give elements of different types the same name, e.g. 1a for class 1a and for room 1a. Names are also case-sensitive. It is therefore possible to name one class 1a and another class 1A. We would urge you not to take either of these approaches.

Full name

This is where a (long) informative name can be specified that also appears on your printed reports. This entry is optional but recommended.

Text

Explanatory text can be entered for each element.

Description

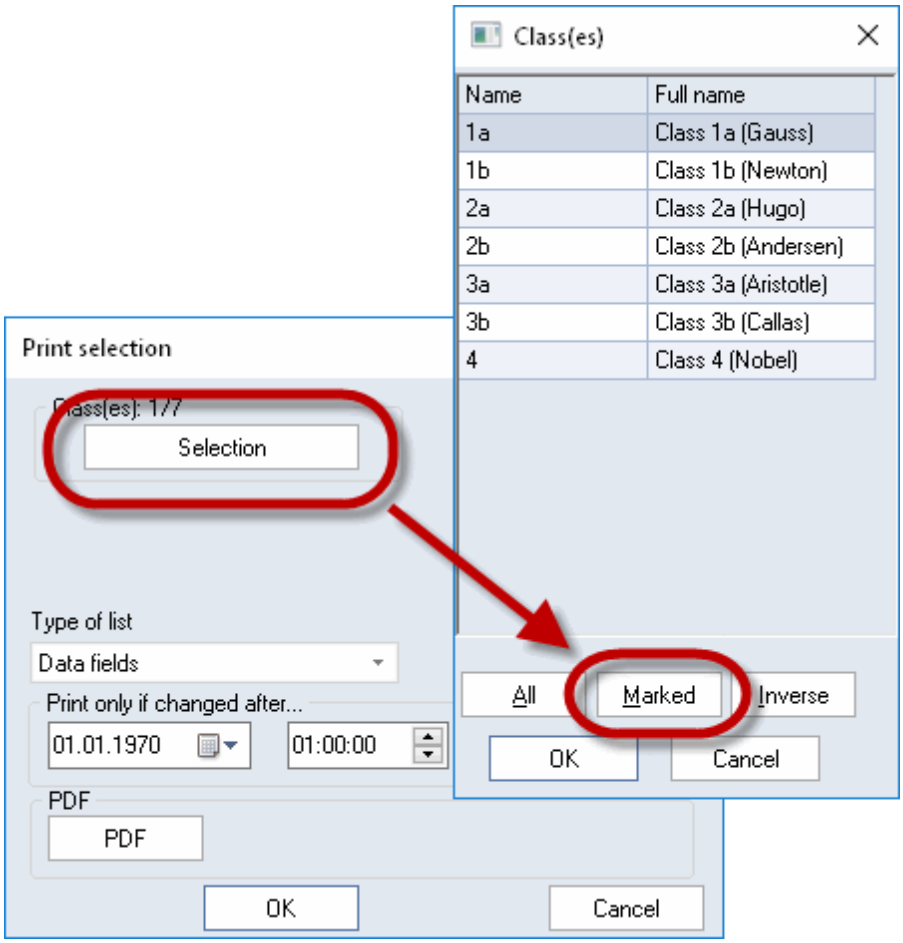
Descriptions are master data in their own right with (short) name and full name. They make sense when descriptions apply to several elements. You select to see the short or full name of the relevant descriptions when printing elements and in views.

Statistics codes

You can define any number of statistics codes (separated by commas) for each element. You can for example create well-defined sub-categories for printed reports using these statistics codes. Please refer to chapter Filtering for more information.

Marked (m)

The Marked (m) code can be set for any element. For certain functions such as printing (timetables or master data) or serial changes you can specify whether only the marked elements should be selected for editing.



Lock (X)

Lessons containing an element that is locked will be 'frozen' in the timetable. The lesson periods will not be moved during subsequent optimisation.

Ignore (I)

Lessons containing an element for which the 'Ignore' flag has been set will be ignored in the timetable, i.e. it will be neither scheduled nor displayed. The (period) value of the lesson will however be included when calculating totals for teachers and classes.

In addition, elements for which the ignore flag has been set will not be exported via some interfaces.

Don't print (N)

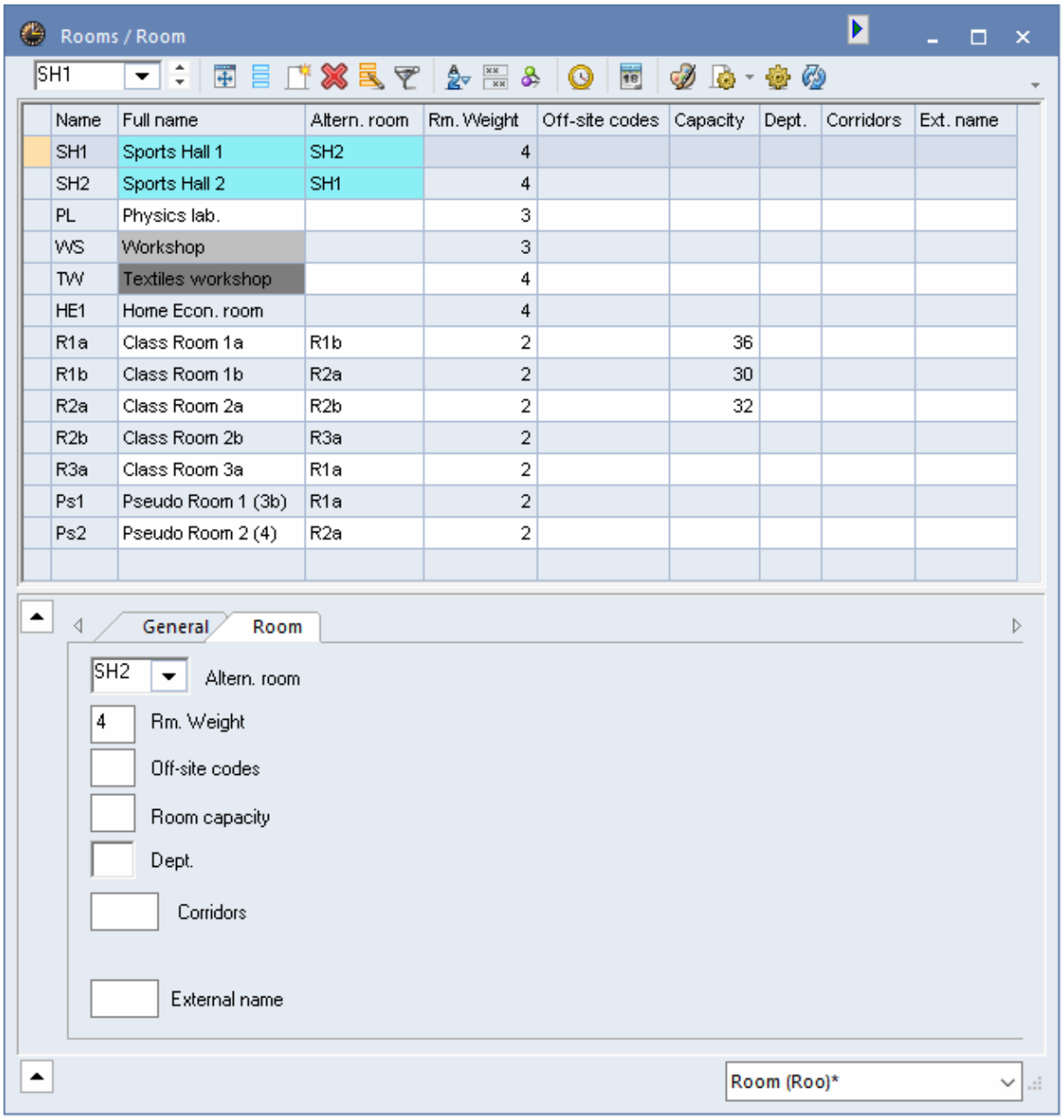
If this flag is set no timetables or lesson overviews will be printed for the element concerned.

Time requests

This field cannot be edited. The box is checked automatically whenever time requestsare entered for an element.

1.4.2 Rooms

The following input fields relate exclusively to rooms master data.



Alternative room

An alternative room is a room that is functionally equivalent to the specified (desired) room and that Untis can use for scheduling purposes when the desired room is unavailable. Please see the chapter on Room logic for a detailed description of the alternative room function.

Room weighting

Room weighting gives an indication of the importance of a room for a particular lesson scheduled to take place in that room.

- Room weighting 4: a lesson can only be scheduled if the desired room or one of its alternative rooms is available (e.g. PE classes).
- Room weighting 0: Untis can schedule lessons even when neither the desired room nor one of its alternative rooms is available (useful for lessons where no specific teaching aids are required).

- Room weighting 1-3: appropriate intermediate levels.

If no weighting is entered for a room, the weighting will correspond to 2.

Note: Room optimisation
Please note that the allocation of rooms is affected not only by room weighting, but also to a large degree by the slide control' Room optimisation '. Please refer to chapter Room logic for more information.

Off-site codes
Off-site rooms are classrooms and specialist subject rooms not located in the main building of the school but at an external site too distant to reach within the space of a normal break. Enter the values 1 to 9 for off-site locations with start-time graduation and the values A to E for off-site locations without start-time graduation Further details on the off-site function can be found in the section Off-site rooms .

Room capacity
This is where you can enter the maximum student capacity for a particular room.

Please read chapter Room capacity if you wish to include room capacity as a factor when assigning rooms for lessons.

Dept.
Department. Rooms can be allocated to a specific department. These details are largely for information purposes only and allow printouts of timetables and/or room lists to be produced for individual departments.

Corridors (Break superv.)
Use this field to enter up to two corridors that the room adjoins. These fields are only useful in connection with the additional module Break Supervision .

External name
The external name is only used when several schools are created in a multi-user database with shared inter-school resources. For more details please refer to chapter Shared resourcesin the MultiUser manual.

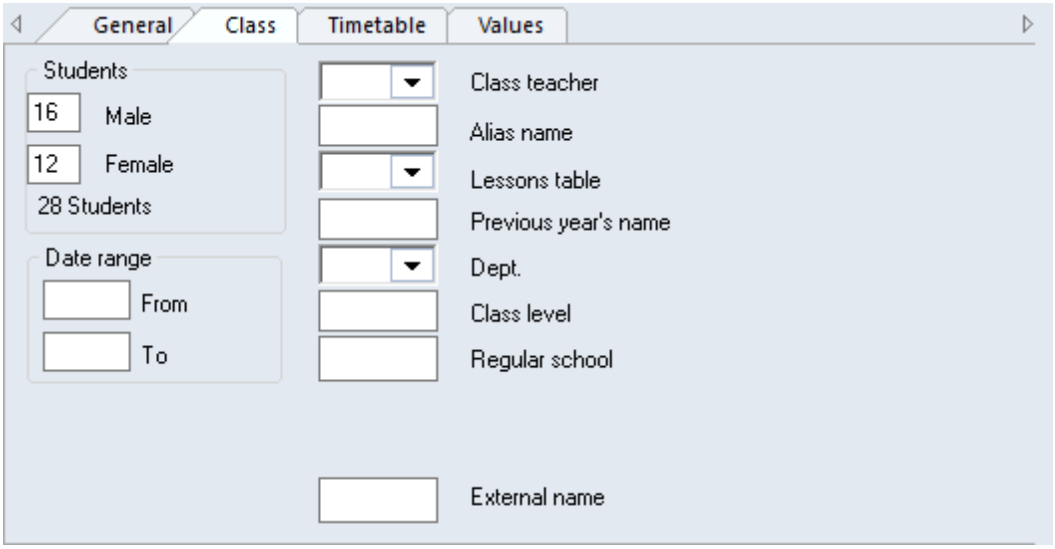
1.4.3 Classes

The input fields for classes are arranged in tabs in the form view . Depending on the number of additional modules you have installed, the number of tabs displayed for master data elements may differ from the examples shown in this manual.

- Class tab
- Timetable tab
- Codes
- Class time grid

1.4.3.1 'Class' tab

You will find the following input fields on the 'Class' tab.



Male/Female

These fields allow you to enter the number of male and female students (pupils) in a class. The two figures are added up automatically and displayed below the input fields.

These figures are only important for use with the room capacity function. For further details on the room capacity function, please refer to chapter Room capacity .

Time range

The entries for the time range are only displayed if you have licensed the Multi-week timetable module and are described in the relevant manual.

Class teacher

Several class teachers (form teachers) can be entered for a class. This field is used in conjunction with the weighting function Class teacher at least once per day , when printing timetables (for display in the heading) and lists and in Cover planning.

Alias (second name)

For certain purposes it may be desirable to use standardised designations instead of the usual names. Examples include printouts for local authorities and data exports to databases.
Alias names can be entered either for the element in question or under menu item ' Master data | Special data | Alias names '.

Note: One name for a group of classes
An alias can be defined for a group of classes via 'Master data | Special data | Alias names', e.g. '3abc" for '3a+3b+3c".

Lesson table

The Lesson table serves as a useful tool for checking subject distribution in the Lesson planning and Value calculation module and has no other significance outside of it

Previous year's name

The class name from the previous year is required for use with the function< Last year's teacher . The

name of the class in the previous year can be entered here to ensure the class teacher accompanies the class into the new school year. This function is available if you have licensed the Lesson planning and Value calculation module.

Dept.
Department. Classes can also be allocated to a particular department. This function is largely for information only and allows timetables and/or class lists to be printed specifically for individual departments. This function is particularly important for use with the e Department timetables module.

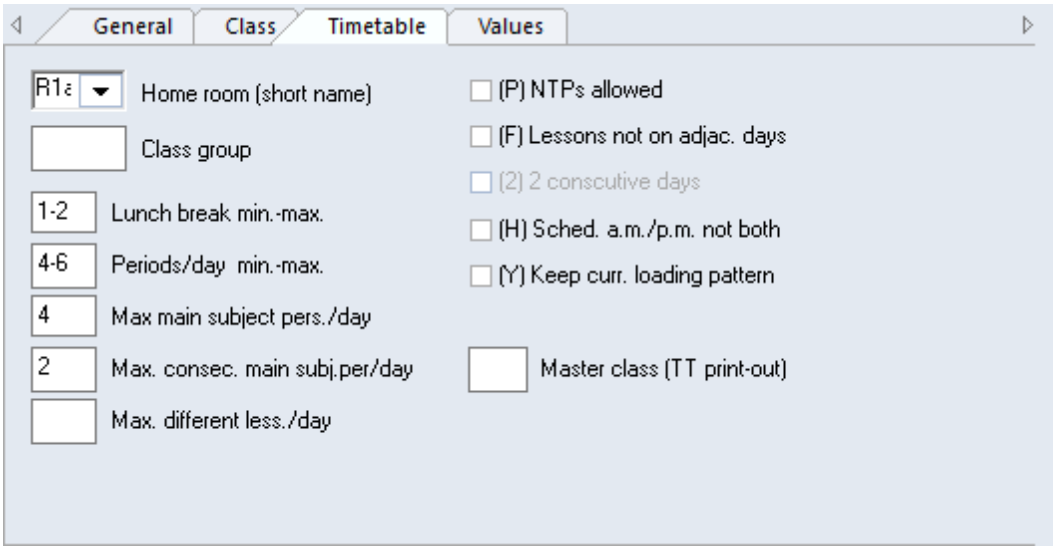
Class level
This function is only useful in connection with the modules Lesson planning and Value calculation , Students timetables or Course scheduling .

Regular school
For use with certain import/export interfaces.

External name
The external name is only used when several schools are created in a multi-user database with shared inter-school resources. For more details please refer to chapter Shared resourcesin the MultiUser manual.

1.4.3.2 'Timetable' tab

This tab allows you to enter parameters and also to set codes .



Home room
This is where you can enter the name of the classroom assigned to a particular class. This subsequently makes the task of Entering lessons easier. Please see chapter Alternative rooms in the User tips for details on classes with no designated classroom.

Class group
This input field is designed specifically for use in Austrian teacher training colleges, British secondary schools, Belgian Gymnasiums and German Realschulen where students have a choice between several main and minor subject areas (core and differentiation lessons) or several subject areas of equal

standing.

Warning:
Please do not enter any data in this field if you are in any way unsure about the exact meaning of the function. You will find a more detailed explanation of class groups in chapter User tips/ Class groups

Lunch break min.-max
This function allows you to specify the maximum and minimum duration of the lunch break for individual classes.

For lunch breaks of exactly one hour, enter '1,1'. If you wish Untis to schedule a lunch break of at least zero and at most two hours, enter '0,2'.

Periods/day min.-max.
Specify the minimum and maximum number of periods / lesson units the class may be taught per day.

For example, enter '4,6' for a class that should have at least 4 periods, but no more than 6 periods, per day.

Max main subject pers./day
You can activate the main subject for any desired subject. Use this field to specify how many main subject periods may be taught as a maximum on any one day.

Max. consec. main subj. per/day
This function determines how many main subject periods may be taught consecutively on any one day.

Max. different less. /day
In some countries (in particular those which have all-day schooling) the authorities only allow a certain maximum number of different subjects to be taught to a class on any one day.

You can enter this maximum value in the field 'Max. diff. less./day' for each class.

Master class
Enter the same master class for type-separated class components if you wish to print the timetables together in a single timetable. Please see chapter User tips/ Type-separated class components and chapter Timetable creation / Several classes in one timetable'for further details.

1.4.3.3 Codes

(P) NTPs allowed
As a rule, NTPs (non-teaching periods) should be avoided at all costs. Possible exceptions are NTPs for pseudo classes and class components.

(F) Lessons not on adjac. days
Use this function for part-time classes that do not have lessons every day of the week if you wish to avoid scheduling lessons on consecutive days. In this case select this code.

(2) 2 consecutive days
Vocational schools sometimes have classes which only have lessons on two days a week. The selection of the weekdays does not matter, howeer, they need to be consecutive so that the students do not need

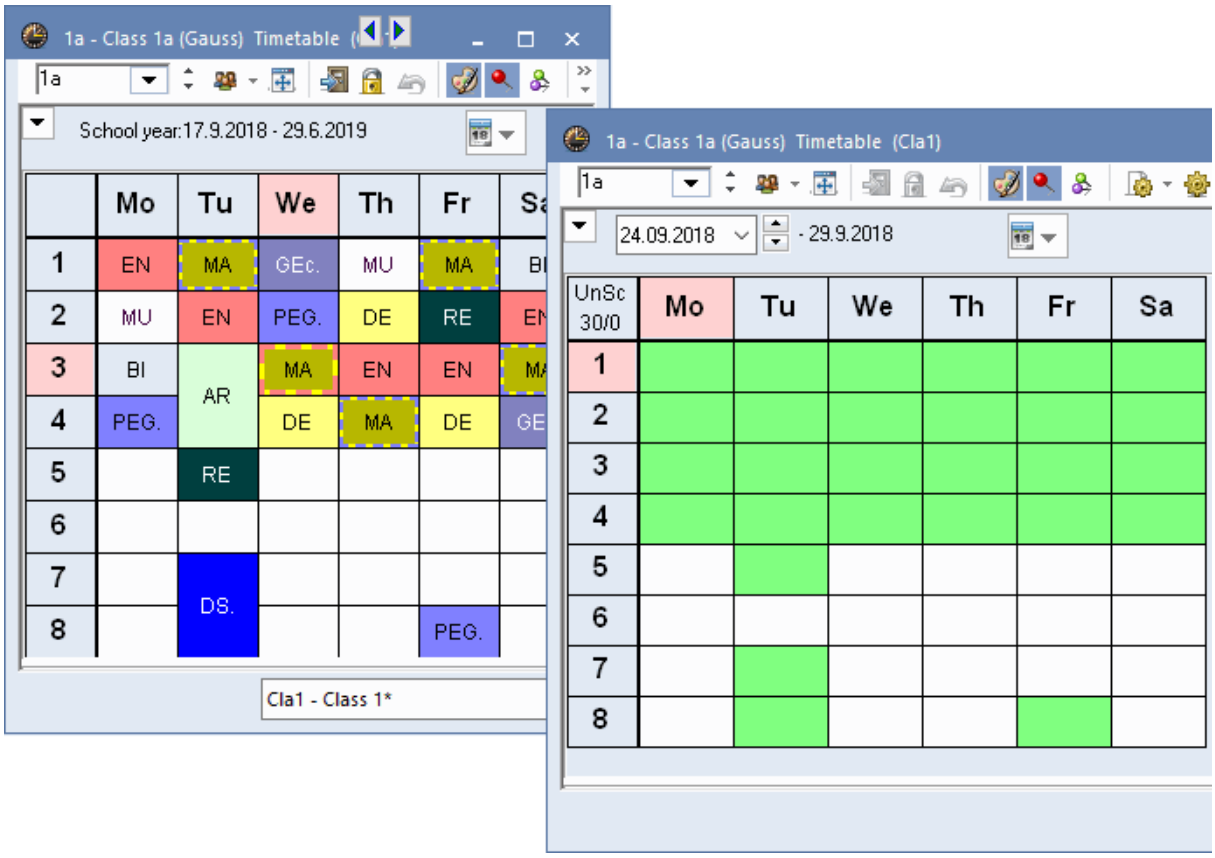
to travel to school twice a week. Check this box and this condition is fulfilled.

(H) Sched. a.m./p.m. not both

This function ensures that lessons can only be scheduled for one half-day of the day, i.e. Untis can allocate lessons either in the morning OR in the afternoon of the same day.

(Y) Keep curr. loading pattern

Tick this option if you wish to block the allocation of lessons before the first and after the last periods already scheduled (for use with a subsequent optimisation run).



Time grid showing permitted scheduling options for use with a subsequent optimisation run where option Y is activated (the last morning lesson is period 5, the first afternoon lessons is period 6).

This means that in a subsequent optimisation already allocated lessons and NTPs may be rescheduled. This code is typically activated when you wish to leave non-teaching time for teachers and classes unchanged when scheduling the timetable. Extracurricular activities are not then affected by the new timetable

Warning
This function imposes considerable restrictions on subsequent optimisation runs and should not be activated without due consideration.

1.4.3.4 Class time grid

You will only find the <Class time grid> button in the toolbar under 'Master Data | Classes' (i.e. for no other element).

The class time grid allows you to specify that
- certain periods should be used for scheduling double periods
- certain periods should be used for scheduling single periods and
- certain periods should (not) be the last lesson for that class on a particular day.

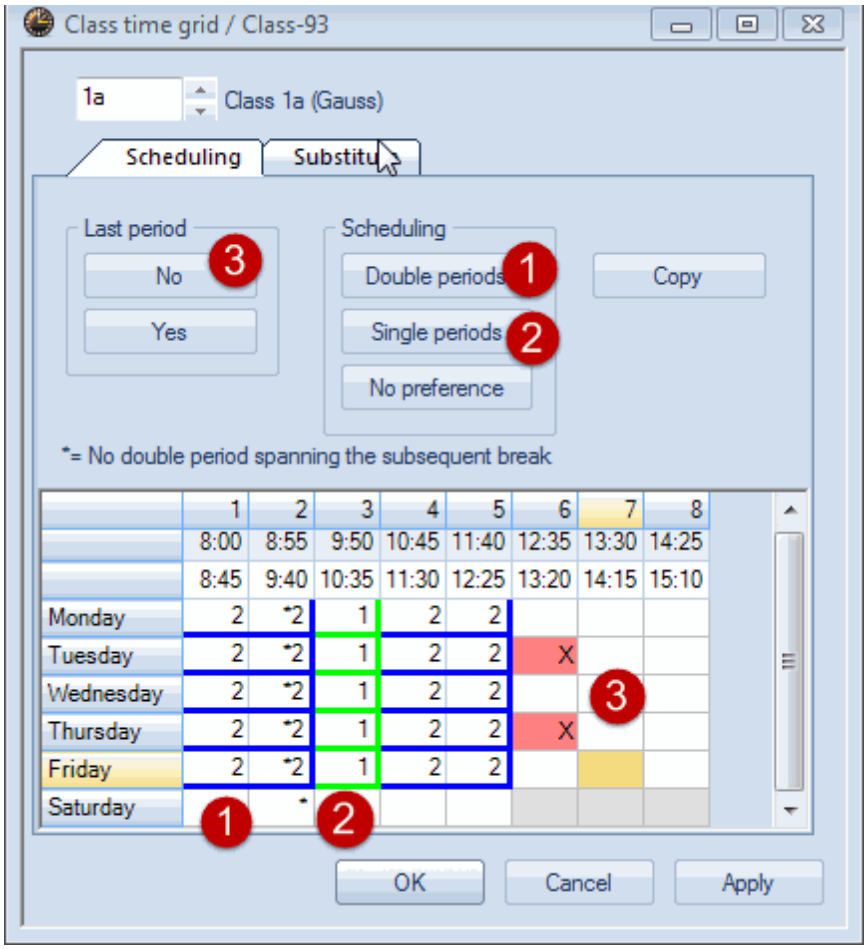
1. If you wish to schedule double periods by preference in the first two periods of the day (on every day of the week) as shown in the example, mark the desired range and click on the <Double periods> button in the 'Schedule' block .

2. If you wish to reserve a range of the day(s) for scheduling single periods, use the <Single periods> button accordingly.

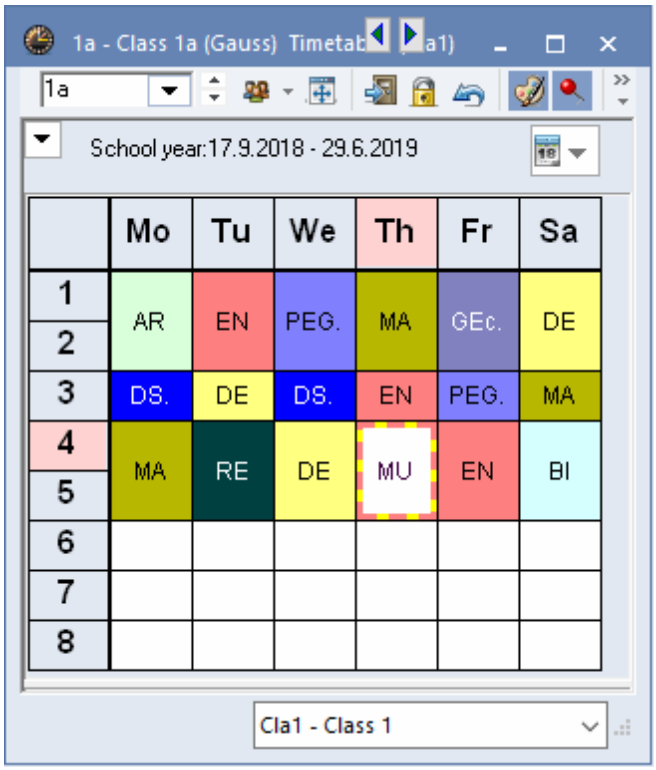
Warning: Sufficient double periods
Please note that it is essential to define a suitable minimum and maximum number of double periods in the lessons window of the class in question in order for this setting to work.

3. You can also use the <No> button in the 'Last period' block to specify those periods after which lessons for the class may not end. This is important if you have to take local transport timetables (school buses) into consideration when preparing your school timetables.

Note: Copying
Use the <Copy> button to transfer the settings you have made here to other classes.



The sample timetable corresponds to the settings made in the figure above.



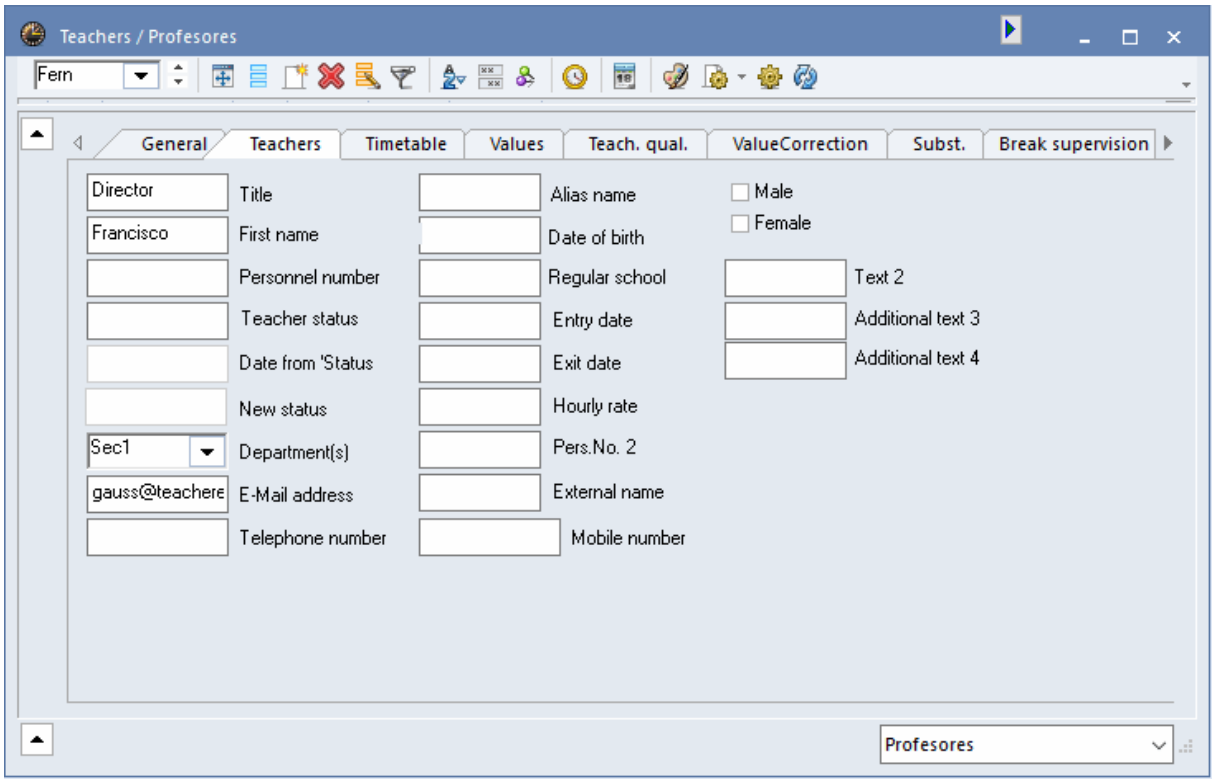
1.4.4 Teachers

The number of tabs depends upon the modules. Here the following is described in detail:

- 'Teacher' tab
- 'Timetable' tab
- Codes

1.4.4.1 'Teacher' tab

You can make the following settings on the 'Teacher' tab.



Title
An entry in this field is for information purposes only and only has an impact on printouts and exports.

First name
Here you can enter the first name of the teacher. Untis uses the value entered here only for certain printouts.

Personnel number
Entering a personnel number is only necessary, if you need it for printouts or for files you need to transfer to e.g. authorities.

Teacher status / Date from for the new / New status
This field can be used for special designations (e.g. headmaster, head of library, etc.). If the status is changed during the school year, you can do this in the fields 'Date from for the new' or 'New status'.

Department
You can assign as many departments to a teacher as you want. This is of special importance when you use the module Department timetable . However, you can also print, for instance, timetables per department.

E-Mail address
This field is meant for entering the e-mail addresses of the teachers.

Within the program it is only used in combination with the module Info-Timetable . With this module you can send timetables and messages on covering up via e-mail , if you have entered their e-mail address here.

Telephone number
The field 'Telephone number' is for administrative purposes only and is not used for anything special within the program at the moment. .

Mobile number
This field is for entering mobile numbers.

You only need to enter a mobile number here, if you use the module Info-Timetable . With this module you can send text messages to teachers.

Alias name
What has been said in the chapter Classes can be applied here, as well: for certain purposes it may be desirable to use standardised designations instead of the usual names. Examples include printouts for local authorities and data exports to databases. Alias names can be entered either at the respective element or under ' Master data | Special data | Alias names '.

Birthdate
This field is for information purposes only and only has an impact on printouts and exports.

Entry date / Exit date
These fields define when a teacher entered or exited service in your school. The dates have a restrictive impact on the lessons of the respective teacher.

Regular school
This field is for information purposes only and only has an impact on printouts and exports.

Hourly rate
At the moment this field is only used in the German Federal Land North Rhine-Westphalia.

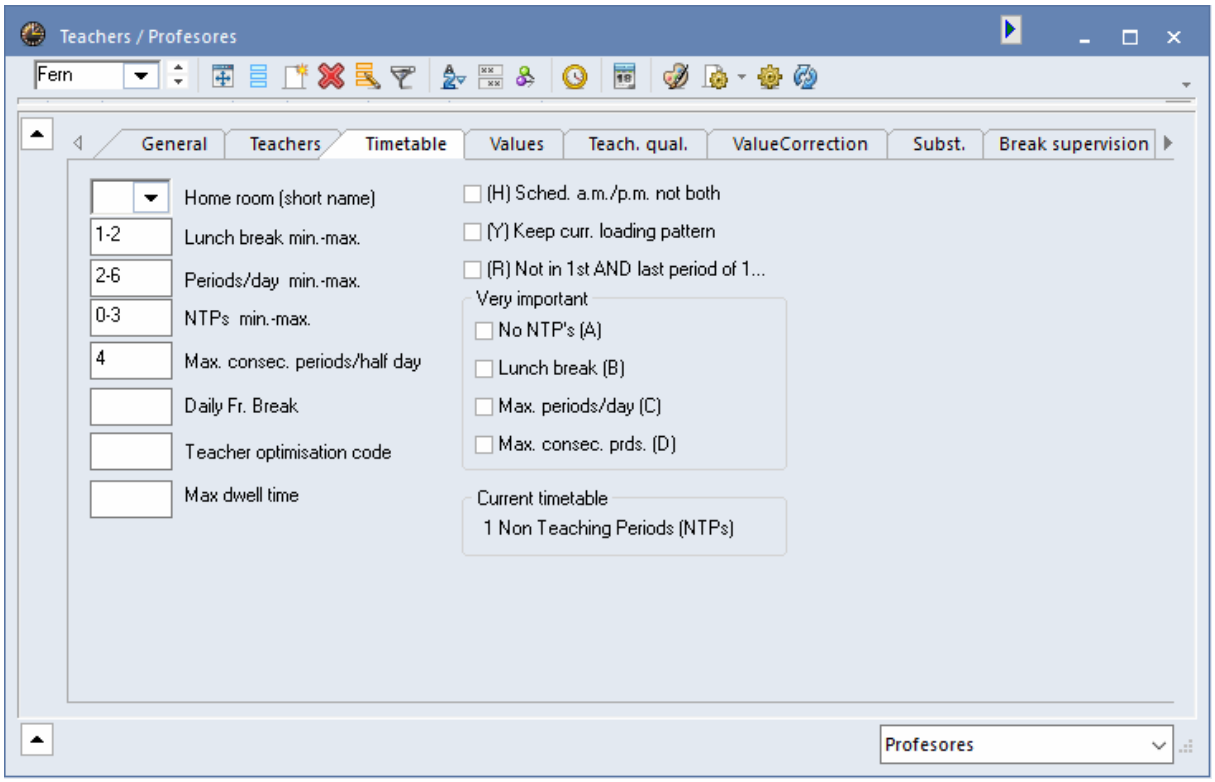
Pers.No. 2
In some countries teachers have two different personnel numbers. In these countries this personnel number 2 is also exported with relevant exports.

External name
The external name is only of use, if several schools with shared resources have been entered into a MultiUser database. Please refer to chapter Shared resources in the manual MultiUser .

Sex
This field is not for informative purposes only, it also has an impact on the module Break supervision . There you can define that certain supervision areas shall only be supervised by female or male teachers.

1.4.4.2 'Timetable' tab

You can make the following settings on the 'Timetable' tab .



Home room

Use this field to assign a dedicated home room to a teacher. This makes entering lessons easier subsequently.

Lunch break min.-max

Enter the minimum and maximum duration of lunch breaks for individual teachers.

Periods/day min.-max

Input in this field determines the minimum and maximum number of periods a teacher should teach each day. Enter '2,5' for a teacher who should teach between 2 and 5 periods per day. Leaving this field empty allows Untis to schedule any number of periods for a teacher.

NTPs min.-max

Use this field to specify the minimum and maximum number of NTPs (free periods, non-contact periods) per week for an individual teacher. An empty field is equivalent to the entry '0,0'.

Max. consec. periods/half day

This field allows you to specify the maximum number of consecutive periods a teacher should teach before an NTP (break) is scheduled.

Daily Fr. Break

In schools where lessons continue until evening, it is often desirable to specify the length of time between the last period in the evening and the first period in the morning to allow a sufficiently long break between classes.

The time grid of a school shows a total of 11 periods per day. On Monday, teacher X teaches until period 9. A value of '4' entered under 'Daily Fr. Break' means that Untis will attempt to keep periods 1 and 2 on

Tuesday free for teacher , i.e. a total a total of 4 free periods.

Teacher optimisation code
The teacher optimisation code is important when optimisation is performed using variable teacher assignment.

Permissible entries are either numbers 1 to 9 or letters A-Z.

Entering a number means that during optimisation with variable teacher assignment, the relevant teacher's lessons can only be exchanged with those of another teacher who shares the same optimisation code.

On the other hand, entering a letter results in lessons only being exchanged with teachers with a different (or no) optimisation code.

Max. dwell time
Certain school systems have a maximum dwell time for teachers per day. This dwell time includes scheduled periods, as well as NTPs and lunch breaks. Use this field to define the dwell time.

Current timetable
All NTPs of the teacher are shown here regarding the current timetable.

1.4.4.3 Codes

(H) Sched. a.m./p.m. not both
Schedule half days only. This function ensures that lessons cannot be scheduled in the morning AND in the afternoon of the same day.

(Y) Keep curr. loading pattern
Activate this option if you want to block the allocation of a teacher before the first and after the last periods already scheduled for the half-day. This means that a subsequent optimisation run ignores the teacher for the periods outside the given range. You will find an example of how to use this field correctly in chapter Master data properties / Classes .

(R) Not in 1st AND last period
You can use this code to avoid a teacher being scheduled in the first and last periods of a day (Scheduling | Weighting | Time Requests | Time requests for teachers).

Very important
The input block ‘Very important’ allows you to specify different timetabling priorities for each individual teacher.

No NTPs (A)
Activate this option to instruct the software to avoid scheduling NTPs for the teacher.

Lunch break (B)
Check this box if you want Untis to pay particular attention to lunch break compliance when creating the timetable.

Max. periods/day (C)

Activating this option ensures a high level of compliance with the specifications entered under 'Periods per day min,max'.

Max. consec. prds. (D)

Activating this option ensures a high level of compliance with the specifications entered under 'Max. consec. periods/half day'.

Note: Do not set for all teachers
Please set codes A-D for individual teachers. If great importance is attached e.g. to avoiding non-teaching periods for all teachers you can achieve this via weighting.

1.4.5 Subjects

The entry of subjects is similar to entering other master data described above. Any subject can be attributedadditional scheduling parameters like Main subject or Fringe period .

'Subjects' tab
'Timetable' tab
Codes

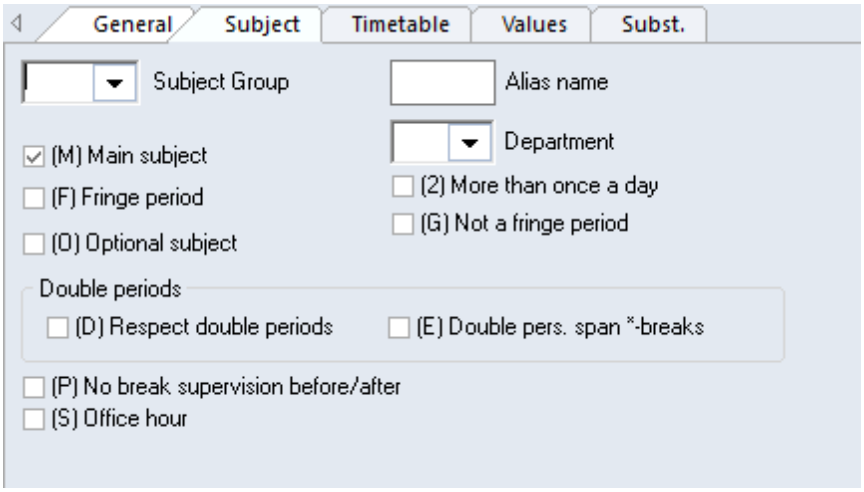
1.4.5.1 'Subjects' tab

Subject group

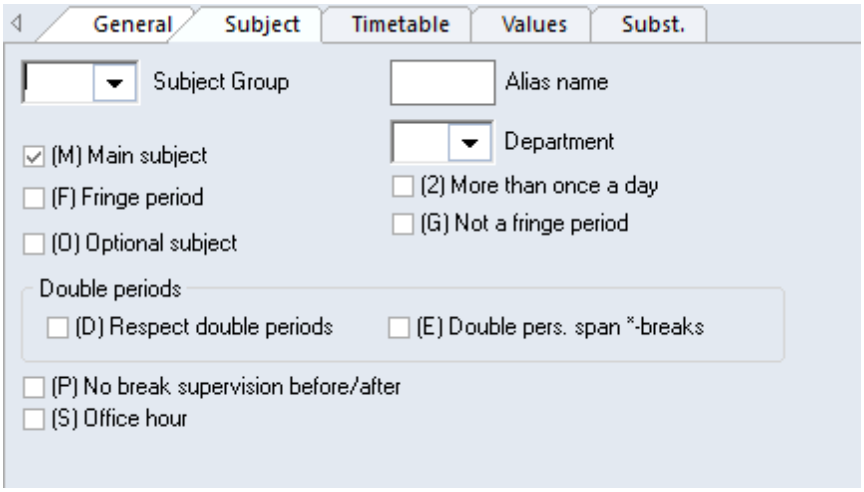
Subject groups are master data and can be created under <Subjects> | Subject groups. At the qualification of teachers you can enter the subject group of the subject as an alternative to the subject. This field is therefore only relevant if you use the module Lesson planning and Value calculation .

Alias name

For certain purposes (data export) it may be desirable to use standardised designations instead of the usual names. Alias names can be entered either at the respective element or on the 'Data' tab under 'Miscellaneous data | Alias names.



1.4.5.2 Codes



(M) Main subject

Check this box to categorise a subject as a main subject. For further details please refer to chapter ' User tips / Main subjects '.

(F) Fringe period

Use this option to categorise a subject as a fringe period subject. The attribute ensures that lessons of this subject are scheduled preferentially at the beginning or the end of a school day or half-day (depending on the grid). For further details please refer to chapter ' User tips / Free periods and fringe periods '

(O) Optional subject

This option allows you to categorise a subject as an optional (non-compulsory) subject. The attribute ensures that lessons of this subject are scheduled preferentially at the beginning or the end of a school day or half-day (depending on the grid). For further details please refer to chapter ' User tips / Free periods and fringe periods '

(2) More than once a day

This option should only be used in special circumstances. If it is active, the optimisation algorithm can schedule the subject at entirely irregular intervals and even several times a day. Checking this box deactivates the weighting settings for ' The same subject cannot be taught more than once on the same day ' and ' Avoid errors with double periods '.

(G) Not a fringe period

Selecting this option causes the software to schedule lessons of this subject by preference in the middle of a half-day, avoiding fringe periods.

(D) Respect double periods

Warning: Use with care
This option is only effective when used sparingly and thoughtfully since it imposes considerable restrictions on the optimisation function, especially with regard to subjects with many double periods. Activate this function only when a previous optimisation run was unable to achieve the desired outcome

and you have already increased the relevant weighting parameter (' Avoid errors with double periods ') to '5'.

- Please note that the correct treatment of double periods requires an appropriate input under option 'Double periods min.-max'.
- The use of the code (D) excludes the use of the codes (2) and (C)

(E) Double periods are allowed to span *-breaks

Breaks marked with an asterisk (*) must not be bridged by double periods and will therefore affect the distribution of double periods. If this restriction is not desired for a particular subject, simply uncheck this option.

(P) No break supervision before/after

This code is only relevant in combination with the module Break supervision .

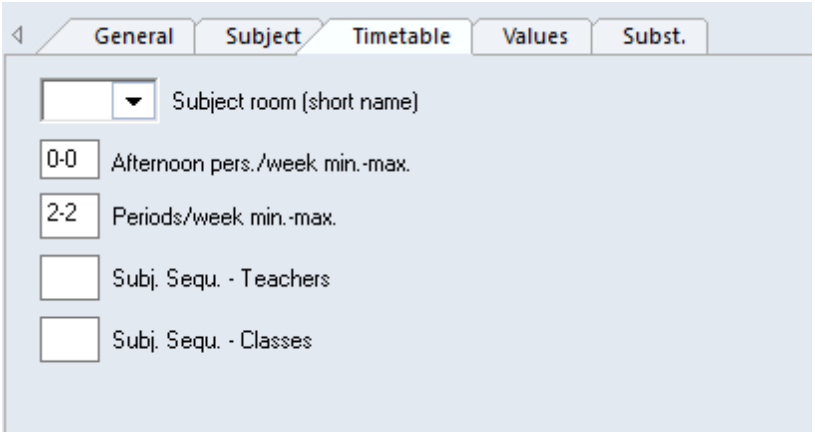
Some subjects like PE require some preparation and follow-up. This code ensures that a teacher teaching this subject is not assigned a break supervision before or after the lesson.

(S) Office hour

This code is only relevant in combination with WebUntis.

1.4.5.3 'Timetable' tab

You can make the following settings on the 'Timetable' tab .



Subject room (short name)

This function allows you to specify the name of a dedicated subject room for a subject. This subsequently makes task of Entering lessons easier. Please see the chapter Room logic under User tips for further details.

Afternoon pers./week min.-max.

The minimum and maximum number of afternoon periods for this subject. Use this field to specify the number of periods per week that the subject must (min.) or may (max.) be scheduled in the afternoon.

Periods/week min.-max.

Minimum and maximum number of weekly subject periods. This function is only relevant for use with the Lesson planning module where you can enter the minimum and maximum number of periods the subject

should be taught per week (if at all).

Subj. Sequ. - Teachers

The numbers 1-9 direct the software to generate teacher timetables where subjects with the same number are scheduled in consecutive periods. The letters A-F prevent the software from scheduling subjects in consecutive periods. Please also see chapter Subject sequence under User tips .

Subj. Sequ. - Classes

The numbers 1-9 direct the software to generate class timetables where subjects with the same number are scheduled in consecutive periods. The letters A-F prevent the software from scheduling subjects in consecutive periods. Please also see chapter Subject sequence under User tips.

1.4.6 Students

There is an additional master data element if you use the Students timetables module – students. If you do not use the module, the menu item will be deactivated.

Note
In some school systems or at some class levels it is not the class that determines the lessons. Instead, students can select the courses they wish to take depending on their preferences. This results in students having their own individual timetables depending on the courses they choose. Untis provides two modules to help you manage these scheduling tasks: Student timetables and Course scheduling . The use of student timetables is useful when the majority of lessons take place for the class as a whole and a smaller share (up to approx. 25 %) is selected individually. The course scheduling module is used when no class exists in the traditional sense and students are (almost) fully free to choose their courses.

1.4.7 Departments

Additional master dataYou will find the following master data under menu item 'Master Data | Special data' :

Student groups

Student groups facilitate student assignment in WebUntis . They play no role in lesson scheduling.

Alias names

For some purposes it may be necessary to use different names than the names specified in master data for elements. For example:

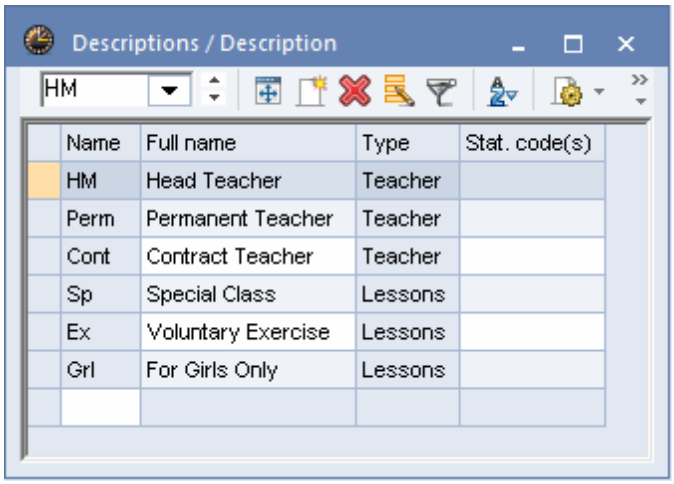
- Standardised official specialist designations for authorities
- Standardised names for interfaces to official databases
- Timetable printing

If you wish to use the aliases specified here in timetable printouts, you must check the box 'For the timetable' and also set the appropriate code in the corresponding timetable view. Please refer to chapter Alias under Timetable for more information.

Descriptions

Descriptions are master data elements in their own right with (short) name and full name. They are useful when designations apply to several elements.

You can for example provide somewhat longer text in the full name of a description. It is then sufficient to enter the (short) name of the description in other master data elements in order to choose between the (short) name or full name of the corresponding description for printed reports and views.



Name	Full name	Type	Stat. code(s)
HM	Head Teacher	Teacher	
Perm	Permanent Teacher	Teacher	
Cont	Contract Teacher	Teacher	
Sp	Special Class	Lessons	
Ex	Voluntary Exercise	Lessons	
Grl	For Girls Only	Lessons	

Departments

You can assign each master data element to a department (in the case of teachers, to several departments). This is only of further significance when used with the Department timetables module. If you do not use this particular module, entering a department name is mainly for informational purposes and can, for example, be printed out on timetables. However, some reports can be printed on a departmental basis.

Corridors

Corridors must be specified for scheduling breaks (corridor supervision). These functions require a license for the Break supervisionmodule.

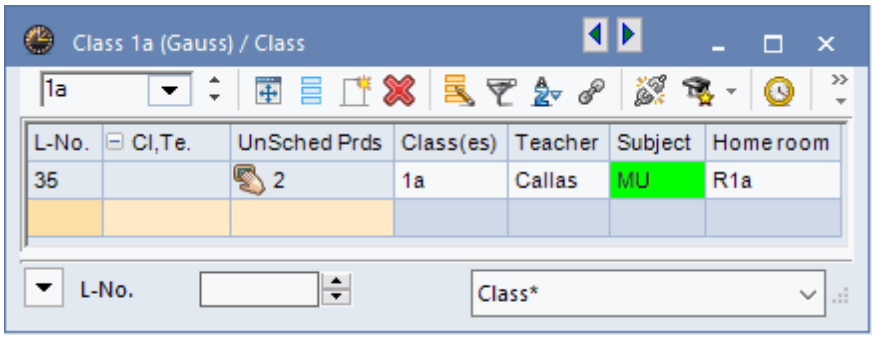
2 Lessons

2.1 Lessons

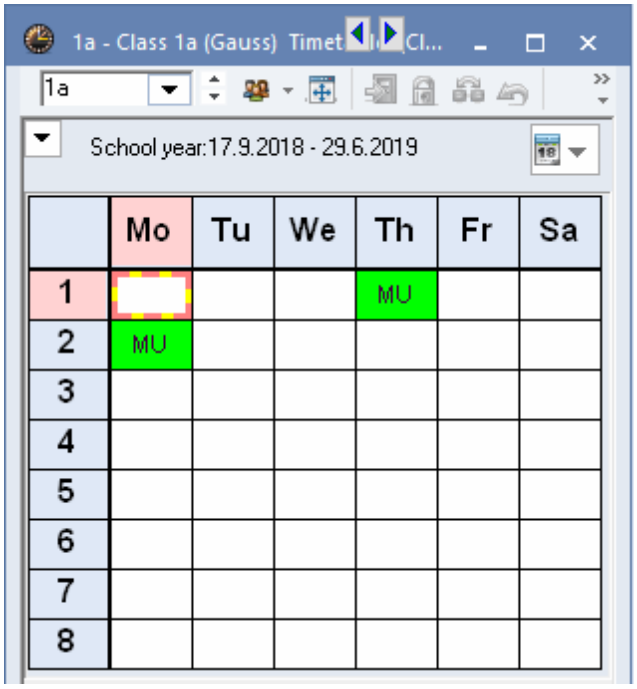
A lesson is the combination of the elements class , teacher , subject and room with a specific number of periods and perhaps with additional parameters. A difference is made between **planned** and **scheduled** lessons.

A planned lesson would be e.g. that teacher Callas should teach two periods of music to class 1a in room R1a.
The scheduled lesson would also contain the position of the lesson in the timetable, e.g. the lesson takes place on Mo-2 and Th-1.

Planned lessons



Scheduled lessons



2.2 The lesson window

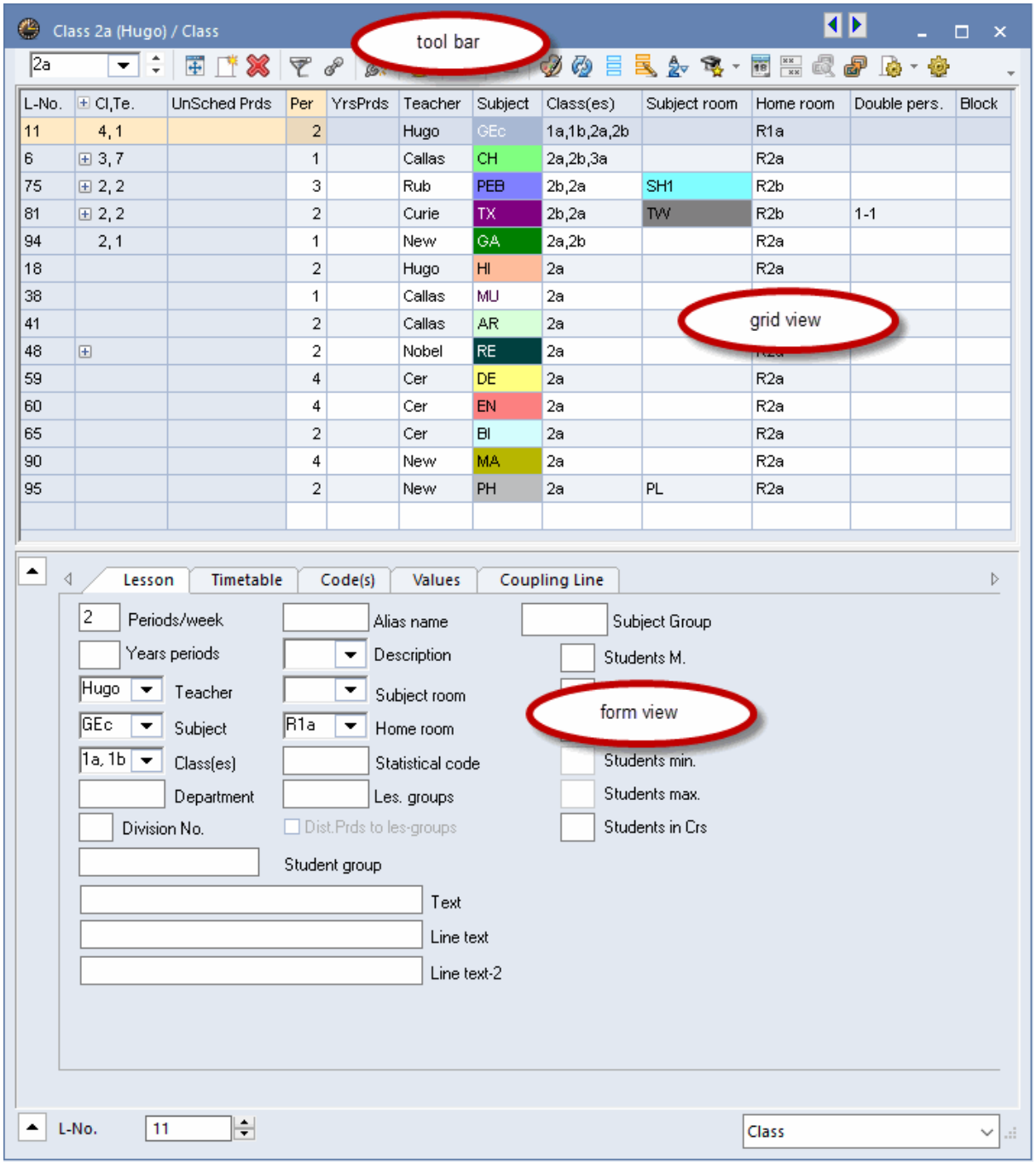
Similar to all master data windows a lesson window always comprises three sections: the toolbar , the grid view and the form view.

The function of the form and grid views is the same as with master data windows . The form view displays one lesson at a time with all the attributes belonging to the lesson while the grid view displays a table of all lessons. Each lesson is automatically assigned a lesson number (which you cannot alter) which the application uses as an internal ID.

Note: Views
The lesson window is a view. This means that the information provided in chapter ' Master data views ' on the basic use of windows (Editing views and Managing views) also applies to lesson windows.

You can open the standard views for lessons sorted by class or by teacher via the menus items 'Classes

| Lessons' and 'Teachers | Lessons'.



Warning: Coupled lessons
In the case of coupled lessons (lessons taking place simultaneously) you will see a **+** in the *Cl,Te* column. Clicking on this will display all the coupling rows of the lesson concerned.

2.3 Entering lessons

Lessons can be entered in the form view or in grid view . Since there are different types of lessons they will be described here separately.

A coupling consists of lessons that have several elements of the same type and that must take place at the same time. In the case of a class coupling, several classes or parts of a class are taught by one teacher, and in the case of a teacher coupling several teachers teach one or more classes at the same time.

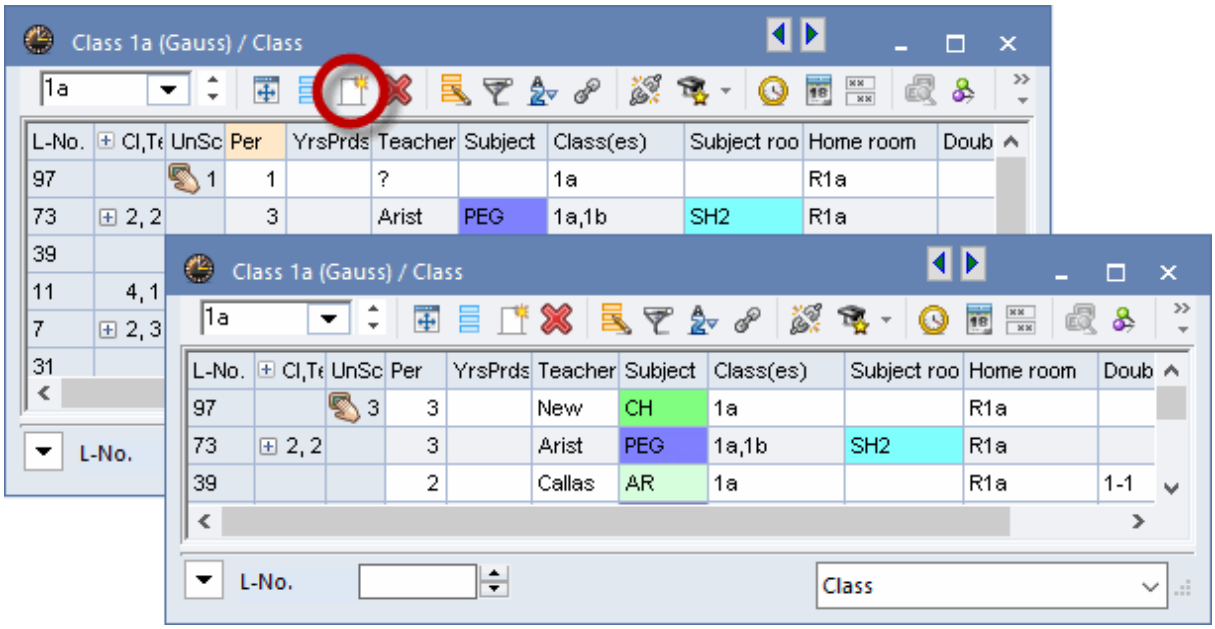
- Simple lessons
- Double period - block
- Couplings

Note: 'Cl,Te' field
The value in the *Cl,Te* field indicates how many classes and how many teachers are involved in this lesson. A straightforward lesson involving one class and one lesson displays no value in this field.

L-No.	Cl,Te.	UnSc	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room	Double pers.	Block
39			2		Callas	AR	1a		R1a	1-1	
11	4, 1		2		Hugo	GEc	1a,1b,2a,2b		R1a		
73	2, 2		3		Arist	PEG	1a,1b	SH2	R1a		
					Rub	PEB	1a,1b	SH1	R1b		

2.3.1 Simple lessons

Open a lessons window and click on the <New> button. This will create a new lesson with one period per week. Alternatively, you can create a new lesson in the last row of the lesson view .
Simply enter all the elements involved for the lesson (class, teacher, subject, room) and if necessary change the number of periods per week.

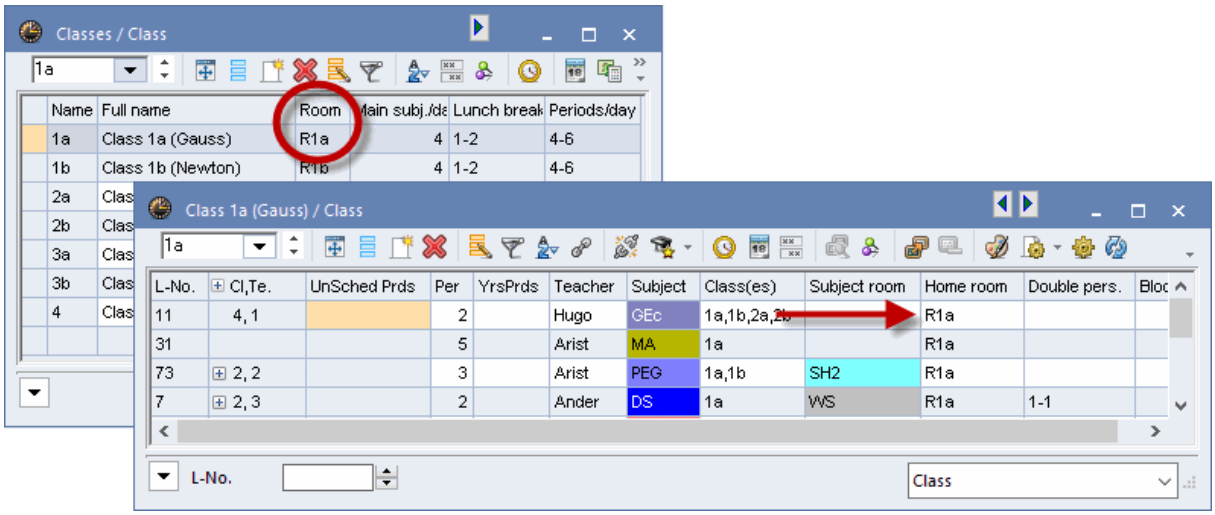


Class / teacher

Depending on whether you have called 'Lessons | Classes' or 'Lessons | Teachers', the active class or the active teacher will be automatically entered for a new lesson.

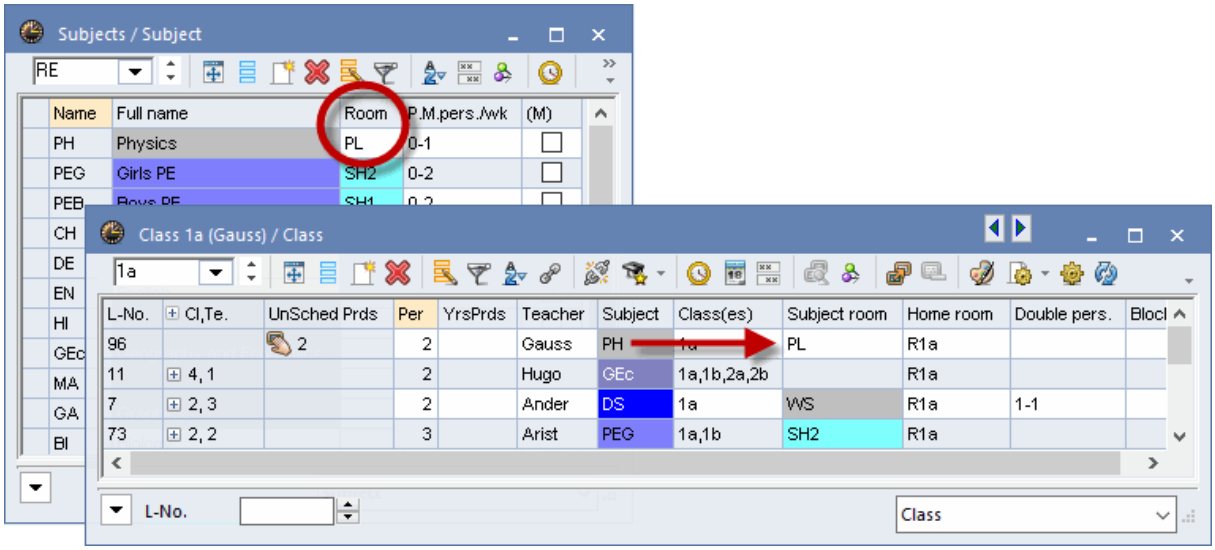
Home room

If you have assigned a room to each class under 'Master Data | Classes', the room will be entered automatically in the Home room field as soon as you enter the class. A teacher can also be assigned a home room, in which case the home room will be entered automatically in the same way.



Subject room

You can also assign rooms under 'Master Data | Subjects'. However, in this case it involves subject rooms, for example a gymnasium for the subject *PE and sport.* When you enter a subject with a subject room , the *subject room* will be displayed automatically in the corresponding field.



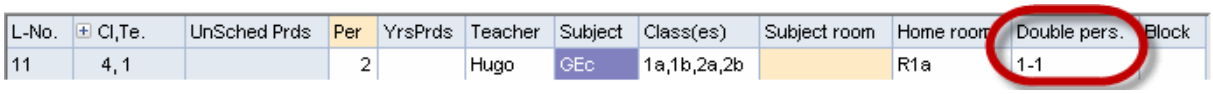
Note: Subject room + home room
A subject room and a home room can be entered for a lesson. In this case, optimisation will first try to schedule the lesson in the subject room. If this is not possible, the lesson can be scheduled in the home room. Please refer to chapter Room logic for further information.

2.3.2 Double period - block

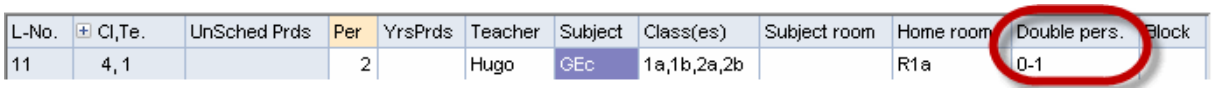
Double period

Lessons will be scheduled in single periods unless specified otherwise. Enter double periods in the column *Double pers.* , if they are desired or permitted. Use this field to specify the distribution of double and single periods:

An entry of 1-1 indicates that the distribution spans from 1 to 1, i.e. the lesson should be scheduled in exactly one double period.



An entry of 0-1 means that a 2-period lesson can be scheduled in a double period, but it is not an absolute requirement (minimum 0, maximum 1 double period).



An entry of 1-2 means that a 4-period lesson can also be scheduled in one double period or two double periods. The timetable algorithm should decide which variant is better suited regarding the overall timetable perspective.

L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room	Double pers.	Block
11	4, 1		4		Hugo	GEc	1a,1b,2a,2b		R1a	1-2	

Tip: Double period requirement
If it is possible to allow variability in scheduling double periods (e.g. with the 0-1 or 1-2 options), please allow the algorithm to work with these freedoms since this can lead to a significantly better overall result.

Block

More than 2 periods scheduled consecutively are called a block of periods.

If you wish, for example, to schedule 3 periods consecutively, enter '3' in the column 'Block'.

L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room	Double pers.	Block
11	4, 1	1	3		Hugo	GEc	1a,1b,2a,2b		R1a		3

If you wish to schedule a 6-period lesson in two blocks of 3, simply enter '3.3'.

L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room	Double pers.	Block
11	4, 1	4	6		Hugo	GEc	1a,1b,2a,2b		R1a		3,3

2.3.3 Coupled lessons

In Untis terminology, coupled lessons (or couplings) are those in which more than one teacher and/or more than one class participate in the lessons and the lessons in the coupling are held at the same time.

Warning: General rule for entering coupled lessons
Several classes are entered together separated by commas but when there are several teachers each one must be entered in a separate coupling row.

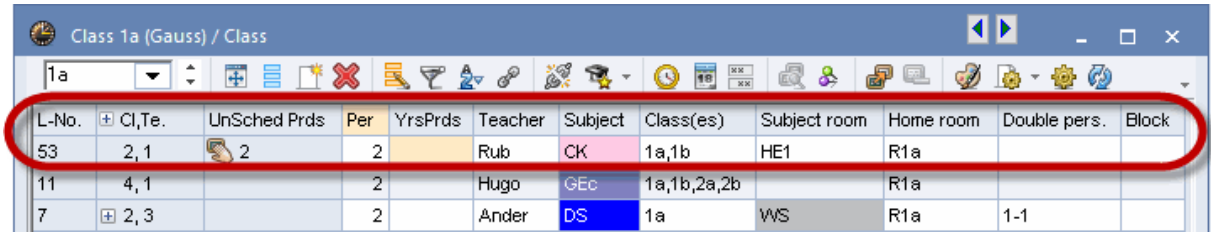
Coupled lessons (several classes)

Teacher Rubens is to teach cookery to classes 1a and 1b for two periods in the home economics room.

Per	Teacher	Subject	Class(es)	Room
2	Rub	CK	1a,1b	HE1

Proceed as in the example of the simple lesson, but enter both classes 1a and 1b in the field 'Class(es)' separated by a comma. In this case the room will not be entered automatically because there is no room

assigned to the subject cookery. For this reason, enter it in the 'Subject room' column .



L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room	Double pers.	Block
53	2, 1	2	2		Rub	CK	1a,1b	HE1	R1a		
11	4, 1		2		Hugo	GEc	1a,1b,2a,2b		R1a		
7	2, 3		2		Ander	DS	1a	WS	R1a	1-1	

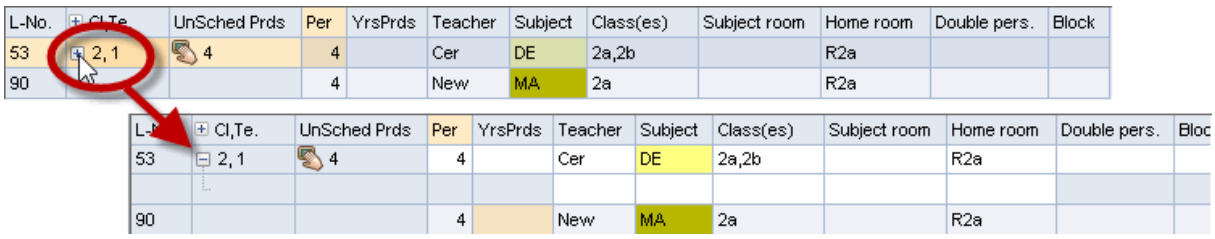
Now switch to class 1b. You will see that the lesson is automatically displayed for this class.

Coupled lessons (several classes and teachers)

We will now plan 4 periods of English in different sets for the students of the second year. This means that students in classes 2a and 2b will be taught in three sets by three teachers (Cer, Ander, Callas) in three different rooms.

Per	Teacher	Subject	Class(es)	Room
4	Cer	EN	2a,2b	R2a
4	Ander	EN	2a,2b	R2b
4	Callas	EN	2a,2b	PS1

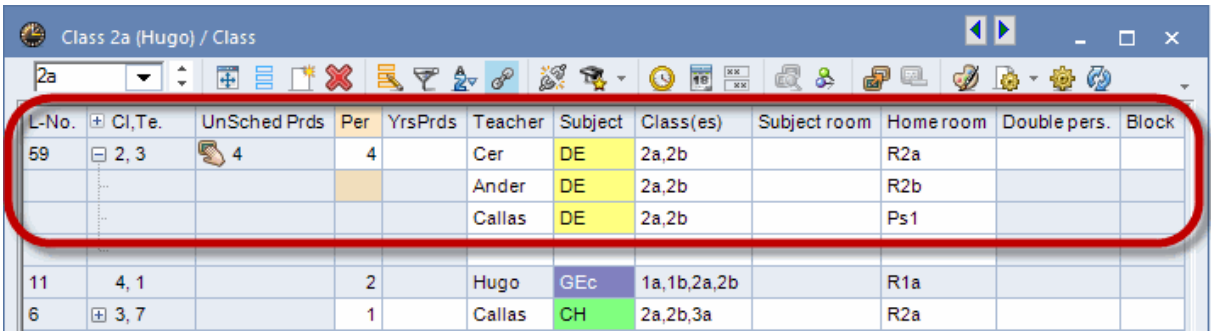
1. Switch the lessons window to class 2a.
2. Enter '4' in the 'Per' column and confirm this by pressing the <TAB> key.
3. Enter the (short) name 'Cer' and confirm again with <TAB>. It does not matter which of the three teachers you begin with.
4. Enter 'EN' for subject.
5. Now enter classes 2a and 2b in the 'Class(es)' column separated by a comma.
6. Class 2a's home room – R2a – will be entered automatically.
7. Move the mouse to the column 'Cl,Te' in the lesson you have just entered and click on '+'. Enter the name of the next teacher ,'Ander', and again classes 2a and 2b in the empty row shaded grey.



L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room	Double pers.	Block
53	2, 1	4	4		Cer	DE	2a,2b		R2a		
90			4		New	MA	2a		R2a		

L-	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room	Double pers.	Bloc
53	2, 1	4	4		Cer	DE	2a,2b		R2a		
90			4		New	MA	2a		R2a		

8. Now change the room from R2a to room R2b since teacher Cervantes will be teaching his group in room R2a .
9. Make the same entries for teacher Callas in the third coupling row, making sure to enter a different room.



L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room	Double pers.	Block
59	2, 3	4	4		Cer	DE	2a,2b		R2a		
					Ander	DE	2a,2b		R2b		
					Callas	DE	2a,2b		Ps1		
11	4, 1		2		Hugo	GEc	1a,1b,2a,2b		R1a		
6	3, 7		1		Callas	CH	2a,2b,3a		R2a		

The '+' sign will now be permanently displayed in the 'Cl,Te' column. Clicking on this sign will display all the information on the lesson. You can decide whether you wish to view only the first row of the lesson or whether all coupling rows should be displayed.

Tip: Showing all coupling rows
Clicking on <+> in the column heading of 'Cl,Te' will show or hide all coupling rows in one operation. If you want to use a key combination, press <CTRL>+ <SHIFT>+R.

You can find further information on using coupled lessons in chapters Coupling lessons and Decoupling lessons .

Several rooms

It sometimes happens that for one lesson (or one coupling row), two or more rooms are needed. you can enter the rooms in one field and separate them by a comma - similar to the classes.

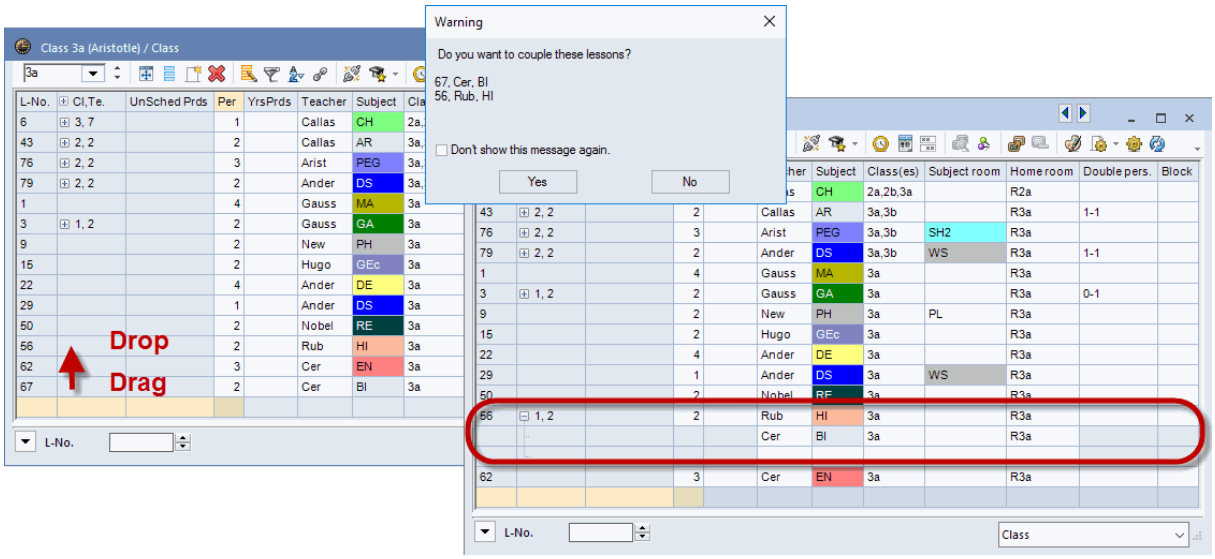
The example below shows that for the music lesson with Maestra Callas the room MZ, as well as the room R2a is needed.

L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room	Double pers.	Block
96		2	2		Callas	MU	2a	MR,R2a			

2.3.4 Coupling lessons

Coupling using drag&drop

If you wish to couple two existing lessons, mark one of the lessons in the column 'Cl,Te' with the right mouse-button and drag it over to the lesson with which you wish to link it. When you release the dragged lesson, both lessons will be coupled.

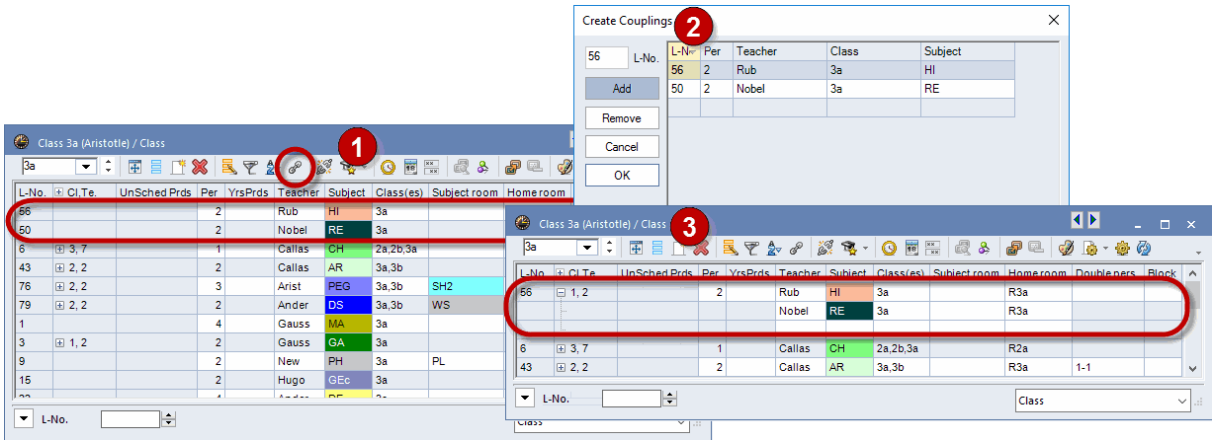


Decoupling coupled lessons is just as simple. Drag the coupling row that you wish to decouple out of the coupling by using the mouse in the 'Cl,Te' column and drop it. The lessons are now decoupled.

Coupling via the toolbar

If you wish to couple two existing lessons, mark one of the lessons concerned and click on the <Create couplings> button in the toolbar. A dialogue window will be displayed already containing the marked lesson. There are three ways to add additional lessons:

- Double click on the lesson you wish to add in the lessons window.
- Mark the new lesson in the lessons window and then click on <Add>.
- Enter the lesson number and then click on <Add>.



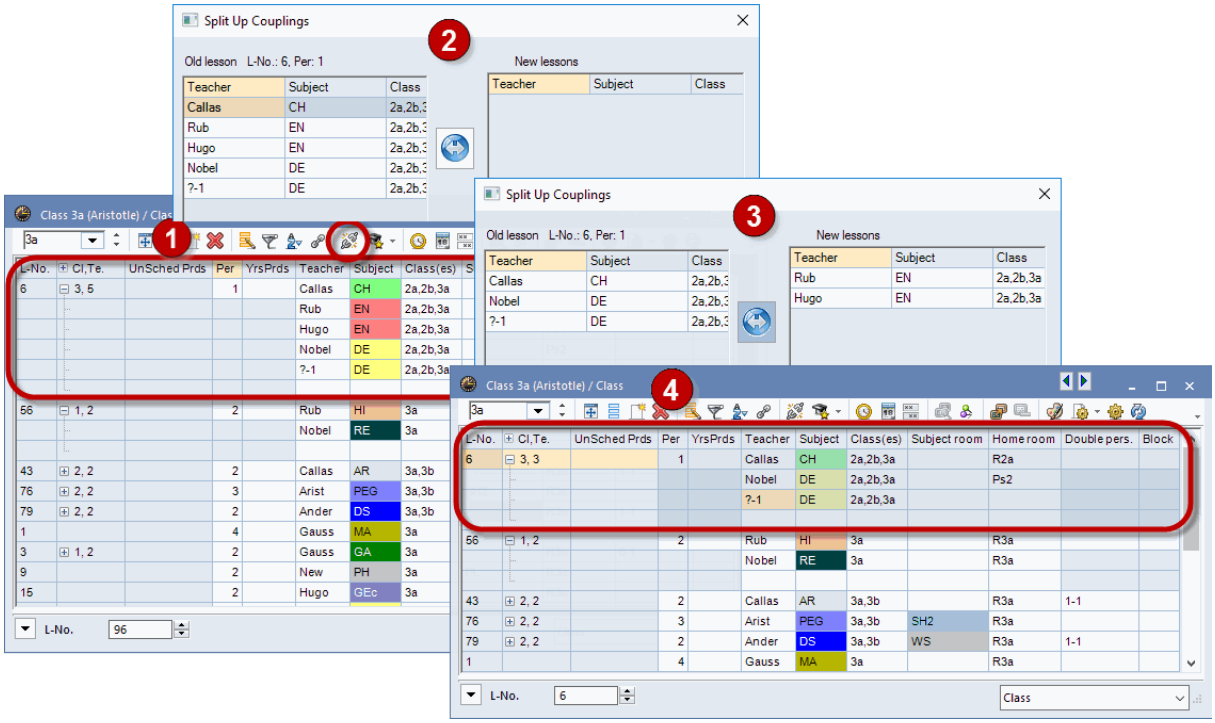
2.3.5 Decoupling lessons

The previous chapter described how you can decouple lessons using drag&drop.

Decoupling via button

This function allows you to convert individual coupling rows in a coupled lesson into lessons in their own right (with their own lesson numbers).

Mark a lesson coupling and click on the button <Extended decoupling>. A window will be displayed where you can select which coupling rows should be removed from the coupled lesson.

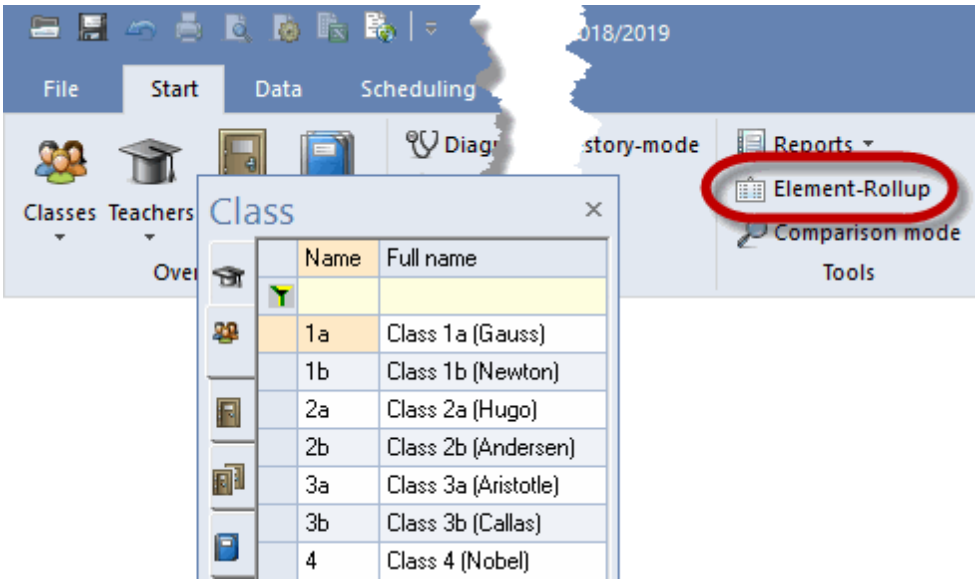


Warning: Split up all
Clicking on the <Split up all> button breaks up all class couplings. This can have a drastic impact on teaching load distribution.

If you only wish to split up a coupled lesson into all coupling rows but wish to retain the class couplings, mark all the rows concerned in the left section and click on the double-headed arrow in the centre of the window.

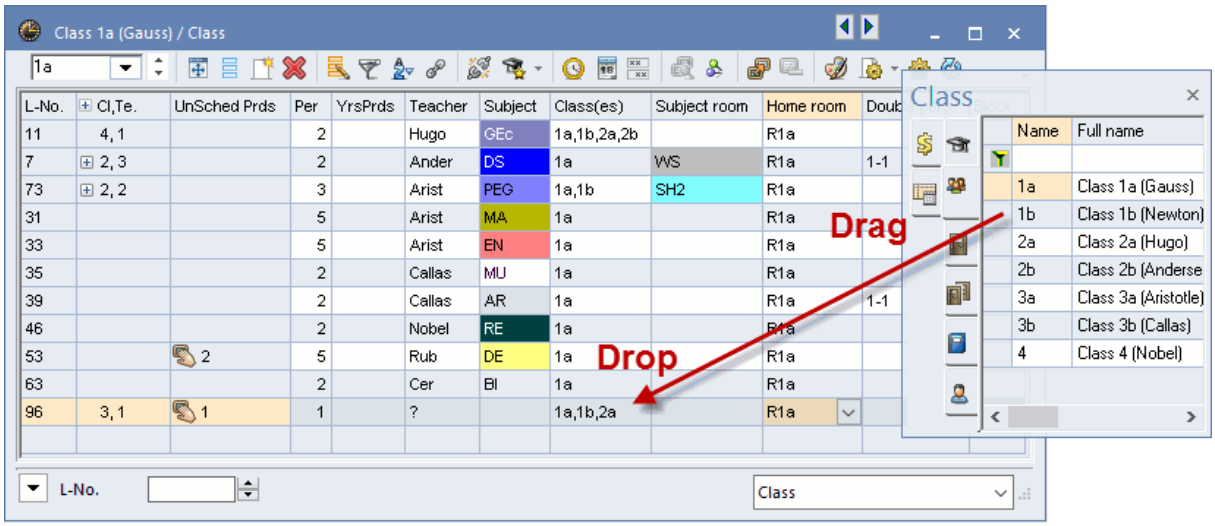
2.3.6 Entering lessons using drag&drop

You can also use the Element-Rollup function to enter lessons using drag&drop. You can access the Element-Rollup function under 'Start | Element-Rollup' or via 'Data | Element-Rollup'.

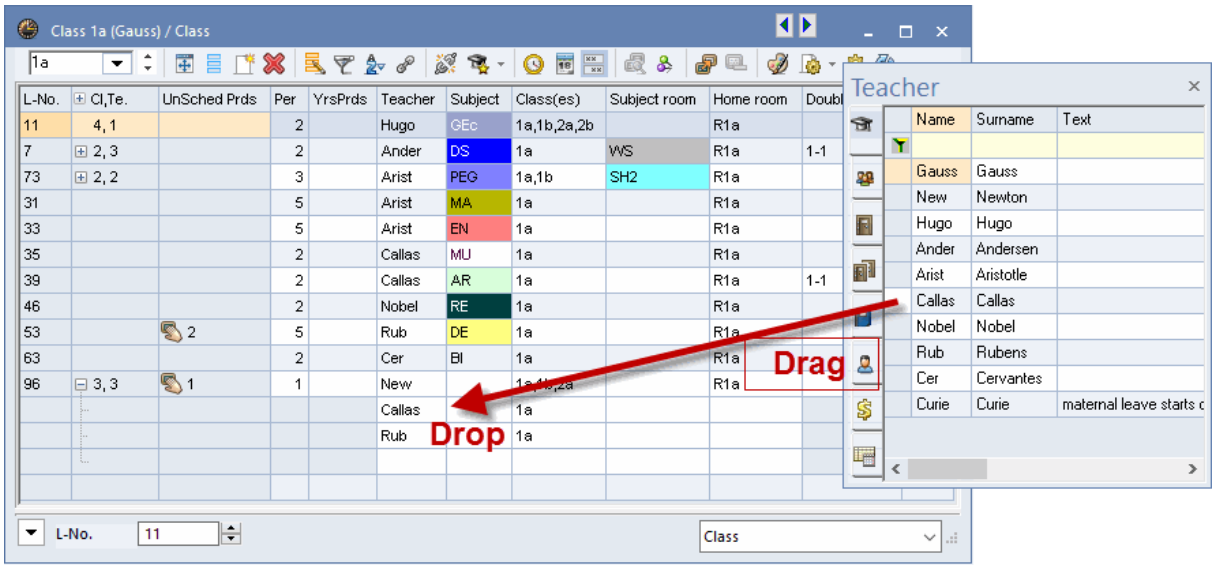


In the Element-Rollup window you can choose between master data types and drag one or several elements into the lessons window.

Note: Several elements
You can hold the <CTRL> key pressed and highlight several elements, which you can then drag into the lessons window together.



If you drag several classes into the lessons window, they will all be entered into one coupling row . However, if you drag several teachers into an existing lesson, a separate coupling row will be created for each teacher.

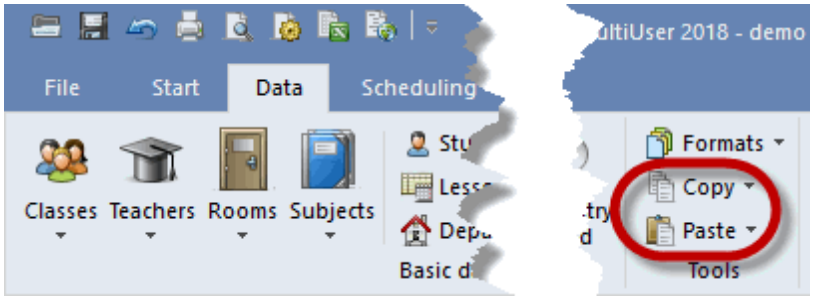


Note: Double-click
You can use a double click in the element window instead of the drag&drop method.

2.3.7 Clipboard

You can copy selected (highlighted) lessons to the clipboard. These functions can be accessed under menu item 'Edit', or you can use the following shortcuts:

CTRL + X = Cut
CTRL + C = Copy
CTRL + V = Paste



Program-internal use

The clipboard function allows you to copy one or more lessons of one class to another or from one term> to another (with the Multiple term module).

If you wish for example to copy all lessons from class 1a to class 1b

- highlight all lessons or press Ctrl + A
- click on 'Copy' on the 'Data' tab,
- switch to class 1b,
- click on 'Paste' on the 'Data' tab.

Note:
When you paste the lessons to class 1b, its home room will be imported.

Warning: Editing mode
If you are in a field in the editing mode, then only the entry of this field is copied and not the whole lesson row. You can exit the editing mode by pressing the Escape key.

Paste special

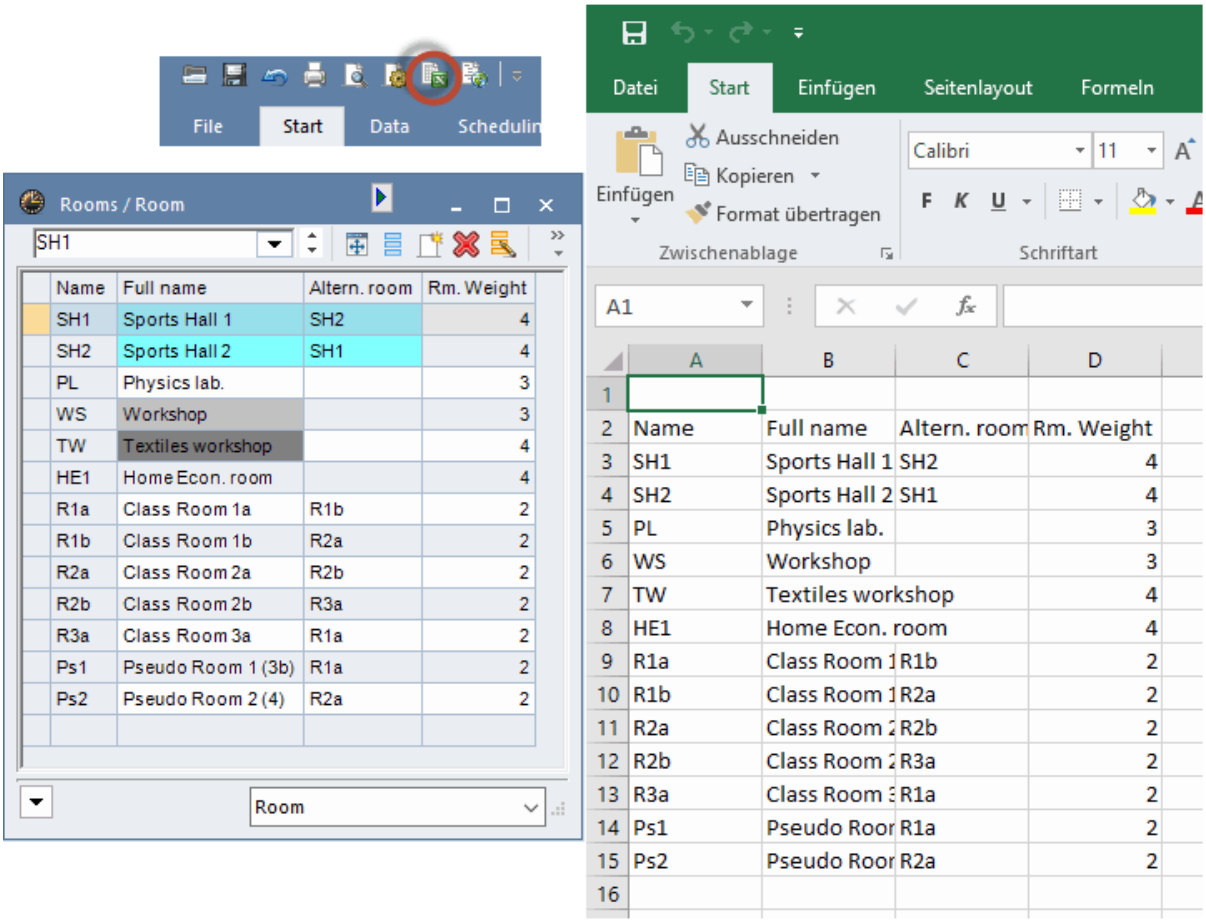
Tip: Copying timetables
The 'Paste special' functions allow you to copy timetables.

In addition to the usual paste function, the 'Edit' menu also provides the 'Paste special' function. Besides inserting lessons, this function also inserts the timetable of the copied lessons, i.e. the timetable of the source class is also copied.

Copying data to external programmes

You can also use the clipboard to export lessons (or other data) to external programs such as spreadsheets or word processors.

Many views also offer the <Print in Excel> option allowing you to export directly to a spreadsheet.



2.4 Lesson properties

You can specify many additional properties for lessons apart from the basic data. With the exception of time requests you can enter this data either in the grid view or in the form view. You will find all the tabs described below in the form view .

- Time requests
- 'Lessons' tab
- 'Timetable' tab
- 'Codes 1' tab
- 'Codes 2' tab
- 'Values' and 'Coupling lines' tabs

2.4.1 Time requests of lessons

You can choose between three different ways of displaying time requests:

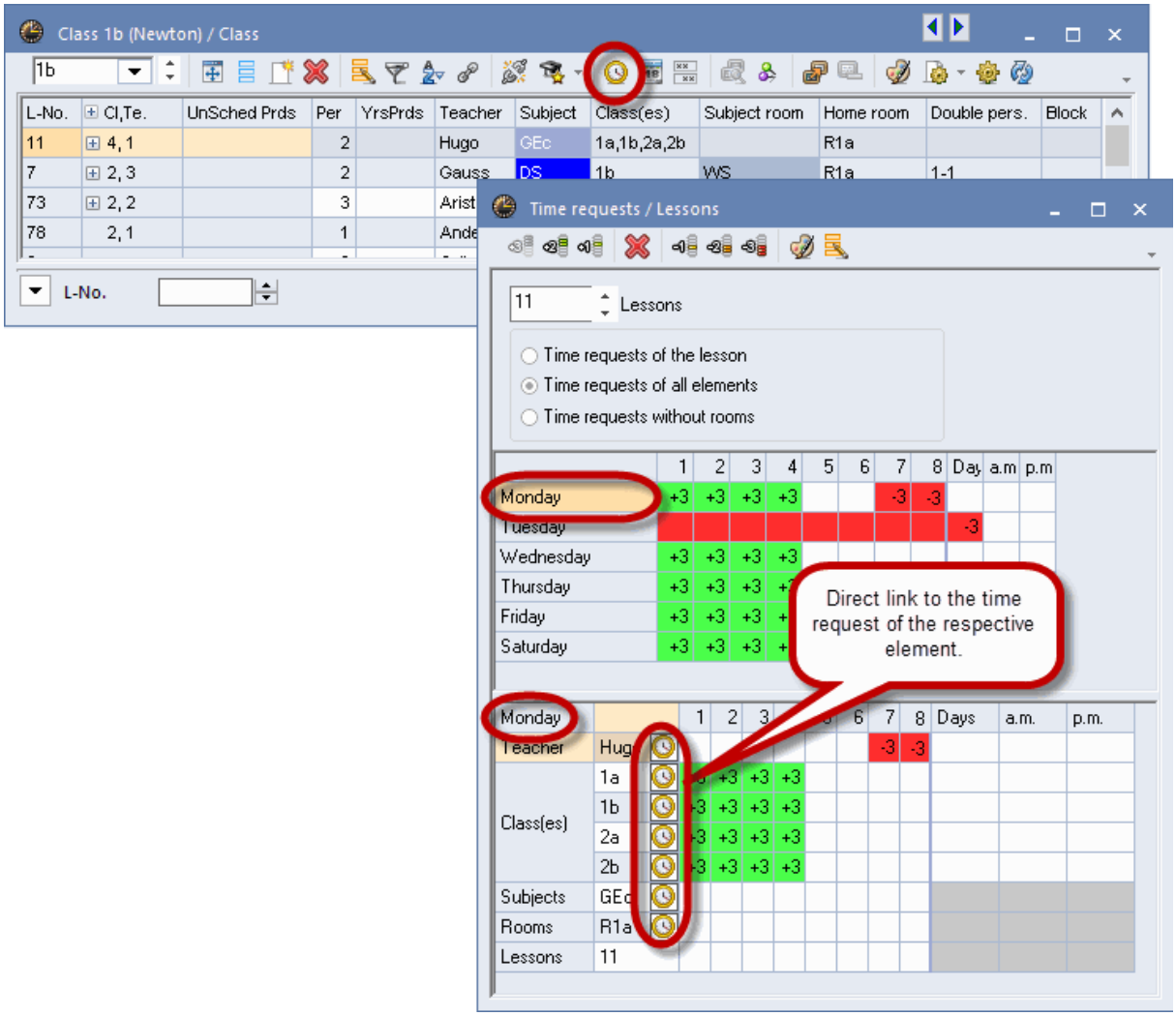
Time requests of lessons

Each individual lesson can be assigned a special time request. The general time request function is described in chapter Time requests in the User tips section. However, a time request for a lesson cannot be given the value +3. In this case, you should schedule the lesson manually and lock it.

Time requests for all elements

Lessons inherit the time requests of the master data involved . For example, if Victor Hugo's free day is Tuesday, no lesson can take place on a Tuesday if Hugo is involved.

The ‘Time requests for all elements’ option displays the time requests for all elements involved in this lesson in the centre of the window. You can click on a day of the week in this section and the lower section will indicate exactly which of the elements involved is responsible for the time request. You change to the
time request window of the respective element via the <Time request> button in the 'Time requests | Lessons' window

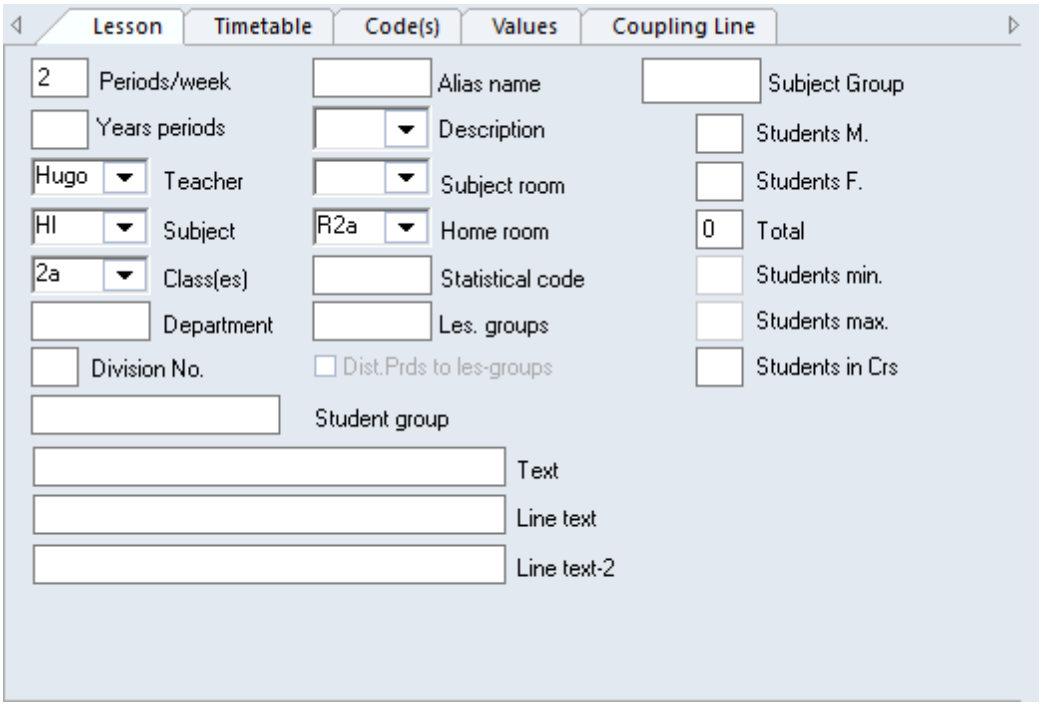


Time requests without rooms

Since room allocationcan still be changed during optimisation, time requests for rooms are not as stringent as those for other elements. For this reason they can be hidden using the lower option.

2.4.2 'Lessons ' tab

You can specify the following settings on the 'Lessons' tab:



Periods/week / Years periods, Teacher, Subject, Class(es), Room

The master data involved in the lesson together with the number of periods are the essential lesson parameters. Entering data was dealt with in chapter Entering lessons .

Division number

The division number is required to ensure that the number of periods for a class are calculated correctly for divisions. A division occurs when for example English is taught in 2 groups but the lessons are not coupled, i.e. do not take place simultaneously. There are then two lesson rows each with 4 periods, but only 4 hours count towards the total number of class periods.

If both lesson rows (numbers) are assigned the same division number (permitted range of values: 0 to 255) the value units will be calculated as described above. A lesson with a division number of 0 will not count towards the total number of periods for the class.

You can assign the same division number for more than 2 lesson rows of the class. The largest number of periods covered by the division number will then count towards the class total.

Student group

An entry in the field student group is very important if you use WebUntis with divided lessons. Please refer to the WebUntis manual for detailed information.

Alias name

You can assign an alias to lessons in the same way as for master data elements. Please refer to chapter Master data – Class tab for a description of this function .

Room
This is where you can enter the desired (subject) room for the lesson. If a subject room has been defined for a subject, it will be automatically used when the lesson is created.

Home room
If data is being entered in the view 'Classes | Lessons', the class' home room will be displayed here; if data is being entered in the view 'Teachers | Lessons', the teacher's home room will be displayed here.

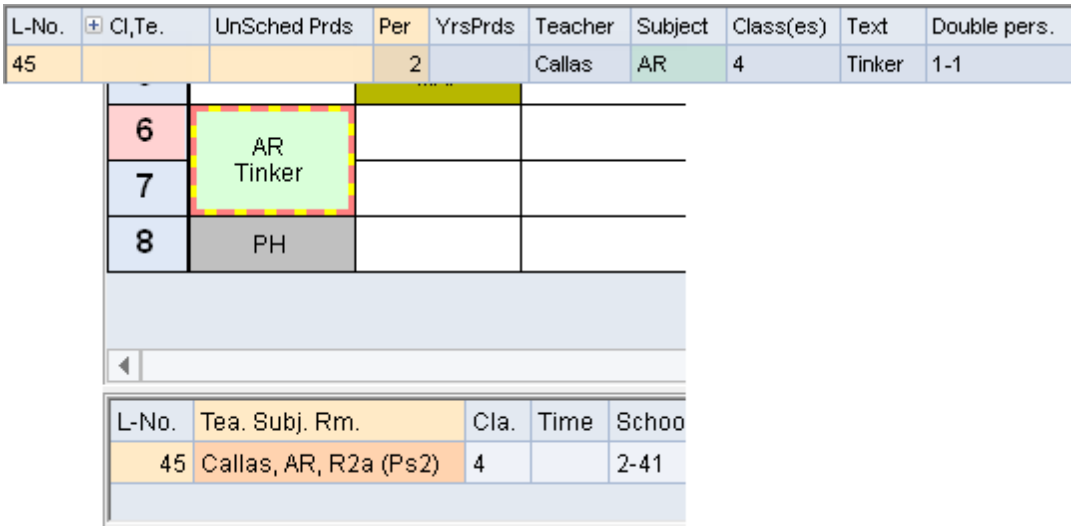
Statistical code
Used in the same way as with master data. You can assign any number of statistical codes to each lesson. These codes are very useful when you wish to filter according to specific criteria.

Les. groups
You can enter the lesson group here if you use the Multi-week timetable module. Please refer to chapter Lesson groups in section Multi-week timetable .

Subject group
If the lesson subject is assigned to a subject group, it will be displayed here. The use of subject groups is primarily of interest in connection with teacher qualifications and the lesson table (with module Lesson planning).

Students M./Students F./Total
This is where you can enter the number of students (male and female) participating in the current lesson. The total of all entries is displayed in the total field. These entries have an influence on room allocation during optimisation and room optimisation .

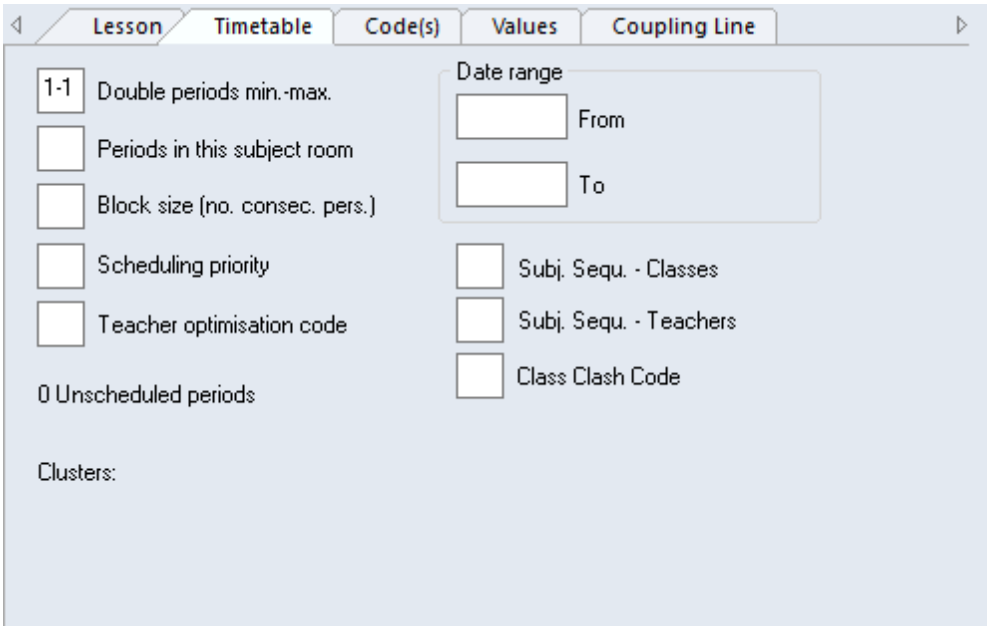
Text
This field allows you to assign a text of your choice to each lesson. This text is also displayed in the 'Special text' column of the timetable details window and can also be displayed in the timetable window itself .



Line text / Line text -2
You can use these fields to assign text to the individual coupling rowsof a lesson.

2.4.3 'Timetable' tab

You can specify the following settings on the 'Timetable' tab:



Double periods min.-max.

Entering double periods and blocks was already dealt with in chapter Double period - block .

Periods in this subject room

If a subject room is defined for a lesson, the optimisation routine will attempt to schedule all periods of the lesson in this room. This is sometimes not desired when there is a shortage of rooms or when rooms are overbooked. If for example only two of three physics lessons are to be held in the physics lab, then enter a '2' here. As a rule, no entry is required in this field.

Scheduling priority

This field has been created for compatibility reasons only. Please do not enter anything in here.

Teacher optimisation code

With the teacher optimisation code, the Lesson planning module offers the possibility of influencing Teacher assignment during optimisation. You will find details in chapter Teacher optimisation under' Optimisation' .

Unscheduled periods

This value indicates how many periods of the current lesson have not yet been scheduled in the timetable.

Time range

The Multi-week timetable module allows you to set time restrictions for lessons.

Subject sequence - Classes/Subject Sequence - Teachers

As with master data, there is also the field 'subject sequence' for lessons. Permitted entries are 1 - 9 for

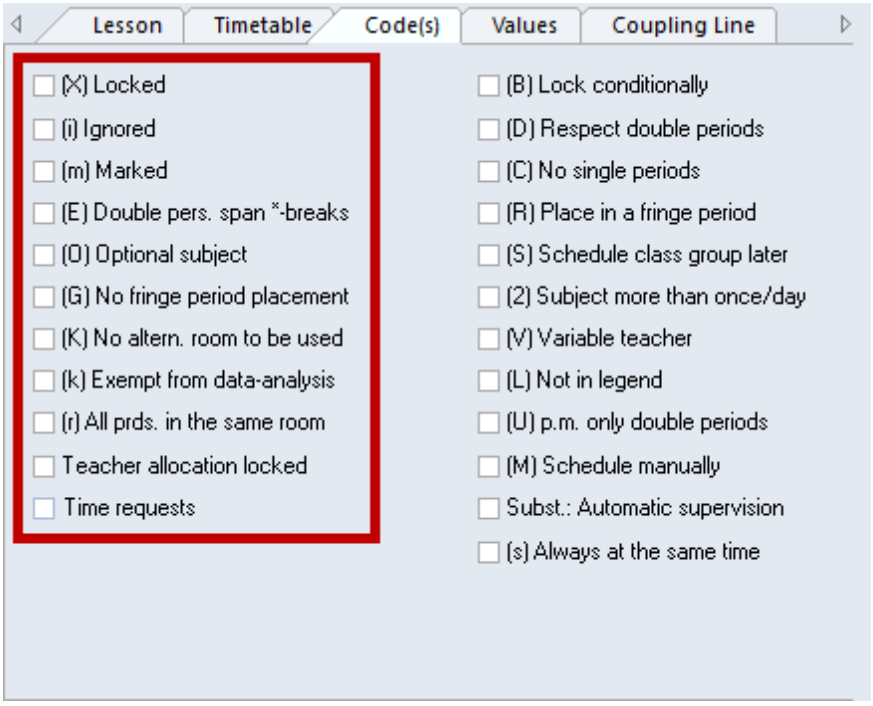
a positive subject sequence and A - E for a negative subject sequence. Please also see chapter' Subject sequence' in the' User tips' section.

Class Clash Code (Class Clash Code, CCC)

This code allows Untis to schedule two lessons at the same time even when the same class is involved in both lessons. Enter values 1 - 9 where a conflict is permissible between lessons with the same CCC, and A - H where a conflict is permissible between lessons with different non-numeric CCCs. Please also see chapter 'Subject sequence' in the' User tips'section.

2.4.4 'Codes' tab part 1

There is a large number of codes available with which you can define lessons more precisely.



(X) Locked, (i) Ignore, (m) Marked

The way these codes work was already explained in chapter Input fields for master data .

In lesson views, ignored lessons are marked with the letter (i) next to the lesson number.

L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)
33			5		Arist	EN	1a
35	(i)		2		Callas	MU	1a
39	(i)		2		Callas	AR	1a
46			2		Nobel	RE	1a
53		2	5		Rub	DE	1a

(E) Double pers. span *-breaks

Double periods and blocks are not allowed to span breaks, which are marked in the timetable with a '*'.

Use the (E) code to deactivate this restriction for specific lessons.

(O) Optional subject
Lessons for which this code is activated are treated during optimisation as if an optional subject were involved. For further details, please refer to chapter User tips – Optional subjects and fringe periods .

(G) No fringe period placement
Activate this code if a particular lesson should not be scheduled in a fringe period. For further details, please see chapter' User tips – Optional subjects and fringe periods' .

(K) No altern. room to be used
Lessons marked (K) may only be scheduled in the designated room. Scheduling in alternative rooms is not allowed.

(k) Exempt from data analysis
Use this code to exclude a lesson from the automated data analysis function of the diagnosis tool.

Warning:
Activate this function only when you have made sure that the lesson in question will not obstruct the optimisation tool.

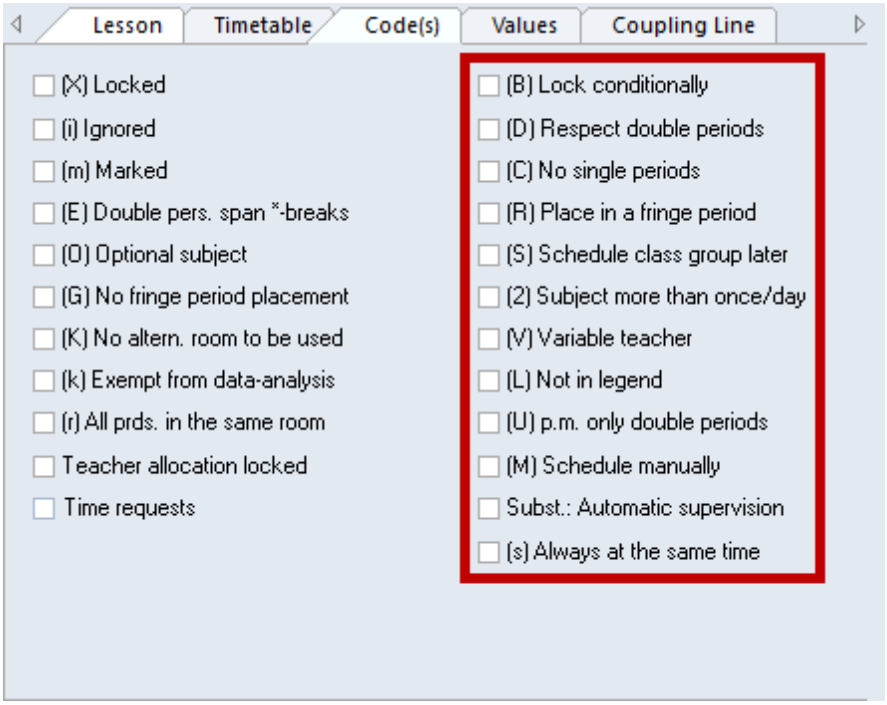
(r) All prds. in the same room
All periods of a lesson marked with this code will take place in the same room. This code has a major influence on room optimisation. A lesson marked with the (r) code can even displace a class from its own home room. Please read chapter ' User tips – Room logic' for further details before attempting to use this function.

Teacher allocation locked
The teacher assigned to teach a class can be locked separately for each coupling line to ensure that the placement cannot be changed by the automated teacher allocation function (only possible with the 'Lesson planning and value calculation' module) (please see also chapter ' Optimisation').

Time requests
This box will be automatically checked if time requestshave been entered for this lesson.

2.4.5 'Codes' tab part 2

Below is a description of the codes in the second column.



(B) Lock conditionally

Lessons marked with this code are treated as locked lessons during the first part of the optimisation run (placement run). During the subsequent optimisation run (swap run), however, the temporary locking function is automatically deactivated (please see also chapter' Optimisation')

(D) Respect double periods

Activate this function for a lesson (or a subject) if you wish the optimisation tool to adhere strictly to the number of permitted (desired) double periods . This also applies when double periods have been excluded for a lesson ('0-0' in the field 'Double periods min.-max.'). The function is particularly useful when the optimisation errors 'Double per. split up', 'Unrequ. double pers. ' and 'Subject twice a day' are to be avoided at all costs.

Warning: Use carefully
Please use this code sparingly (if in doubt, please do not use it at all), since it places severe restrictions on optimisation – especially for subjects with a large number of periods. If necessary, increase the corresponding weighting parameters (Avoid errors with double period) to 5 before using it.

- Please also note that to ensure the correct treatment of double periods, data must be entered in the 'Double periods min.-max' field.
- Setting the (D) code excludes the use of codes (2) and (C).

(C) No single periods

Setting the (C) code gives priority to scheduling the lesson in questions as block. Single periods will be avoided if at all possible.

- This code is only useful for lessons with more than 6 periods per week.
- Codes (2), (C) and (D) are mutually exclusive.

(R) Place in a fringe period

Use this option to specify lessons that should be scheduled in fringe periods in the same way as fringe lessons. The attribute ensures that lessons marked in this way are scheduled preferentially at the beginning or the end of a school day or half-day (depending on the timetable). Please also refer to chapter User tips / Fringe periods and optional subjects .

(S) Schedule class group later

You can change the scheduling priority for the lessons when using class groups . The code instructs the optimisation tool to leave the scheduling of these lessons until after other classes of the same class group have been scheduled.

- Use this code only when you are familiar with working with class groups.

(2) Subject more than once/day

The Untis optimisation algorithm assumes that a subject should only be scheduled once a day for any one class (except block lessons and double periods). You can use this flag to override this – highly weighted – boundary condition. Untis will then be allowed to schedule the subject as it thinks fit.

- The options (2), (C) and (D) are mutually exclusive.

(V) Variable teacher

When this code is set Untis may replace the teacher(s) involved in the lesson with more suitable teachers when bottlenecks are encountered during optimisation. Please refer to chapter Optimisation for further details.

(L) Not in Legend

No legend will be printed for lessons where this code is set.

(U) p.m. only double periods

This code ensures that the automated optimisation function will only schedule double periods (and no single periods) in the afternoon. This code only makes sense when

- double periods are permitted for the lesson and
- the subject is marked as a subject that can take place in the afternoon.

(M) Schedule manually

Lessons marked (M) are ignored by the optimisation tool. These lessons must be scheduled manually.

Subst.: Automatic supervision

This option is only to be used with couplings. If one of the teachers is absent, Untis will automatically replace him/her with another teacher of the coupling.

2.4.6 'Values' and 'Coupling line' tabs

'Values' tab

This tab will only be displayed with the module Lesson planning and value calculation . Please refer to chapter Values under Value calculation for details on the fields.

'Coupling line' tab

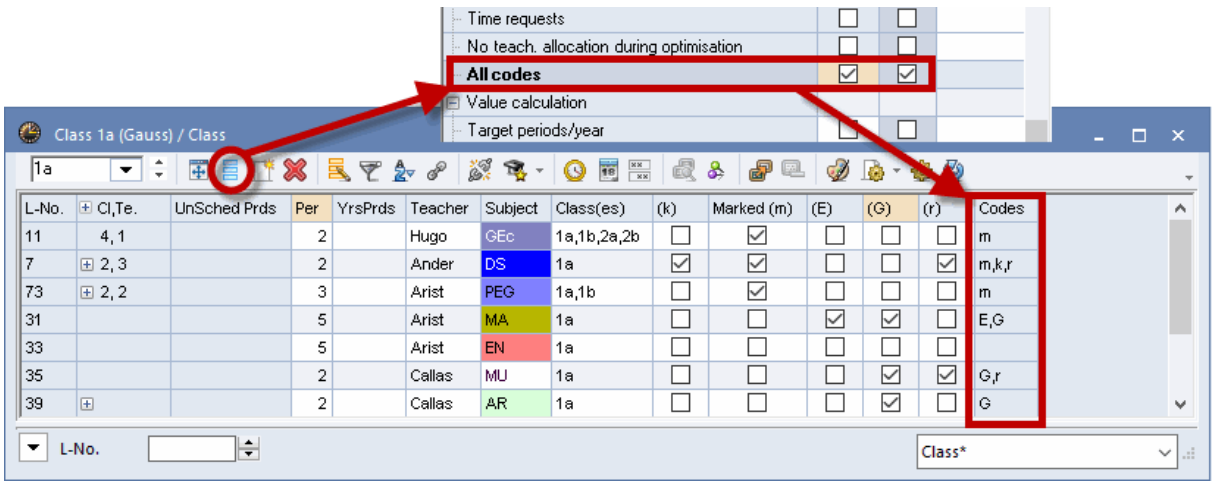
This tab contains fields that are only relevant for a coupling line, but not for the entire coupled lesson. Most fields can be found on the 'Lessons' tab , as well and are described there.

The fields 'Teacher allocation locked' and '(Teacher)' are described in chapter Automatic teacher

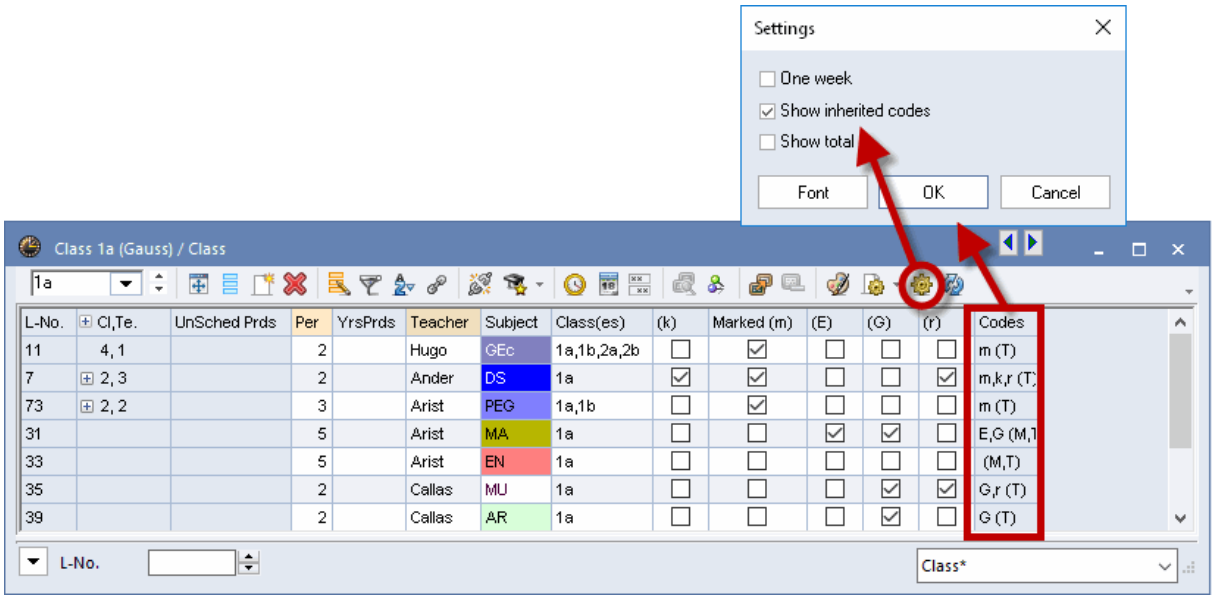
assignment during optimisation under Lesson planning.

2.4.7 All codes

This field, which can only be activated in the grid view via the <Grid Adjustment> button, offers an excellent overview of the relevant timetable settings of a lesson. The 'Code' column clearly and comprehensively displays all the codes set for a lesson. The code Z denotes lessons where a time request has been entered.

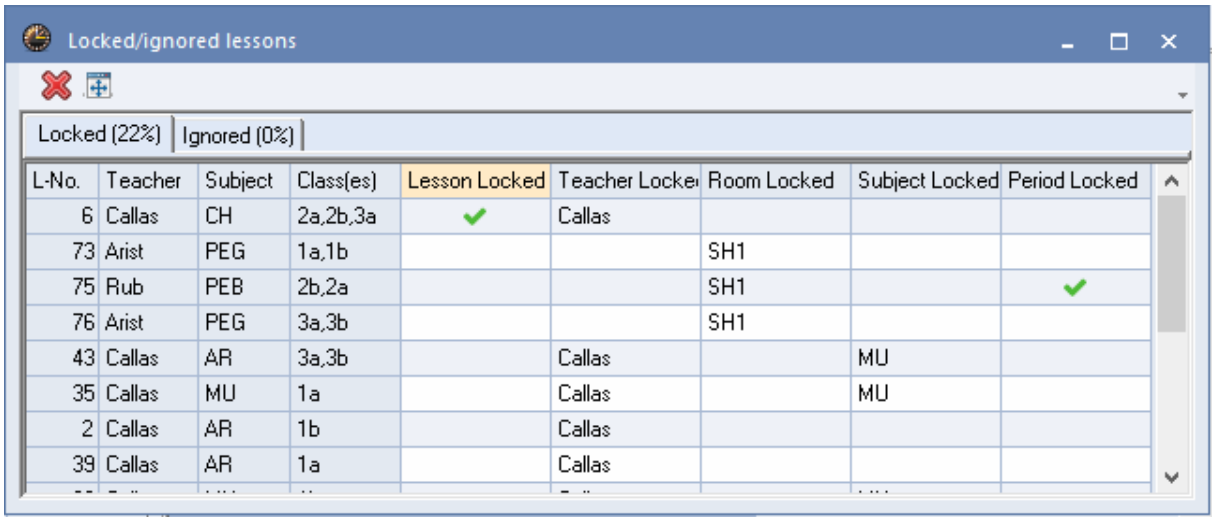


Check the relevant box under <Settings> in this lessons window if you wish inherited codes, i.e. codes entered for a master data element of these lessons, to be displayed in parentheses.



2.4.8 Locked lessons

The menu item 'Lessons | Locked lessons' allows you to open a window listing all locked lessons . It is irrelevant if the lessons in question have been locked as individual periods , aslessonsor via anotherelementorlesson group.



L-No.	Teacher	Subject	Class(es)	Lesson Locked	Teacher Locke	Room Locked	Subject Locked	Period Locked
6	Callas	CH	2a,2b,3a	✔	Callas			
73	Arist	PEG	1a,1b			SH1		
75	Rub	PEB	2b,2a			SH1		✔
76	Arist	PEG	3a,3b			SH1		
43	Callas	AR	3a,3b		Callas		MU	
35	Callas	MU	1a		Callas		MU	
2	Callas	AR	1b		Callas			
39	Callas	AR	1a		Callas			

You can remove locked lessons from the window by clicking on the cell in question and then clicking on the <Delete> button in the toolbar.

Note:
It is not enough to select the row in question – you must click on the cell in the row that causes it to be locked. You can read more about locking in chapterLockingin theUser tipssection.

2.5 Toolbar functions

The general functions are explained in chapter Master data / Toolbar functions .

You will only find the following special functions in the lessons window:

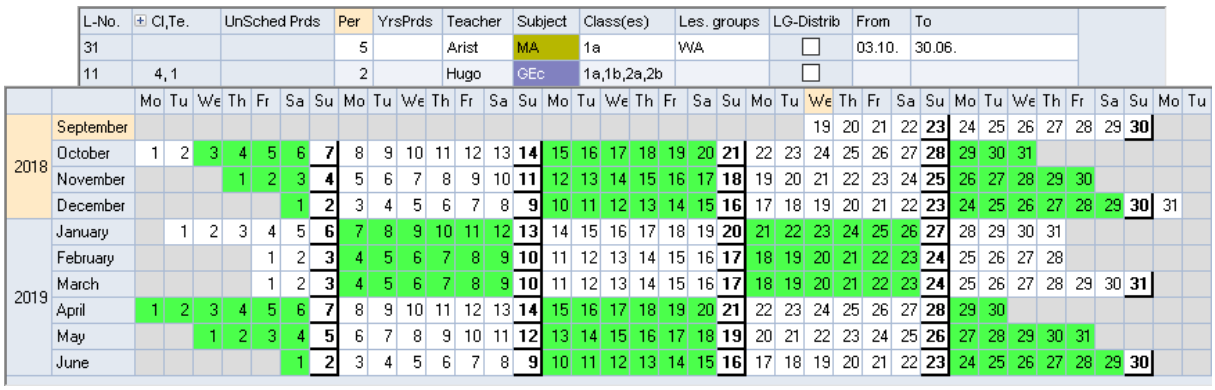
Create coupling
Please refer to chapter Coupling lessons .

Extended decoupling
Please refer to chapter Decoupling lessons .

Teacher suggestion
Please refer to chapter Teacher suggestions under Lesson planning .

Calendar
You can use the Multi-week timetable module to specify time restrictions for master data elements and lessons , and define lesson groups (time ranges). The school year calendar displays the selected lesson

in green for the period in which the lesson can be held.



L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Les. groups	LG-Distrib	From	To
31			5		Arist	MA	1a	WA	☐	03.10.	30.06.
11	4, 1		2		Hugo	GEc	1a,1b,2a,2b		☐		

		Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu
2018	September																								19	20	21	22	23	24	25	26	27	28	29	30		
	October	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
	November				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
	December						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
2019	January		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
	February					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
	March					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	April	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30							
	May			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
	June						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		

Lesson comparison

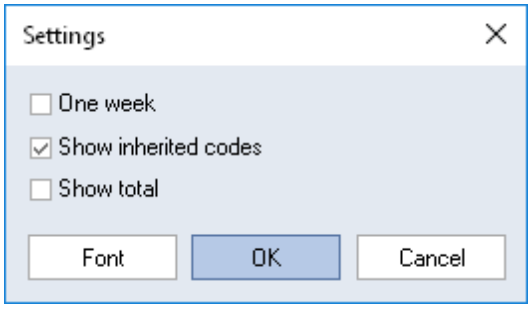
Please refer to chapter Lesson comparison under Lesson planning .

Convert lesson(s) into course(s)

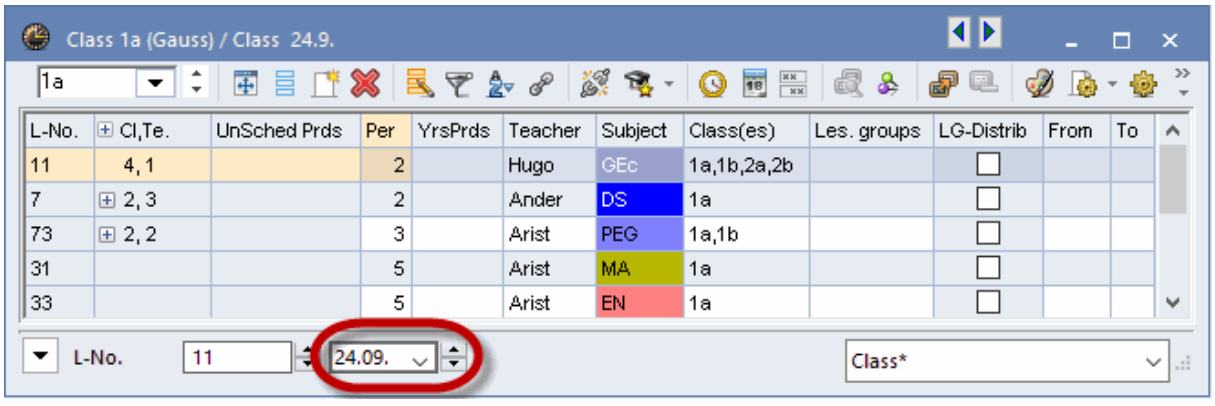
Please refer to chapter Specifying courses under Course scheduling

Settings

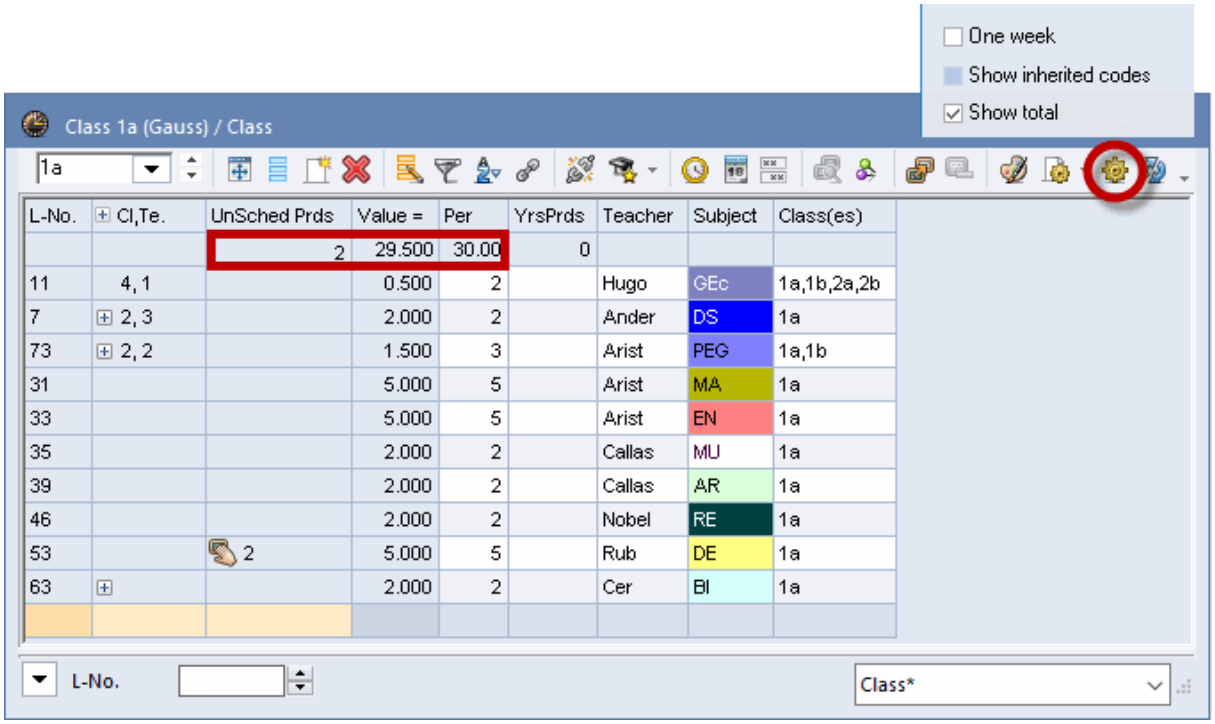
You can select <Settings> to tailor the grid view of the lesson window to your requirements.



- **One week** - This check box is only activated if you use the Multi-week timetablemodule. Only those lessons taking place in a specific week will be displayed.



- **Show inherited codes** - This option affects the codes field. Please refer to chapterDisplaying codes.
- **Show total- Use this setting to display a row with totals below the header row in the grid view. The value of individual fields will be totalled for numeric fields. <**

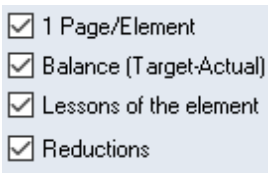


Tip: Context menu
You can also display the totals row by right-clicking on the header row.

2.6 Printing

The print function in the lesson views works in exactly the same way as the print function in the master data views .

The <Details> window under print selection offers additional settings that are only relevant for lessons.



1 Page / Element

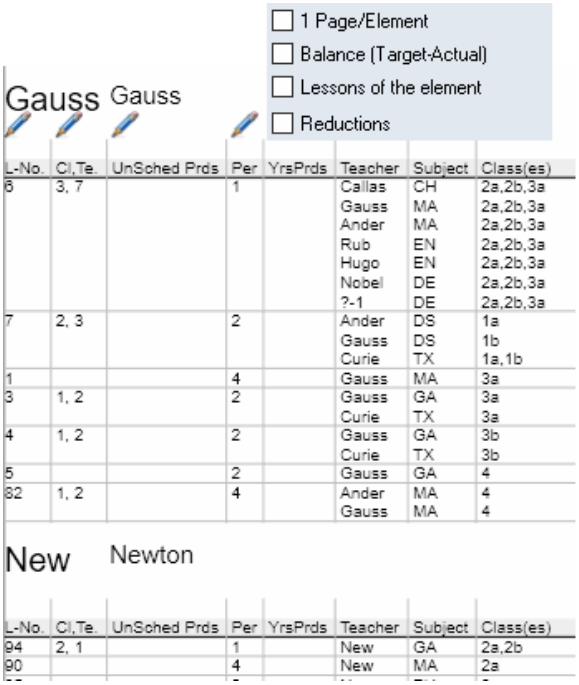
This option allows lessons of the various elements (Teachers or classes) to be printed on separate pages.

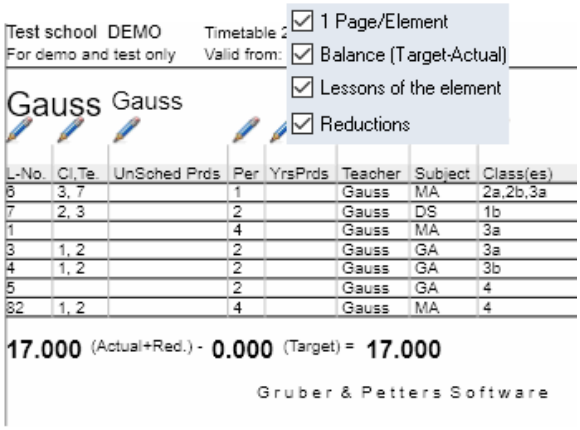
Balance (Target-Actual)

This option prints a balance row. This function is only possible in combination with the module Lesson planning and value calculation .

Lessons of the element

In the case of coupled lessons , this option deactivates the printing of rows that are not relevant for the active element.



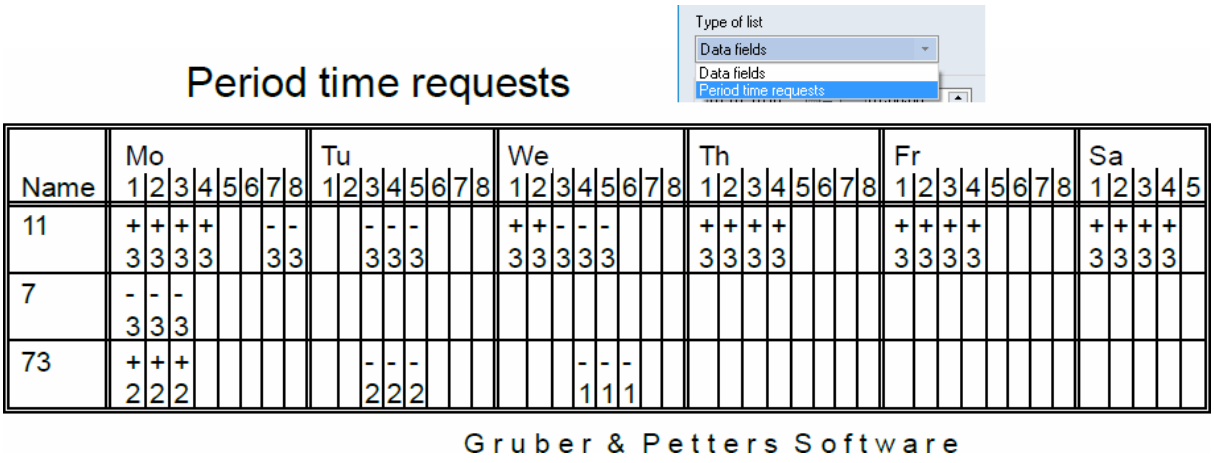


Reductions

The Reductions option only makes sense in combination with the module Lesson planning .

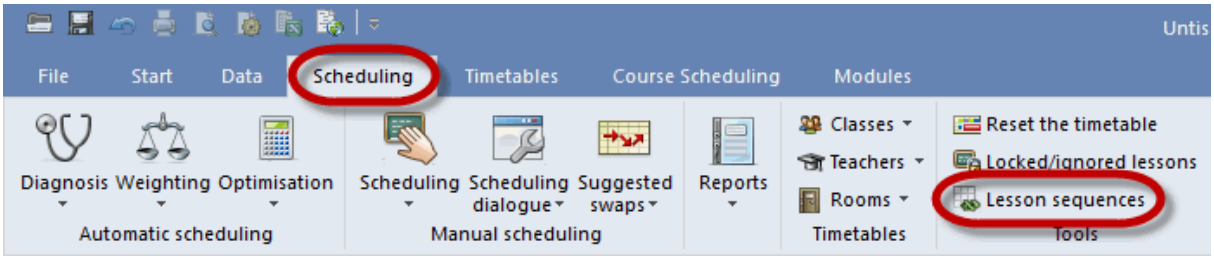
Period time requests

The print selection dialogue also allows you to print out period time requests (Time requests) for individual lessons.



2.7 Lesson sequences

You can use the lesson sequence function, accessed via the 'Scheduling' tab to influence how lessons are scheduled. There are four different types of lesson sequence:



- Fixed (subject) sequences
- Simultaneous lessons
- Sequence in a week

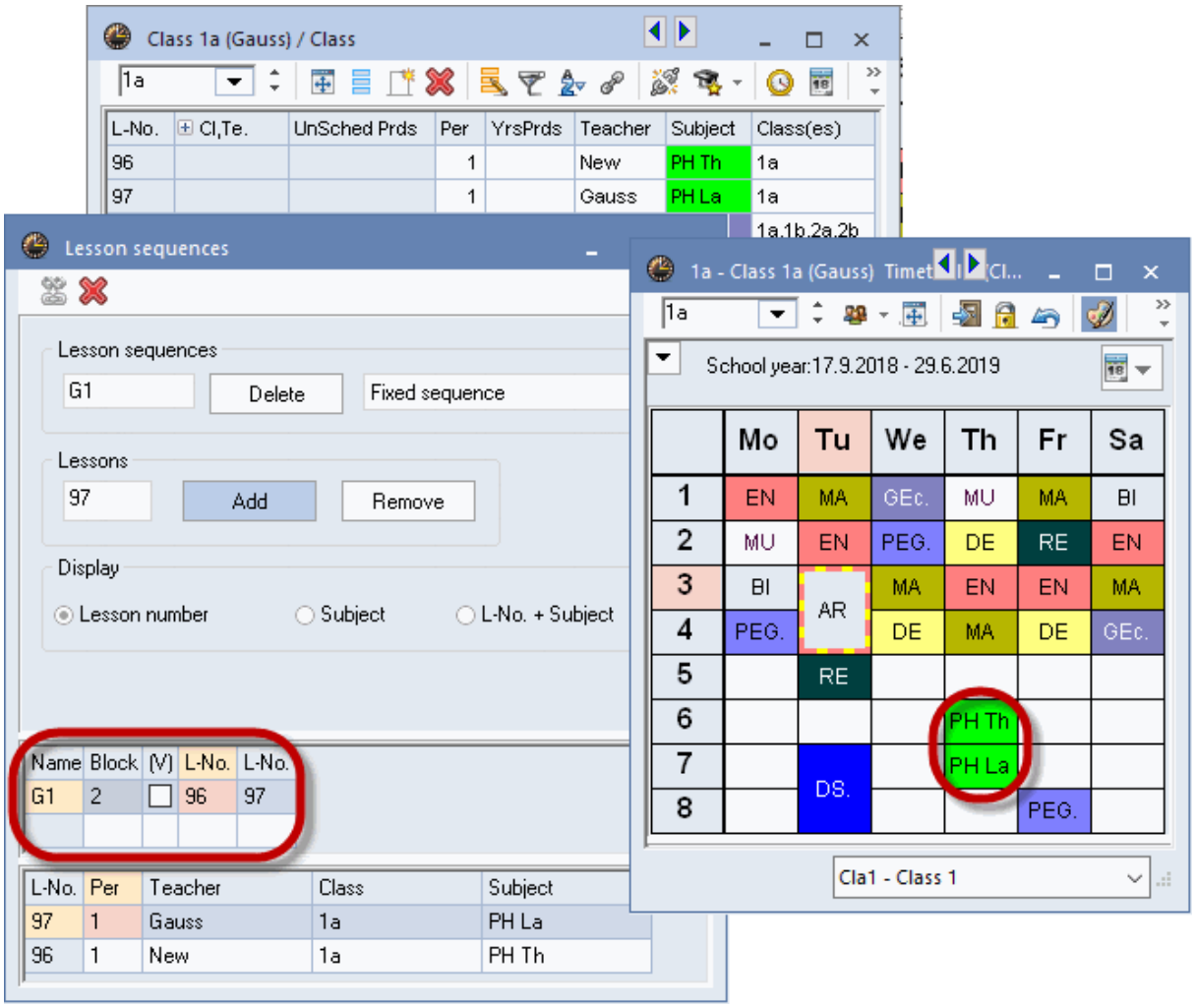
2.7.1 Fixed (subject) sequence

3 Use the fixed subject sequence to specify the periods that must be scheduled in sequence.

Access the Lesson sequences window on the 'Scheduling' tab, set the drop-down list at the top right to *Fixed sequence* and enter the lessons that are to be scheduled in sequence.

Example

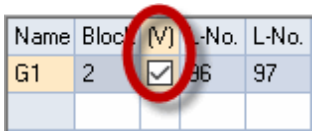
The physics theory lesson for class 1a, lesson 96, should immediately precede practical physics, lesson 97. Once the subject sequence has been specified, Untis will now schedule the periods to take place sequentially.



Note: Entering with double-click
Lesson numbers for lesson sequences can also be entered by double-clicking on the lesson number in question (in the 1st column of the lessons view.

Variable fixed (subject) sequence

In the case of a variable fixed subject sequence, the lessons still follow on from each other but their sequence is variable. In the above example, Untis would be able to choose whether to schedule the theory or practical (lab) lesson first.



Warning: All periods of the lesson
With fixed sequences all periods of a lesson are scheduled as a block. If you schedule a two period and a three period lesson in a fixed sequence, you create a five periods block without having to enter anything in the 'Block' column in the lesson window.

2.7.2 Sequence in a week

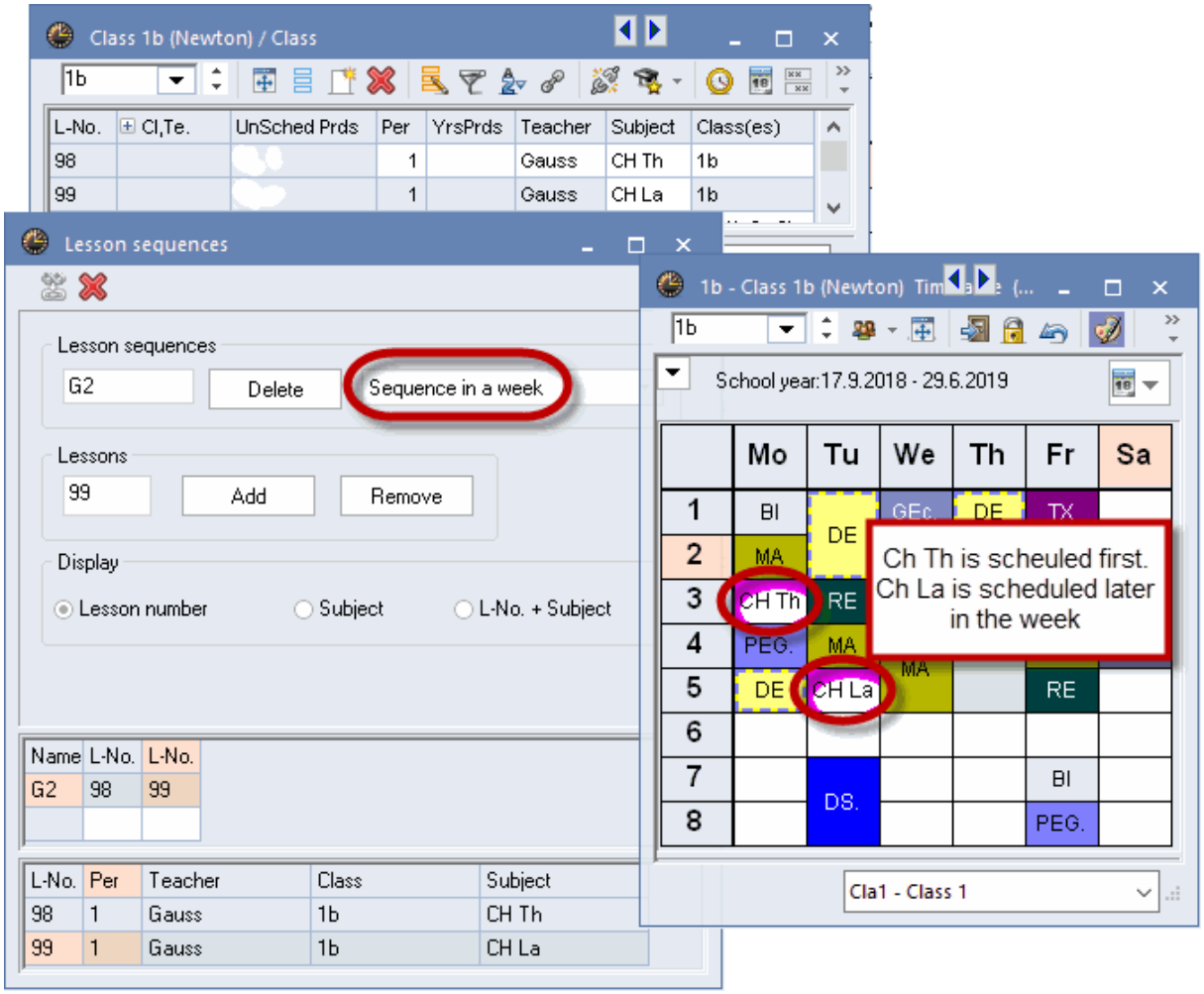
The week sequence allows you to specify the order of class lessons during the week. This function is designed for use with lessons with one or two periods per week.

Access the Lesson sequences window on the 'Scheduling' tab, set the drop-down list at the top right to *Sequence in a week* and enter the lessons that are to be scheduled in sequence.

Example

The chemistry theory lesson for class 1b is to be scheduled, with the chemistry lab lesson following sometime later in the week.

If a sequence is now entered for the week as shown in the example, Untis will schedule L-No. 98 before L-No.99.



A maximum of 3 lesson numbers are possible in the week sequence.

2.7.3 Simultaneous lessons

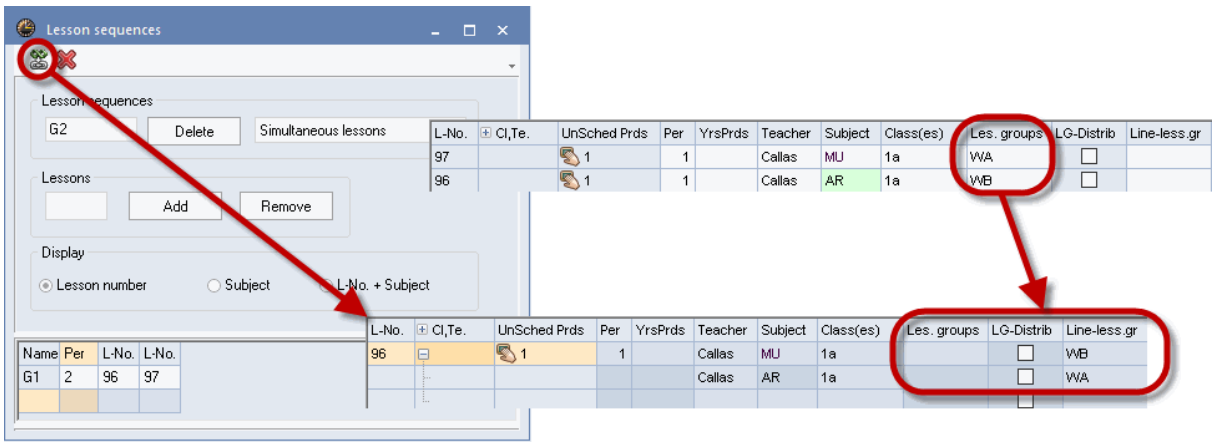
In certain circumstances, for example in combination with the course scheduling module or lessons that take place fortnightly, it may be desirable but not essential to schedule different lessons at the same time. You can define this condition here.

Access the Lesson sequences window on the 'Scheduling' tab, set the drop-down list at the top right to *Simultaneous lessons* and enter the lessons that are to be scheduled in sequence.

The difference between simultaneous lessons and coupled lessons is that the optimisation tool is permitted to split simultaneous lessons. Coupled lessons, on the other hand, can never be split.

Converting lesson sequences into couplings

In the 'Lesson sequences' window you now can convert those sequences which are marked as ‘simultaneous lessons’ into couplings by one click. If these lessons have lesson groups assigned they are migrated into the field 'Lines lesson groups'.



3 Optimisation

3.1 Timetable optimisation

The following chapter describes the timetable optimisation function and the diagnosis tools used before and after an optimisation run.

The program starts with an empty time grid and proceeds to fill the grid with periods. Since this alone would not necessarily produce the best results, the generated timetable then undergoes a series of specific period swaps to improve the final outcome. In the end, the weighting settingsyou have specified will determine the actual quality of the timetable.

3.2 Weighting

The weighting function is the basis of the automated timetable optimisation tool. Untis offers six levels of importance ranging from 'unimportant' (0) to 'extremely important' (5) which allow you to specify the level of priority given to the individual settings.

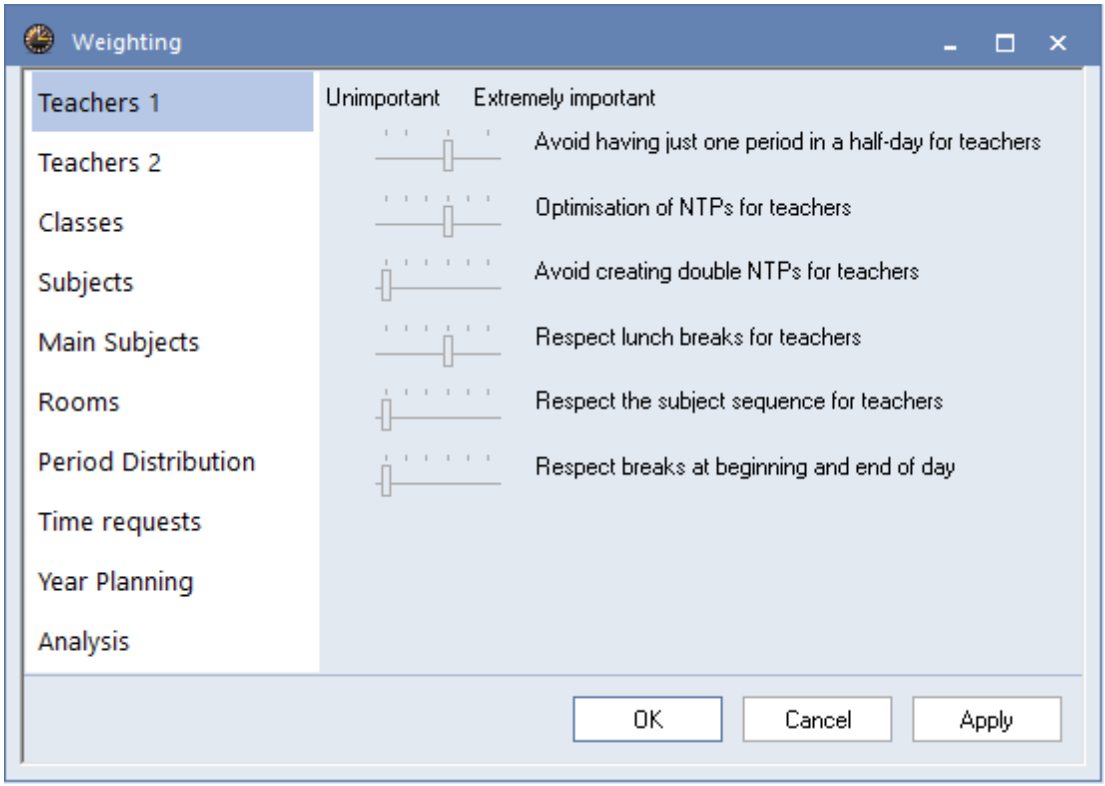
Note:
Some weighting points only become effective after specific data has been entered in the master data or in one of the 'Lessons' windows (please refer to chapter 'Data entry'). Other weightings, however, are data independent and affect every optimisation run.

The function 'Respect the maximum and minimum number of periods per day for teachers', for instance, is a dependent weighting point since it depends on data entered under 'Periods day Min-Max' on the 'Timetable' tab in the 'Teachers | Master data' window (e.g. '2- 4'). The weighting determines the level of importance of these settings (i.e. the degree of compliance with the settings). Leaving the field empty means that the weighting has no effect on the optimisation process.

Independent weighting points, however, involve general settings such as 'Avoid non-teaching periods (NTPs)' or 'Avoid having just one period in a half-day for teachers' since single periods and NTPs do not require additional specifications to be entered under master data *or* lessons *.*

The weighting settings *can be accessed via the <Weighting> button on the 'Start' tab.*
The weighting dialogue contains the different weighting parameters *sorted by topic. Increase or decrease individual weighting settings by using the slider controls. From left to right, the weighting sliders offer 6 different levels of importance:*

- *Position 0 - unimportant*
- *Position 1 - not very important*
- *Position 2 - fairly important*
- *Position 3 - important*
- *Position 4 - very important*
- *Position 5 - extremely important*



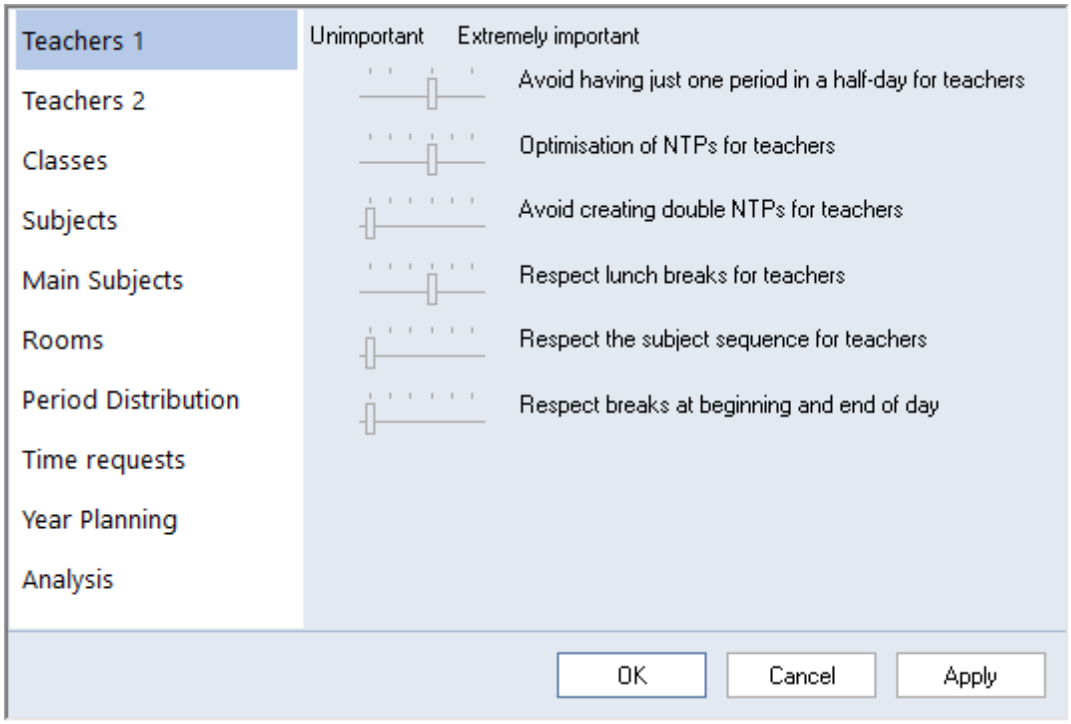
The following chapter briefly describes the individual parameters with reference to the master data and lesson data settings relevant for dependent weighting points.

3.2.1 The weighting parameters

The weighting parameters are topic-based and can be modified on the appropriate tab.

Section: Teachers 1
Section:Teachers 2
Section:Classes
Section:Subjects
Section:Main Subjects
Section:Rooms
Section:Period Distribution
Section:Time requests
Section:Analysis

3.2.1.1 Section: Teachers 1



Avoid having just one period in a half-day for teachers

When a teacher has lessons on a half-day, a high weighting ensures that the teacher will teach more than one period.

Optimisation of NTPs for teachers

In the 'Teachers | Master Data' window, you have entered values for maximum and minimum numbers of NTPs (Non Teaching Periods). Use this slide to control the level of compliance with the specified settings.

Avoid creating double NTPs for teachers

In addition to controlling single NTPs, you can give penalty points for each double NTP scheduled by the software during optimisation.

Respect lunch break for teachers

Applies to the settings entered for minimum/maximum length of lunch break for teachers under 'Teachers | Master Data'.

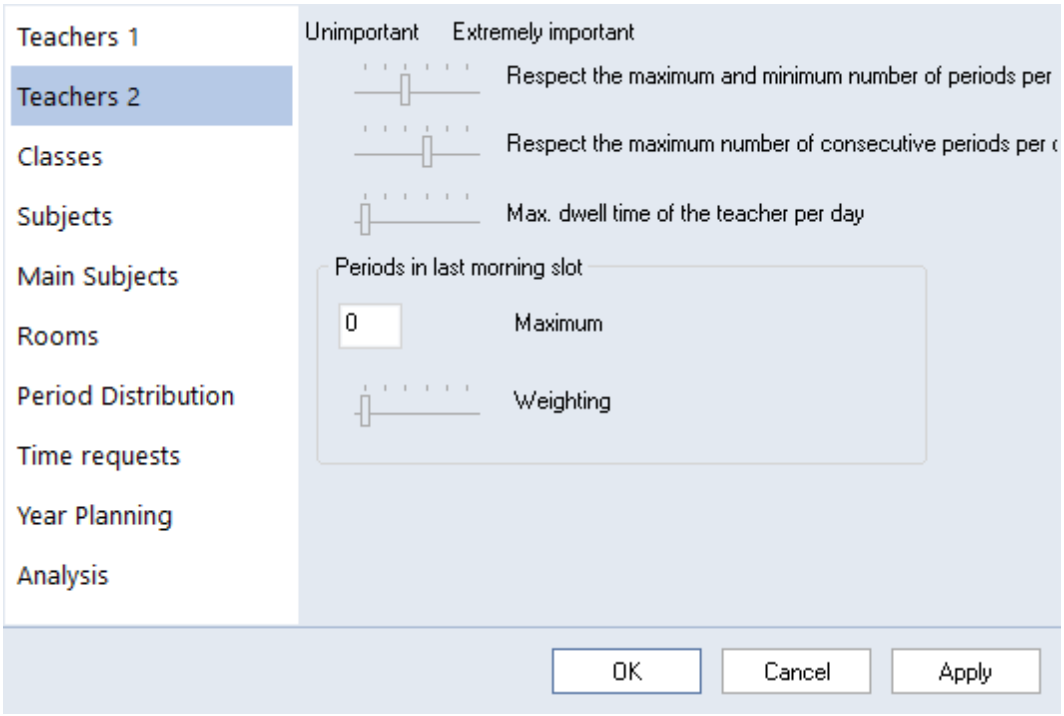
Respect subject sequence for teachers

Controls the level of importance of the subject sequence codes entered in one of the 'Lessons' windows or in the 'Subjects | Master Data' window. For further details, please refer to chapter 'User tips: Subject sequences'.

Respect breaks at beginning and end of day

Controls the level of importance of breaks at the beginning and the end of a day entered on the 'Timetable' tab under 'Teachers | Master Data'. For further details on breaks at the beginning and the end of the day, please refer to chapter 'Master data properties'.

3.2.1.2 Section: Teachers 2



Respect the maximum and minimum number of periods per day for teachers

Controls the level of compliance with the values entered in the 'Teachers| Master Data' window for maximum / minimum number of periods per day for teachers.

Respect the maximum number of consecutive periods per day

Controls the level of compliance with the values entered in the 'Teachers| Master Data' window for maximum number of periods per day in sequence.

Max. dwell time of the teacher per day

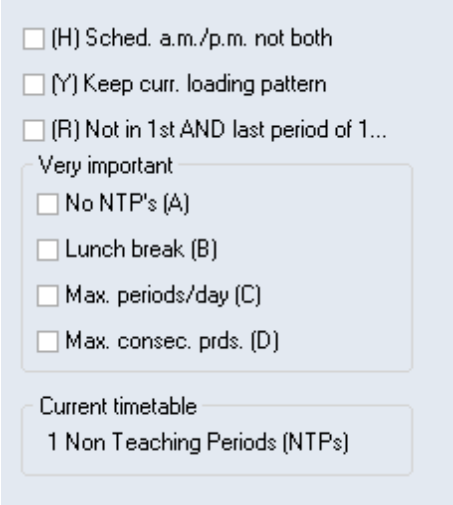
Controls the number of hours a teacher is allowed to spend per day in school maximum. This dwell time is defined in the input field of the 'Teachers| Master Data" window.

Input block 'Periods in last morning slot

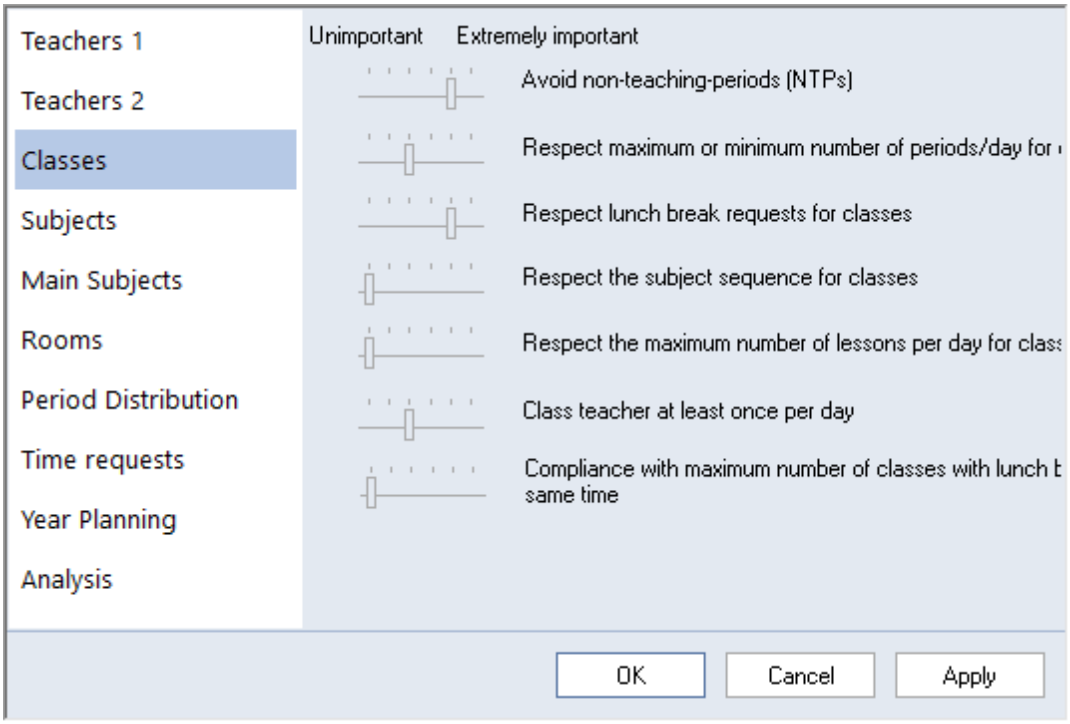
Maximum
Teachers scheduled to have lessons in the last period of the morning are often at a disadvantage. You can therefore specify the maximum number of last morning periods each teacher should teach.

Weighting
Indicates the level of compliance to this rule.

On the 'Timetable' tab in the 'Teachers| Master Data' window, the weighting for NTPs, lunch break, maximum number of periods per day and maximum periods in sequence for individual teachers can be increased further (to 'Very important').



3.2.1.3 Section: Classes



Avoid non-teaching periods (NTPs)
- Controls the avoidance of NTPs for classes.

Respect maximum or minimum number of periods/day for classes
- Controls the level of compliance with the values entered under 'Classes | Master Data'.

Respect lunch break requests for classes
- Controls the level of compliance with the values entered under 'Classes | Master Data' for minimum / maximum length of a lunch break.

Respect the subject sequence for classes
- Controls the level of compliance with the subject sequence codes specified in one of the 'Lessons' windows or under 'Subjects | Master Data'.

Respect the maximum number of lessons per day for classes

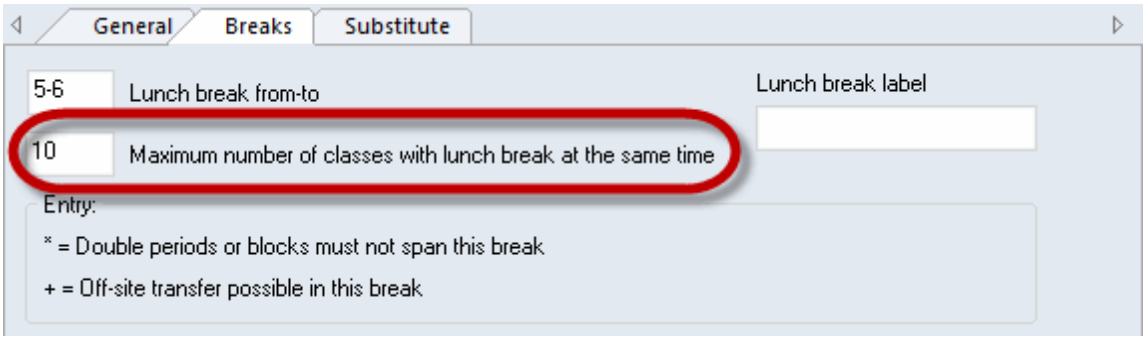
- Controls the level of compliance with the values entered under 'Classes | Master Data' for 'Max. different less./day'.

Class teacher at least once per day

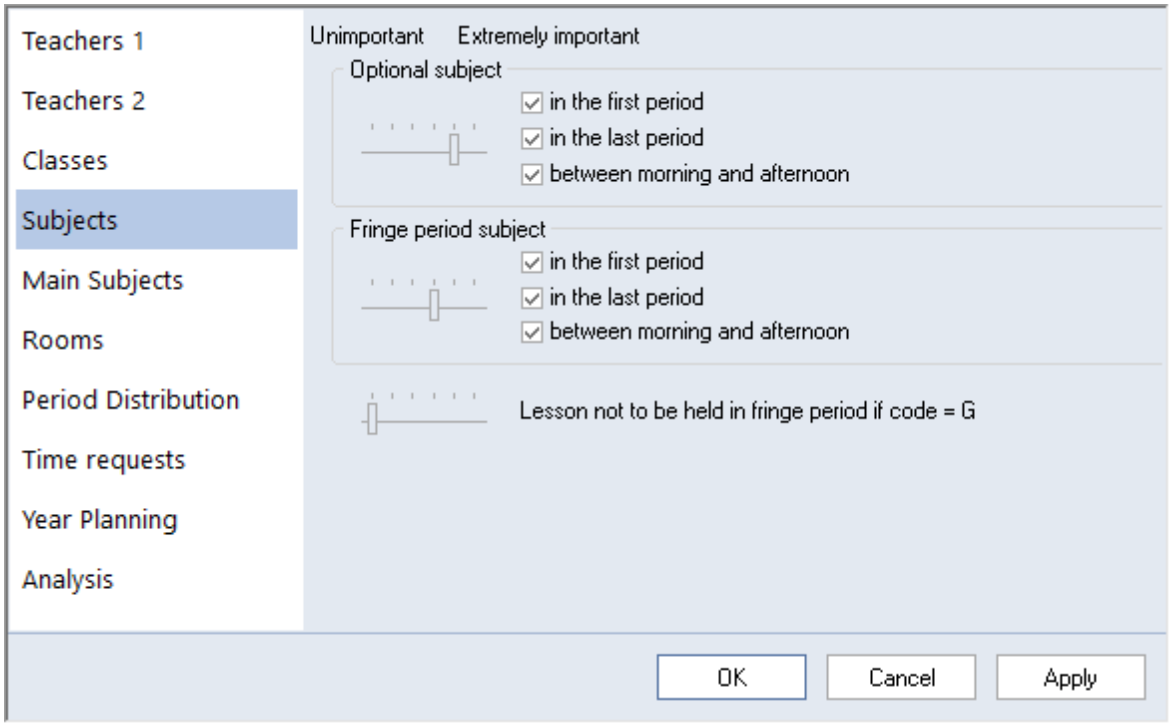
If you have assigned class teachers to classes in the 'Classes | Master Data' window, the optimisation function tries to schedule every class teacher to his/her class at least once a day. This weighting parameter controls the respective level of compliance.

Respect the max. number of classes having lunch break at the same time

You can define in the time grid how many classes maximum should have their lunch break at the same time. This frame condition cannot be weighted here.



3.2.1.4 Section: Subjects



Use the following weighting settings to control the level of compliance with the specifications entered for

optional subjects and fringe period subjects. These are defined under 'Subjects | Master Data' or in one of the 'Lessons' windows (code '(O)' for optional subject and code '(F)' for fringe period).Fringe period and optional subjects are usually lessons not attended by all the students of a class. To avoid NTPs for the rest of the students, these subjects should preferentially be scheduled at the beginning or the end of a halfday.

You have three possible rules to define for optional subjects and fringe periods by checking the box next to it.

- 'in the first period', if the first period of the day is available for scheduling
- 'in the last period', if the last period of the day is available for scheduling
- >-'between morning and afternoon', if the time between the morning and afternoon periods is available for scheduling

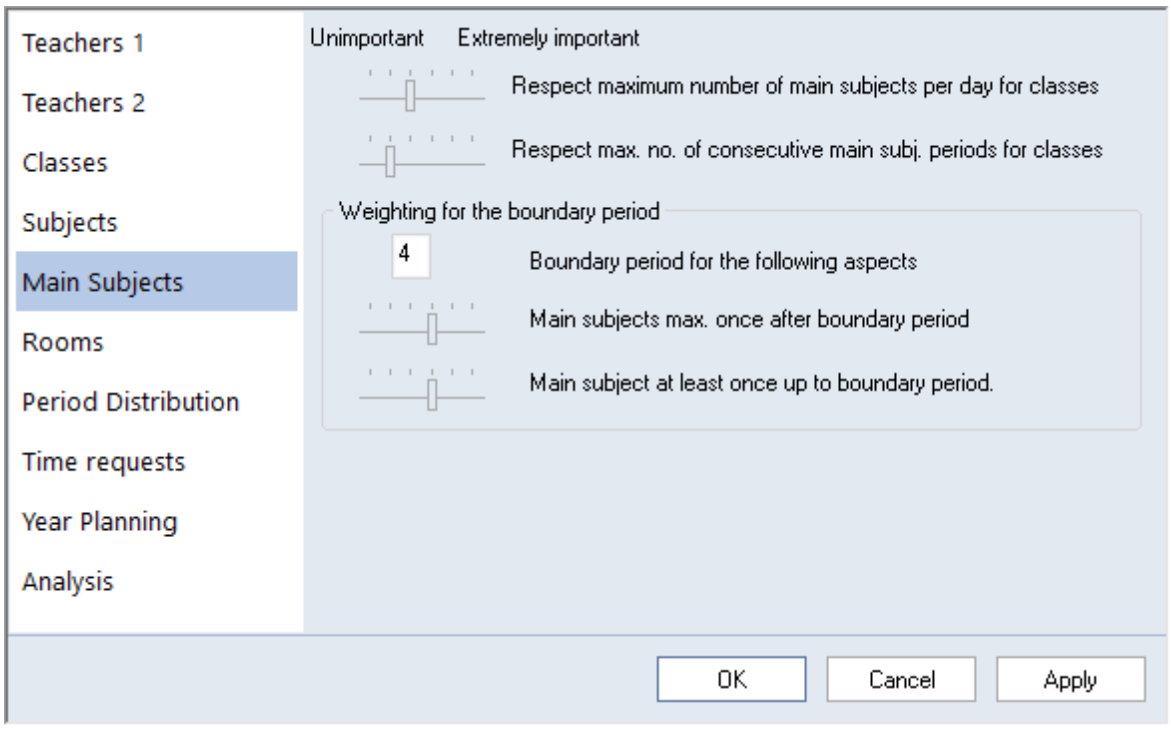
The only difference between optional and fringe period subjects are the different weighting settings you have defined.

Note:
You can also control the scheduling of fringe period and optional subjects exclusively via the time request function. However, the optimisation tool will profit from a higher degree of flexibility when working with weighting settings rather than time requests.

Lesson not to be held in fringe period is code = G

A subject or lesson marked with G is not to be scheduled in fringe periods, but rather in the 'middle' of the day. This weighting controls the level of importance of the settings.

3.2.1.5 Section: Main Subjects



Main subjects can be defined under 'Subjects | Master Data'.

Respect maximum number of main subjects per day for classes

Controls the level of compliance with the specification 'Maximum number of main subjects per day' entered in the 'Classes | Master Data' window (on the 'Timetable' tab or in the grid view).

Respect max. no. of consecutive main subj. periods for classes

In the 'Classes | Master Data' window (on the 'Timetable' tab or in the grid view) you can specify the number of main subjects that may be scheduled in sequence for a class. This weighting controls the level of importance of the settings.

Input block 'Weighting for the boundary period'

Boundary period for the following aspects

Use this input field to specify a boundary period.

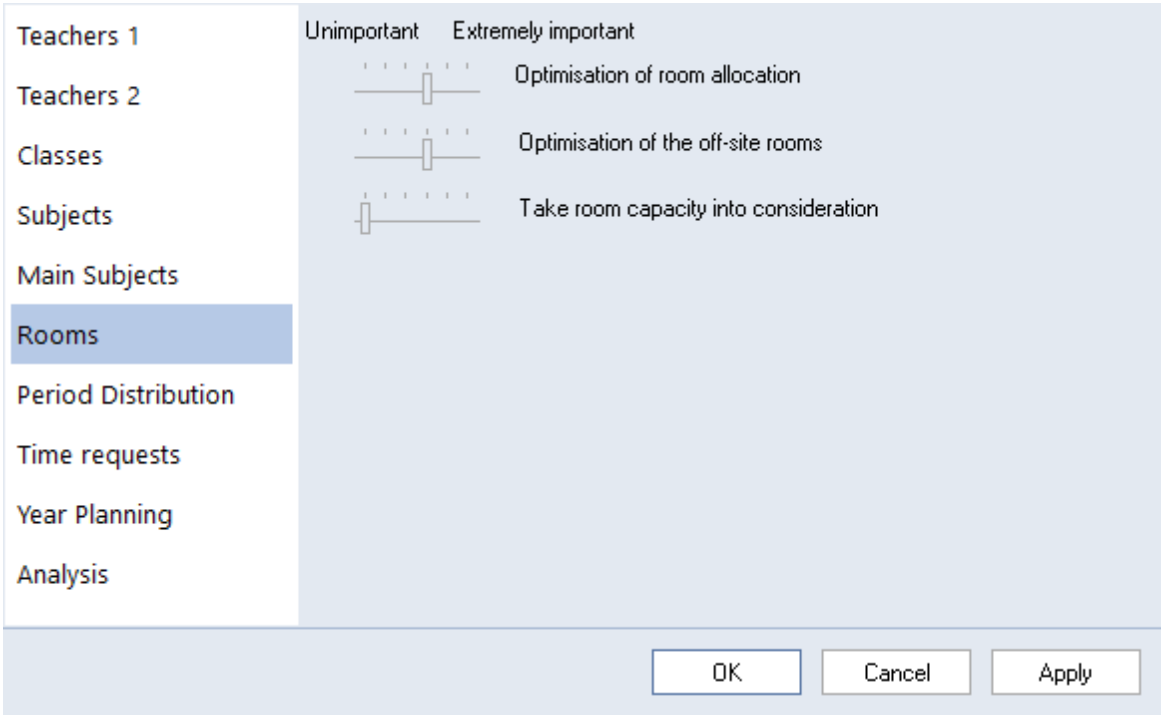
Main subjects max. once after boundary period

Controls the level of importance for the above specification (per week).

Main subject at least once up to boundary period

Controls the level of importance for the above specification (including the boundary period) per week.

3.2.1.6 Section: Rooms



Optimisation of room allocation

Via the 'Room Weight' field under 'Rooms | Master data' you define how important a room is for a lesson. A room without specific equipment can easily be replaced by another room (enter 0), a PE lesson only makes sense when the sports hall is available (enter 4).
The 'Optimisation of room allocation' weighting controls the level of importance of the entered room weighting.

Warning:
If the weighting slider is set to 5 ('extremely important') or 4 ('very important') and if, in addition, the room

weighting of the subject room is set to 4, the lesson will not be scheduled unless a suitable subject room can be found.

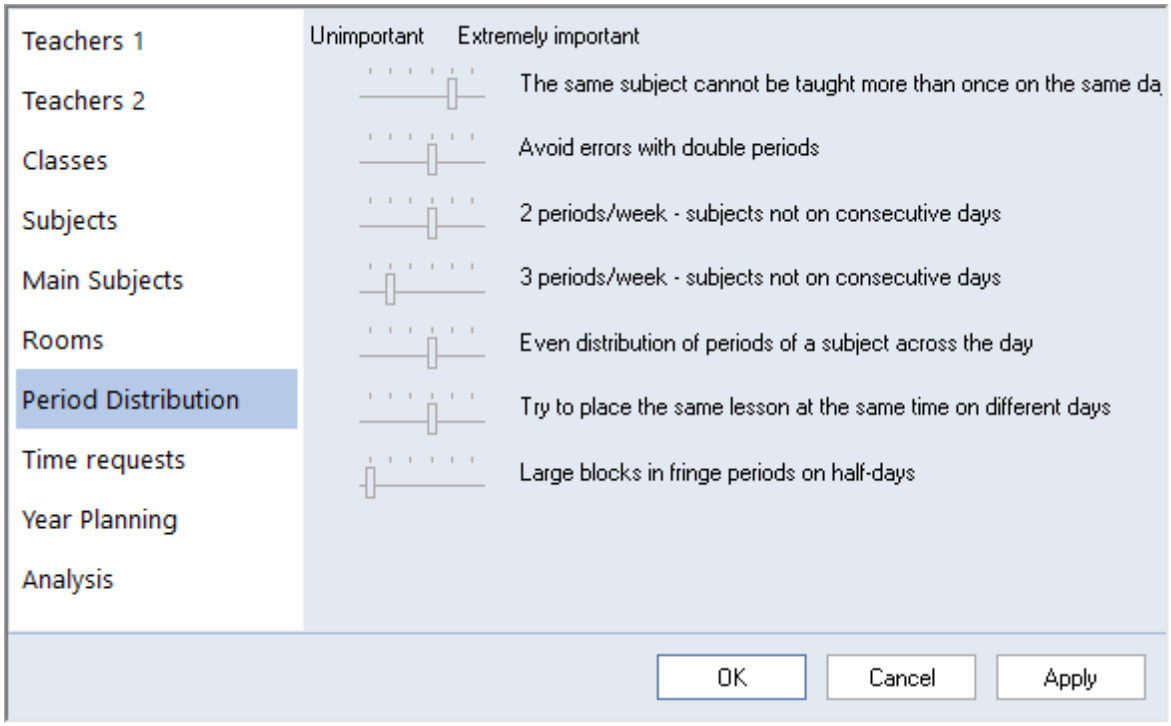
Optimisation of the off-site rooms

- Controls the level of compliance with the specified walking times required to reach off-site buildings (e.g. external sites). Please refer to chapter 'User tips | Off-site rooms' *for further details.*

Take room capacity into consideration

As a rule, the optimisation tool and the room optimisation function attempt to allocate a room with a room capacity appropriate for the number of students in the class. If this presents a problem, the programme searches for a room that is slightly larger than required. In extreme cases, the software may allocate a room that is slightly smaller than required.

3.2.1.7 Section: Period Distribution



The same subject cannot be taught more than once on the same day

Specifies that a subject must not be scheduled more than once a day for a class (even if the subject is involved in a number of different coupled lessons).

Avoid errors with double periods

Untis identifies two types of double period errors: the splitting of desired double periods and the 'accidental' emergence of undesirable double periods when the same subject is scheduled for consecutive periods. Of the two errors, the optimisation tool assigns a higher priority to the preservation of desired double periods.

This weighting is connected with codes '(2) More than once a day' and '(D) Respect double periods'. You can find these settings in the master data and the 'Lessons' windows. The two codes are mutually exclusive.

Code '2' causes the weighting for 'Avoid errors with double periods' to be set to 0 ('unimportant'), while code 'D' increases the importance of the weighting. This increase in importance can result in a situation

where a lesson will not be scheduled because the software cannot comply with the double period condition.

When you set the weighting for 'Avoid errors double periods' to 'extremely important' (position 5), the optimisation tool rates the importance of the double period condition very high right from the very beginning of the optimisation run and even increases the importance during the run so that at the end of the optimisation process, all lessons are treated automatically as if the lessons had been coded '(D) Respect double periods'.

Warning:
Activate code '(D) only in exceptional cases or not at all'. Excessive use leads to a deterioration of the optimisation results

2 periods/week - subjects not on consecutive days

This weighting applies to lessons with 2 block lessons (single and double periods or blocks) and is designed to ensure that they are evenly spread throughout the week. A high weighting prevents the software from scheduling the lessons on consecutive days or from scheduling one block on the last week day and the other on the first week day.

3 periods/week - subjects not on consecutive days

This weighting applies in the same way as the previous one, but for 3 block lessons.

Even distribution of periods of a subject across the day

A high weighting ensures that a subject scheduled for Monday, period 3, is scheduled for a different period on subsequent days of the week, i.e. not period 3. This weighting controls the level of importance of this rule.

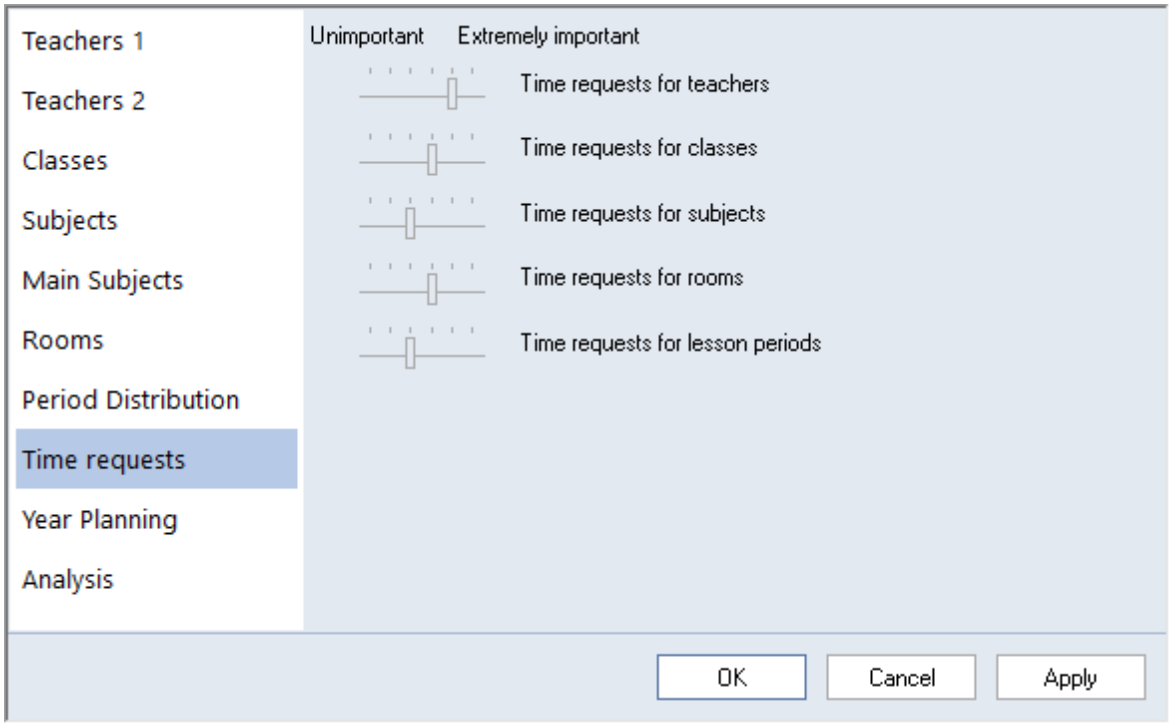
Try to place the same lesson at the same time on different days

A high weighting ensures that a subject scheduled for Monday, period 3, is also scheduled for period 3 on other days of the week. This weighting controls the level of importance of this rule.

Large blocks in fringe periods on half-days

For a variety of reasons, it is often desirable to schedule block lessons at the beginning or end of a half-day. A half-day consisting of 6 periods can therefore accommodate 2 blocks of 3 periods each. Since block lessons are often slightly shorter than the sum of the single periods (for instance, because there are no breaks between periods), students will be able to leave school early or start school later than the normal start time.

3.2.1.8 Section: Time Requests



Time requests can be entered via the master data or in one of the 'Lessons' windows by clicking on the button <Time requests>. For further details, please refer to the chapter 'User Tips | Time requests' .

Time requests for teachers
Controls the compliance with time requests entered under 'Teachers | Master Data' .

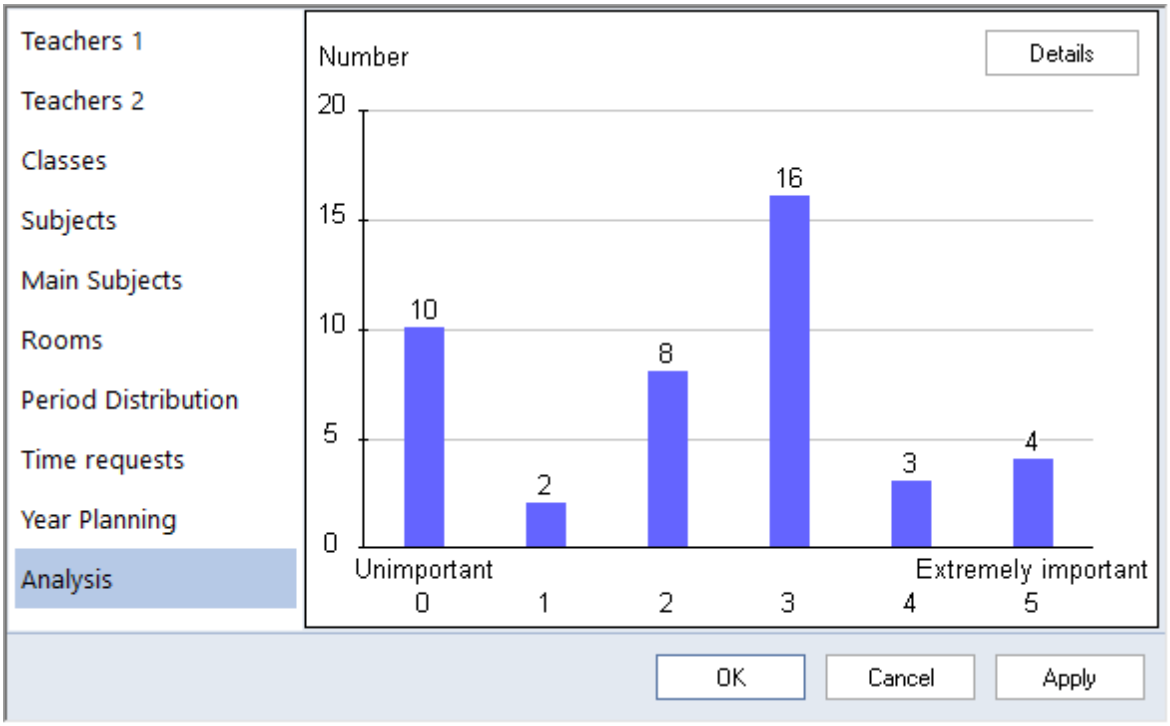
Time requests for classes
Controls the compliance with time requests entered under 'Classes | Master Data' .

Time requests for subjects
- Controls the compliance with time requests entered under 'Subjects | Master Data' .

Time requests for rooms
Controls the compliance with time requests entered under 'Rooms | Master Data' .

Time requests for lesson periods
Controls the compliance with time requestsentered in one of the 'Lessons' windows.

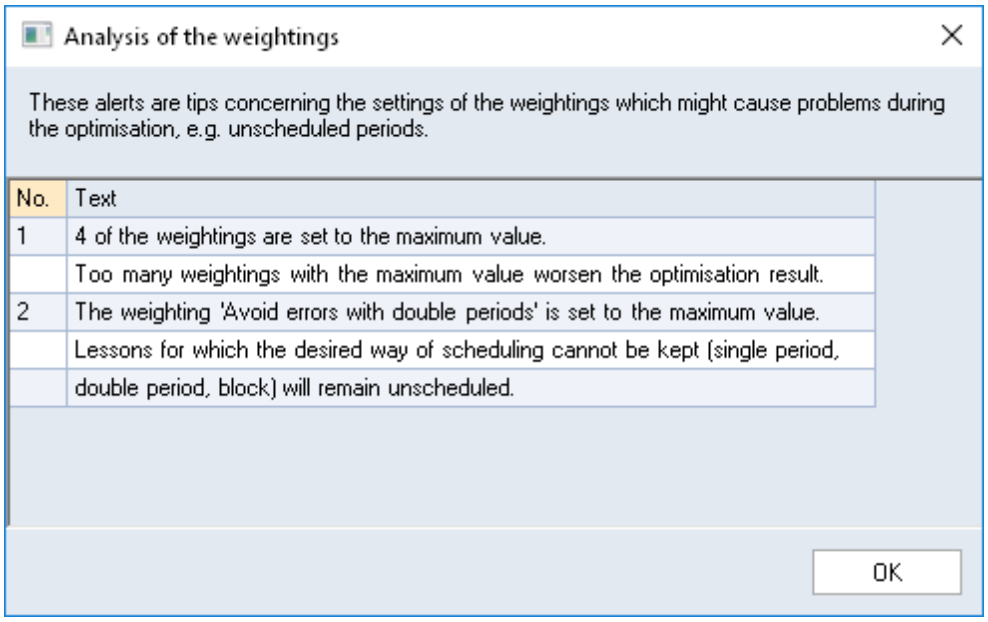
3.2.1.9 Section: Analysis



A well-balanced distribution of the weighting is the prerequisite for a good optimisation result. The Analysissection offers an overview of the frequency of the different weighting levels.

In our example about 4 weighting parameters are set to the highest weighting level 5 (extremely important).

You can get more information about possible problems because of the distribution of the weighting by clicking on the button <Details>.



3.2.2 General notes

If you have not worked with the weighting parameters before, we would suggest you proceed as follows:

First, familiarise yourself with all the weighting parameters and their functions.

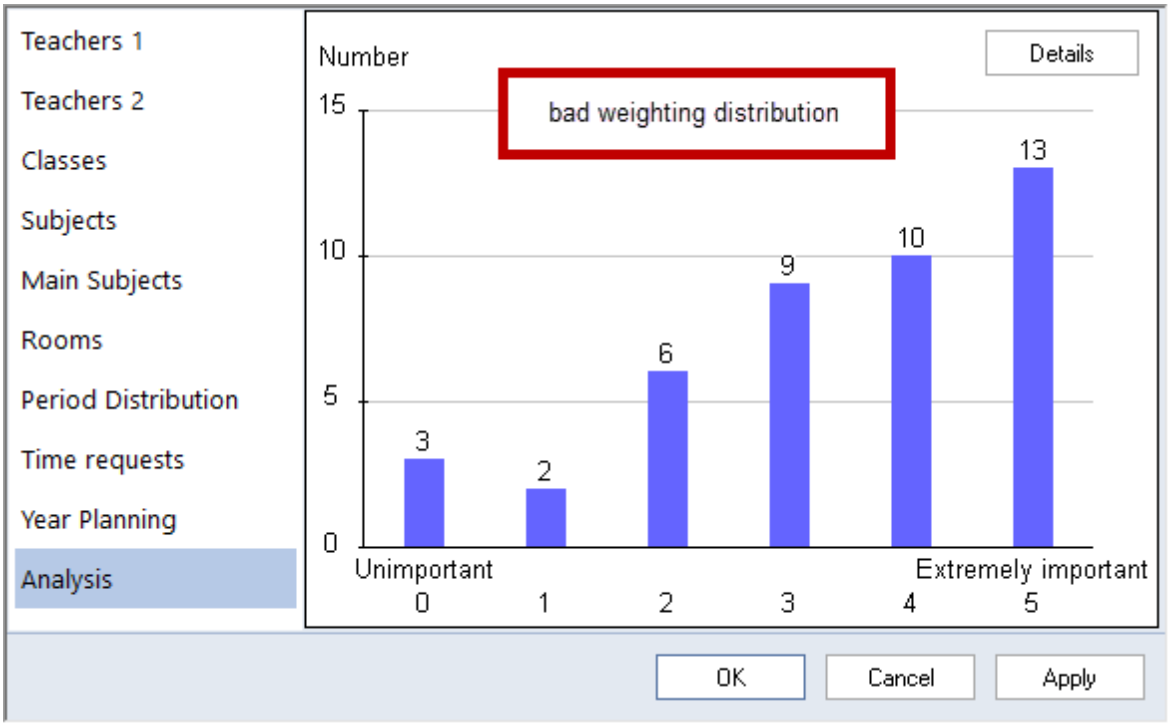
Then, move the sliders for all the attributes that **do not apply to your school under any circumstances** to the very left (position 0 = unimportant), for instance, for 'Optimisation of the off-site rooms', if your school has no off-site rooms.

Note:
If in doubt about the relative importance of an attribute, set the slider to position 1 (not very important) instead of 0.

Next, adjust the remaining sliders in order of increasing importance from 'not very important' to 'extremely important'.

Watch the frequency with which you assign the different levels of importance. We recommend to decrease the frequency with increasing weighting importance according to the diagram below.

You should never end up with a distribution where a disproportionately large number of weightings are set 'unimportant' (or 'not very important') or to 'extremely important'. Another undesirable situation is a frequency that increases with increasing weighting importance.

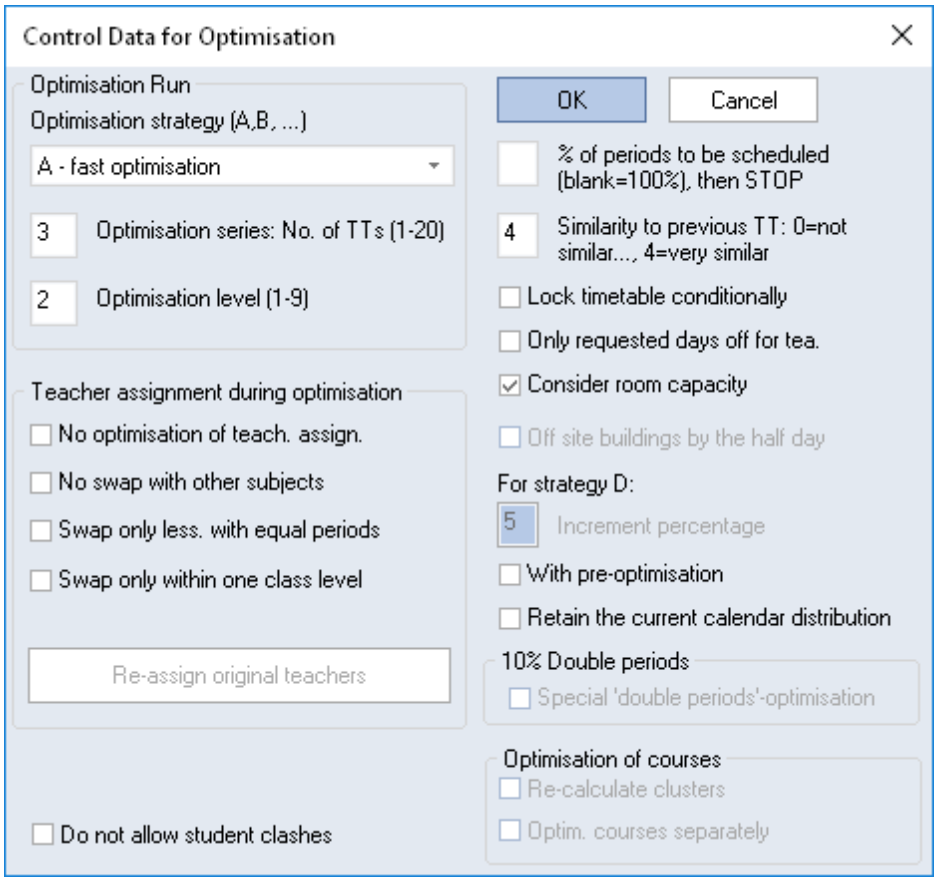


Warning:
The difference between the weighting level 4 and 5 is much higher than between 3 and 4. If you have selected too many settings of 'extremely important', the optimisation tool will be restricted to such an extent that it can only schedule a fraction of the periods. Hence, set parameters on level 5 only if it is absolutely necessary.

3.3 Optimisation

3.3.1 Control data for optimisation

Via the <Optimisation> button on the 'Start' tab you can access the optimisation dialogue.The following chapter describes the individual input fields in this window.



3.3.1.1 Optimisation process

You have a choice of different strategies and optimisation depths.

Strategy A - fast optimisation

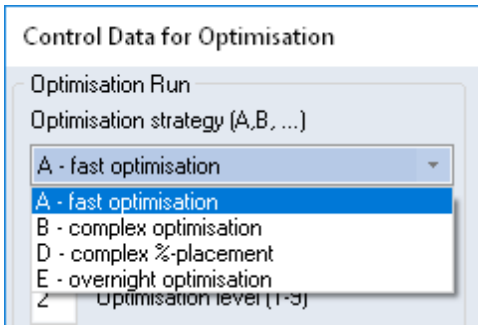
Strategy B - complex optimisation

Strategy D - complex %-placement

Strategy E - overnight optimisation

3.3.1.1.1 Optimisation strategy (A, B, C, D, E)

Untis offers five different strategies for the generation of your timetable. These strategies offer different levels of complexity. Strategy A represents the lowest and Strategy E the highest level of complexity. As a general rule, the more complex the optimisation strategy, the better the result, but the longer it takes the software to compute the result. The differences between the individual strategies are described in a later chapter.



Strategy A - fast optimisation

Strategy B - complex optimisation

Strategy D - complex %-placement

Strategy E - overnight optimisation

3.3.1.1.2 Optimisation series: No. of TTs (1-20)

Use this option to specify how many different timetables you want the software to calculate per series. If the box 'Save the results of the optimisation in work files' is checked in the 'Settings' under 'Miscellaneous', each timetable is saved in a dedicated file (work *x* .gpn where *x* is the number of the file) in the active Untis directory (it is advisable, however, to enter a dedicated path for these work files on the 'Directories' tab). Depending on the selected optimisation strategy, the programme will carry out further optimisation runs for the timetables.

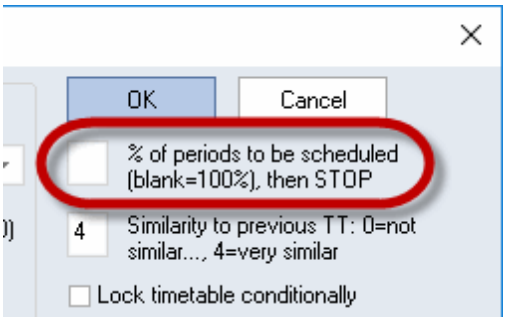
3.3.1.1.3 Optimisation according to timetable

This function allows you to specify the extent of the software's 'pre-calculation function' for each optimisation run. Like a chess game programme, the Untis programme calculates before each 'move' (i.e. before each placement of a lesson) how the move will affect the situation as a whole. Depending on the computer, the size of the school and the figure entered for this option, the optimisation

of a timetable can take between a few seconds and a few minutes. As a general rule, the longer it takes the computer to come to a result, the better the final outcome. In the early stages of a timetable construction, however, long optimisation runs are often counter-productive, since initial results often indicate that certain changes need to be made regarding the input data.

3.3.1.1.4 % of periods to be scheduled

Here you can specify the percentage of periods you want the software to schedule. Leaving the field empty means that the optimisation tool will attempt to schedule all the available periods.



Tip:
The percentage refers to the periods of the entire school. So if you schedule 10% of a total of 1,000 lessons, Untis selects those 100 lessons that are regarded as to be the most difficult ones. This helps you to find out quickly which lessons are difficult to schedule.

3.3.1.1.5 Similarity to previous timetable

Here you can specify if and how much the next timetable should resemble the previously generated one. The input options range from 0 (no similarity) to 4 (great similarity).The new timetable always reflects the modifications you make in the scheduling dialoguebetween optimisation runs. Leaving this field empty a value of '0' is automatically assumed.

3.3.1.1.6 Lock timetable conditionally

If you lock the timetable conditionally, the next optimisation run will skip the placement run and only carry out a swap run. This means that the resulting timetable will be very similar to the previous one. This constitutes an even higher level of similarity than the highest similarity settingof the previous input field (4 = great similarity).

If you have checked the box 'Lock timetable conditionally' and increase at the same time the percentage under '% of periods to be scheduled', the software proceeds by first locking the previous timetable, then scheduling the remaining periods and finally carrying out a swap optimisation run for all the periods.

3.3.1.1.7 Only requested days off for teachers

Tick this option to instruct the software to schedule only the free days specified under time requests for teachers (and no additional days).

Note:
Consider thoroughly if you want to use this field. By checking this box you prevent the scheduling of the best timetable for everybody involved due to the fact that a teacher ‘happens’ to have a free day. This

means that this timetable has become (subjectively) worse for the respective teacher, and certainly from a pedagogic point of view, and also all timetables of the other teachers are affected negatively.

3.3.1.1.8 Consider room capacity

Activate this function to instruct the optimisation tool to compare the specified room capacity with the number of students in a class or lesson and allocate rooms accordingly.

3.3.1.1.9 Off-site buildings by the half day

This option is only active, if you have entered off-site codesin the master data of the rooms. If you have activated it, the algorithm tries to avoid that classes and teachers have to move from one site to another during one half-day.

3.3.1.1.10 Percentage increase

This field is only relevant for strategy D. It is discussed in the respective chapter.

3.3.1.1.11 With pre-optimisation

This setting was created especially for smaller schools. When periods are placed, this funtion significantly increases the number of variations to be taken into account during the optimisation run - this has a positive effect on the total result, however, the calculation time is also significantly increased.

3.3.1.1.12 Special 'double periods'-optimisation

You can check the option <Special 'double periods'-optimisation> when at least 70% of the lessons you have entered are to be scheduled as double periods. Special importance is then attached to scheduling double periods in subsequent optimisation.

Internally, this process halves the time grid and the number of periods for the lessons meaning that only single and half periods need to be scheduled during the run.

Warning:
Please ensure that there is an even number of periods defined in the morning in the time grid. If the time grid has a total of 10 periods per day, only 4 or 6 periods should be declared for the morning, and not 5.

3.3.1.2 Teacher assignment during optimisation

When the software encounters bottlenecks during the optimisation run (please also refer to chapter 'CCC analysis'), the program attempts to bypass them by swapping teachers. If the software finds a suitable teacher and if a swap with this teacher would improve the quality of the timetable, the program automatically proceeds with this swap during the optimisation run.

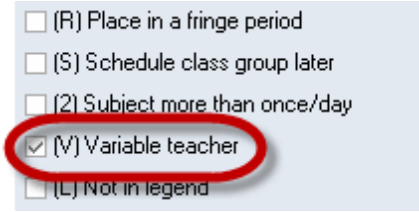
The module 'Lesson Planning' provides you with an extended version of this function.

Automated teacher swaps can only be carried out when at least one of the following two conditions can be met:

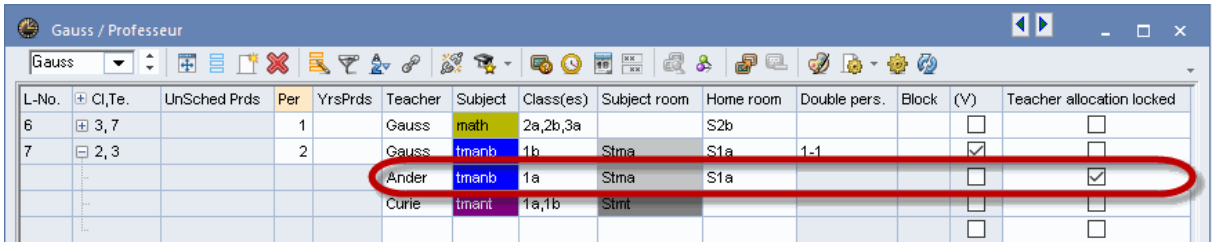
- The code '(V) Variable teacher' is active for some lessons;
- The function '? teachers' is active for some lessons (with the module 'Lesson Planning and Value Calculation')

3.3.1.2.1 (V) Variable teacher

A teacher may only be swapped, if the code '(V) Variable teacher' has been activated. You can find this option on the 'Codes' tab under 'Teachers | Lessons '. A teacher who is the cause of an optimisation bottleneck and for whom the code (V) is active may be replaced with another teacher.

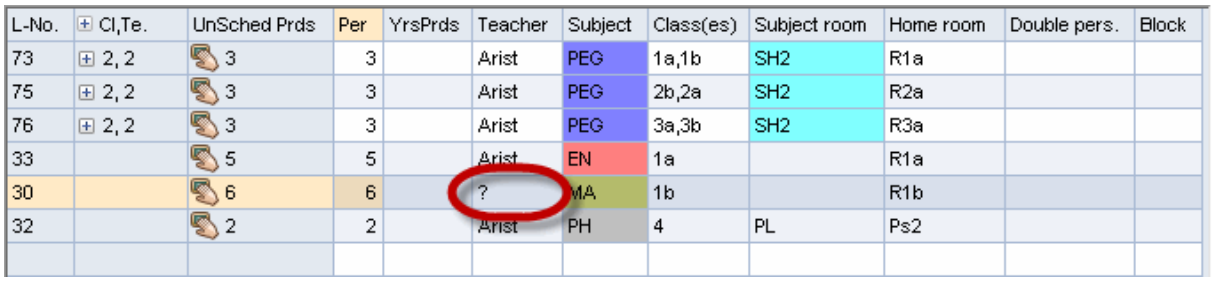


As a rule, the code (V) applies to *all* the teachers of a lesson. Check the box 'Teacher allocation locked' in the appropriate row in the lesson details window (under 'Lessons | Teachers') if an individual teacher involved in the lesson should not be swapped under any circumstances. This deactivates the code (V) for this particular teacher in this coupled lesson (see example below).



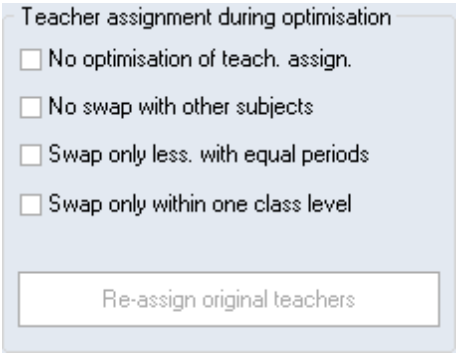
3.3.1.2.2 ?-Teacher

For use with the 'Lesson Planning' module. This function enables the software to search for a suitably qualified teacher for the lessons for which this function is active.



3.3.1.2.3 Settings

The automatic teacher swap is controlled vie the optimisation dialogue, the following settings apply:



No optimisation of teacher assignment
Ticking this box deactivates the teacher swap function. All '(V) Variable teacher' codes will be ignored.

The following two input options are only available for use with the 'Lesson Planning' module.

No swap with other subjects
Teachers can only be swapped between lessons of the same subject.

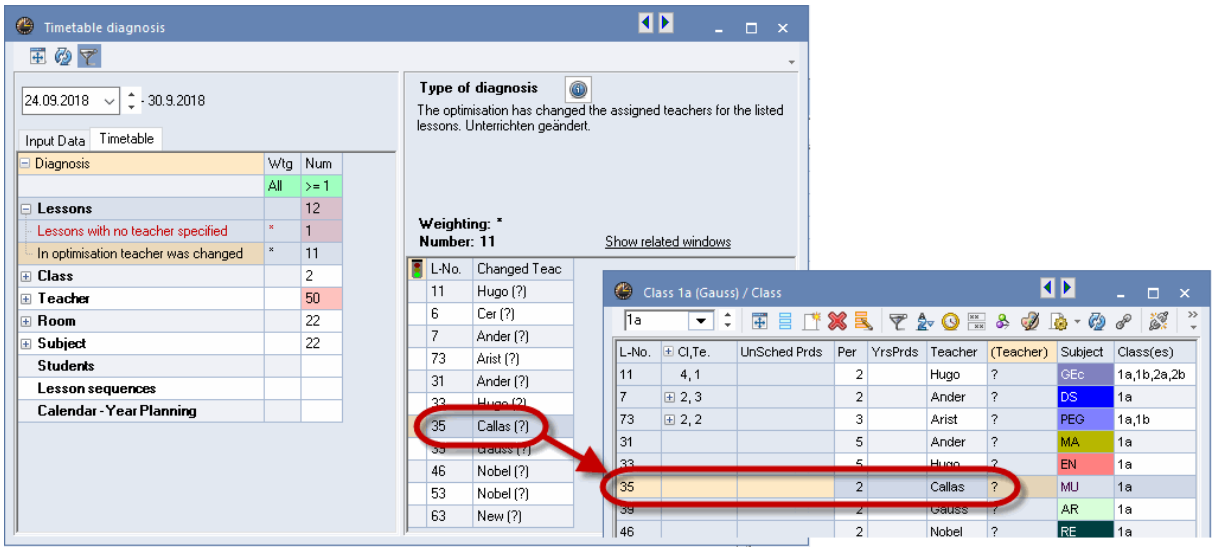
Swap only lessons with equal periods
Teachers can only be swapped between lessons with the same number of periods.

Swap only with one class level
If this box is checked then lessons are onyl swapped amongst variable teachers, if the classes involved in this lesson are of the same class level.

3.3.1.2.4 Re-assign original teachers

Tick this option to delete all teacher swaps carried out in previous optimisation runs. This means that each subject will again be taught by the teacher originally assigned to the lesson under 'Teachers | Lessons'.

After a successful teacher swap, all swapped and originally assigned teachers are shown in the diagnosis function (<Diagnosis> button on the 'Start' tab). The following figure shows a case in which the '?' was replaced by 'Callas' for lesson 35.



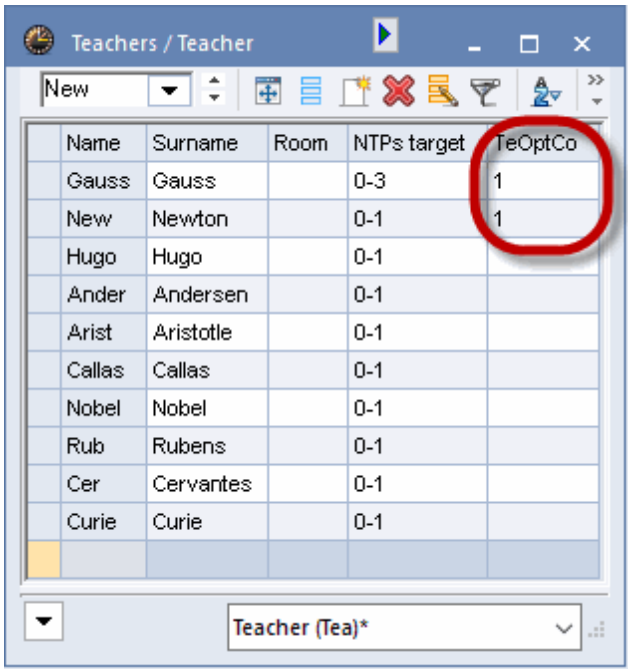
3.3.1.2.5 Teacher optimisation code

The module Lesson Planning offers with the teacher optimisation codes a further method to limit swaps with variable teachers.

You can find the codes in 'Teachers | Master Data' and in the 'Lessons' windows. The codes in these two types of windows are independent of each other.

The codes can be used to select a pool of lessons (or teachers) in which swaps are possible. Identical codes mean that the teachers of the marked lessons can be swapped.

You can assign the codes 1-9 and A-Z. The codes are always an additional limitation. For instance, if you have activated the option 'Swap only within one class level' and you have entered the code 1 for the teachers Gauss and Newton then swaps of Newton's lessons are only possible with lessons of Gauss in the same class level.



3.3.2 Strategies

Untis offers four different optimisation strategies for creating your timetable:

Strategy A - fast optimisation

Strategy B - complex optimisation

Strategy D - complex %-placement

Strategy E - overnight optimisation

3.3.2.1 Strategie A - fast Optimisation

Strategy A is the fastes of all optimisation types. It does not bring the best results, however, it is best for detecting any errors or mistakes in input data. Use this strategy therefore at the beginning of your work until all gross mistakes in the master data have been corrected.

Tip: Check data entry
Errors or mistakes in data input inhibit a good optimisation result. Use Strategy A and the 'Input Data' field of the 'Diagnosis' function in order to detect such errors or mistakes.

3.3.2.2 Strategy B - complex optimisation

This strategy provides very good results and does not take too long. Use this strategy after Strategy A and have a look at the results. Adjust weighting, if necessary, if you are not satisfied with the result.

Tip: Working out of weighting parameters
Between weighting 4 and 5 is a (very) big difference. If a weighting slider control is set on 5, although 4 would be enoug, the result is worse. Set all slide controls to max. 4 and only if you are not satisfied with

the results gradually set the slider controls to 5.

3.3.2.3 Strategy D - complex %-placement

Depending on the school Strategy D or B provides better results. Since strategy D takes significantly longer, you should only use it after you have worked out the weighting parameters with Strategy B. In this strategy the algorithm works step by step, it does not process 100% of all lessons straightaway. You therefore need to enter the start and the increment percentage in the optimisation dialogue.

Tip: Start and increment percentage
We recommend a start percentage of 30%, an increment percentage of 20%.

3.3.2.4 Strategy E - overnight optimisation

As the name already implies, this strategy may take very long, however, it brings about the best results in most cases.

Use it only at the very end, i.e. after you have applied all other strategies. The duration of the optimisation run heavily depends on the size of the school and on the number of timetables to be calculated, how many optimisation steps are necessary per timetable and on the capacity of the computer. Therefore it may really take the whole night, i.e. overnight.

3.3.3 The accompanying window

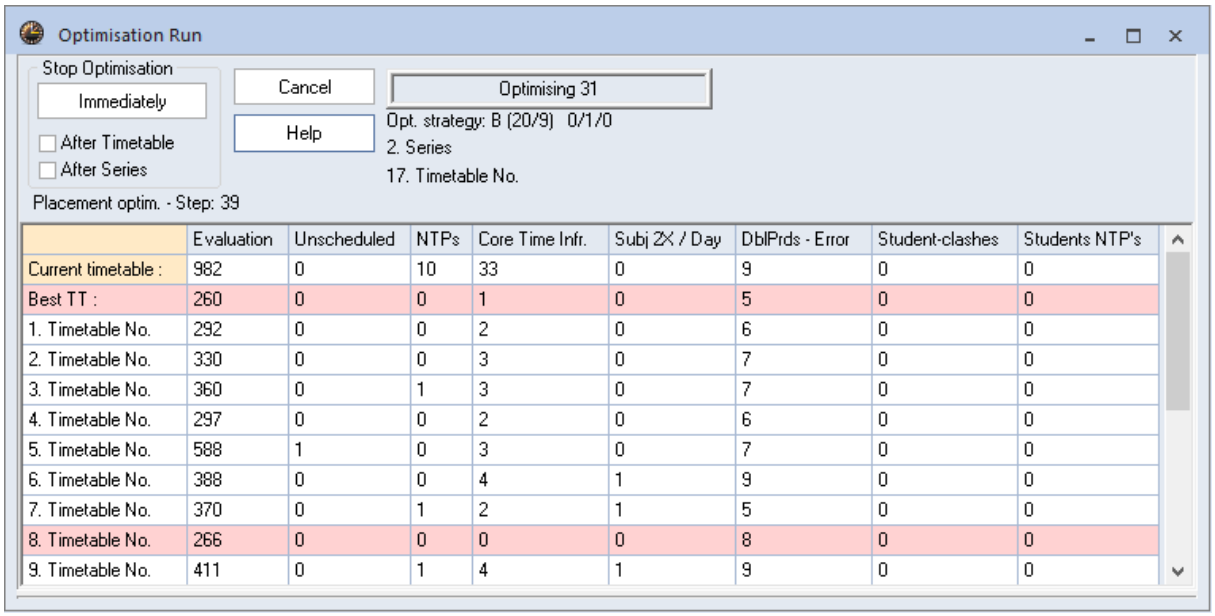
Start the optimisation process by opening the optimisation dialogue. Go to the 'Start' tab and click on the <Optimisation> button, enter the desired settings and click <OK>.

If the data analysis window appears, check the displayed messages and/or rectify the displayed errors and click <OK>.

An accompanying window appears which consists of two panes. The upper part of the window is the information window containing functions for the management of the optimisation process (pause, cancel etc.).

The window also provides a continuous display of key data of the current optimisation run, including an evaluation of the current timetable (penalty points), the number of unscheduled periods, NTPs (for classes) and core time violations (these are periods with a time request of +3 that the software is unable to fill for some reason). Additionally, it is shown how often double period conditions are violated and how often a subject was scheduled twice on one day from the class view. If you use the module Course Scheduling the number of clashes in the student timetables, as well as the total number of NTPs are also displayed.

These data provide a first, rough impression of the quality of your timetables. The tools for a more detailed diagnosis are described in the chapter 'Diagnostics tools' .



	Evaluation	Unscheduled	NTPs	Core Time Infr.	Subj 2X / Day	DblPrds - Error	Student-clashes	Students NTP's
Current timetable :	982	0	10	33	0	9	0	0
Best TT :	260	0	0	1	0	5	0	0
1. Timetable No.	292	0	0	2	0	6	0	0
2. Timetable No.	330	0	0	3	0	7	0	0
3. Timetable No.	360	0	1	3	0	7	0	0
4. Timetable No.	297	0	0	2	0	6	0	0
5. Timetable No.	588	1	0	3	0	7	0	0
6. Timetable No.	388	0	0	4	1	9	0	0
7. Timetable No.	370	0	1	2	1	5	0	0
8. Timetable No.	266	0	0	0	0	8	0	0
9. Timetable No.	411	0	1	4	1	9	0	0

When the yellow-blue <OK> button appears on the screen, the optimisation run is completed.

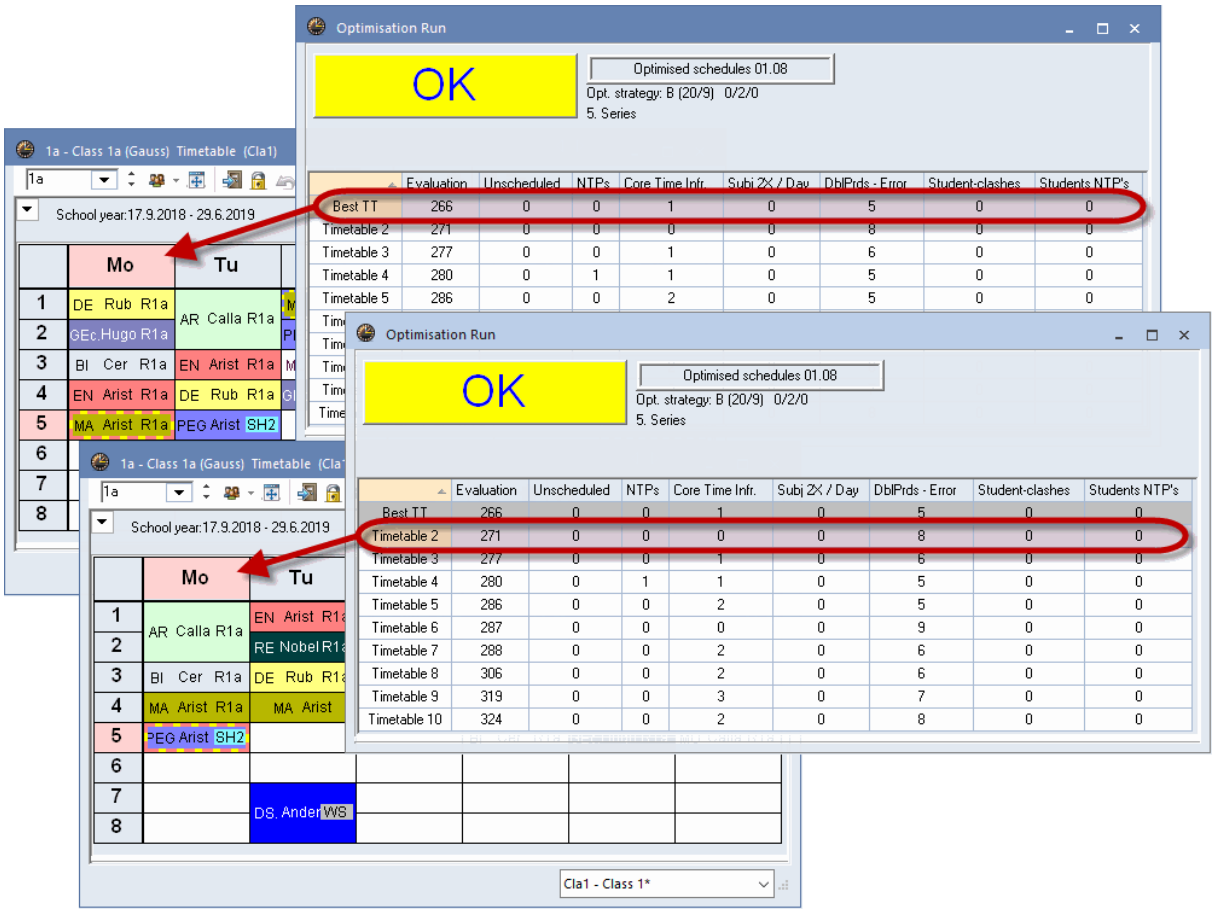
Note:
Every timetable is assessed (column 'Evaluation'). The less points a timetable has, the better it is. The number of points depends on the amount of data, as well as the weightings settings. It does not make any sense to compare your number of points with the neighbouring school's.

3.3.4 View optimisation results

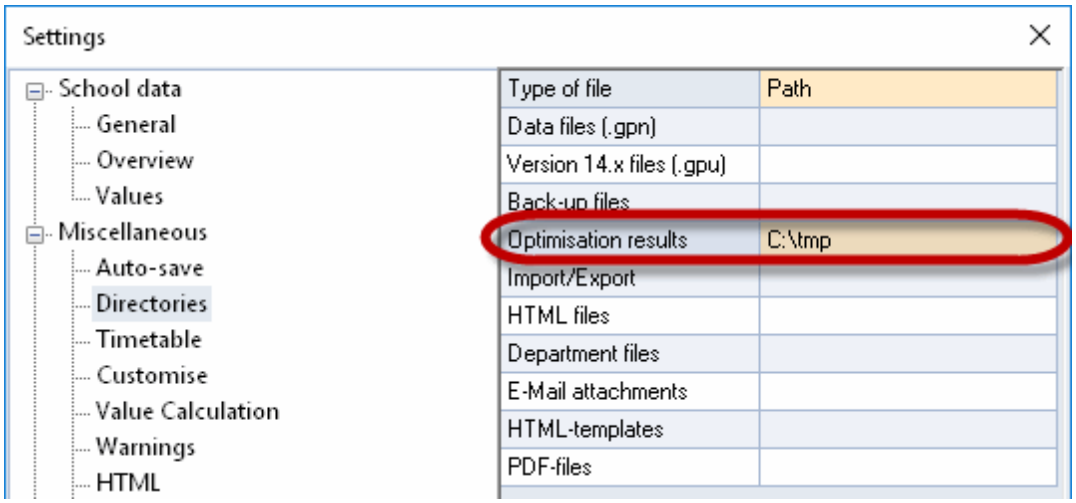
When the optimisation is completed the best result is loaded. Via the optimisation dialogue you can switch to other timetables, as well. Click on the respective line in the upper part of the window.

Every individual timetable can be stored as a separate file (work1.gpn to work *n* .gpn) by selecting the option 'Save the results of the optimisation in work files'by going to <Settings>, 'Miscellaneous | Auto-Save' . This gives you the possibility to load, view and analyse all the results anytime.

After you have confirmed by clicking on the yellow-blue button, you can switch to the different optimisation results either by loading the work.gpn files or you load them via the 'Start' tab, menu item 'Optimisation | Optimised Timetables'. The latter method is only possible during the session in which the optimisation was started. If Untis was closed inbetween, this menu item is greyed out.



Tip:
You can change the directory of the work.gpn files via the <Settings> on the 'Start' tab. Go to 'Miscellaneous | Directories' and define a path in the field 'Optimisation results'.



3.4 Diagnostics tools

The master and lesson data of your school contain a vast store of information and it is often difficult to keep track of the amount of data. This means that it is easy for inaccuracies, mistakes and errors to creep in when entering or modifying data. Searching for these inaccuracies and errors is a bothersome, but necessary task. The diagnosis tool is designed to facilitate this task.

This chapter not only deals with errors, but also with so-called 'input weaknesses'. Input weaknesses are data that, while not technically wrong, can cause inferior or unexpected results.

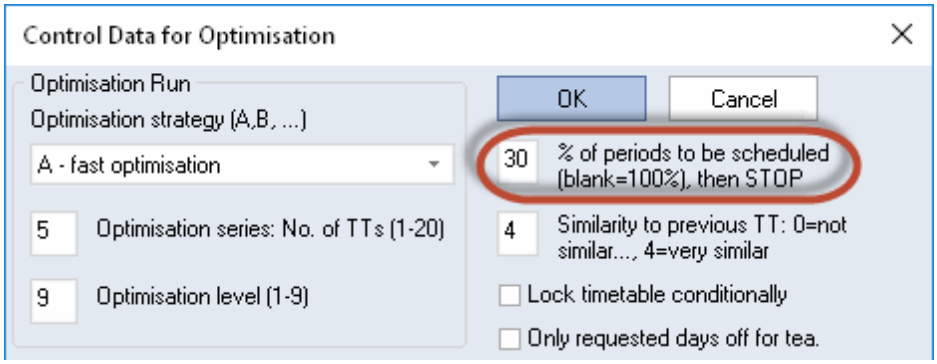
Percentage planning

Diagnosis

Overall diagnosis

3.4.1 Percentage scheduling

After finishing your data entry, you should initially carry out a percentage scheduling run (e.g. at 30%) to identify lessons which Untis software categorizes as 'difficult'. As a rule, the program attempts to place such lessons as quickly as possible to prevent them from causing an obstruction later during the process.



Note:
The level of difficulty of a lesson is higher, the more elements are unavailable, the more elements are coupled and the bigger the lesson block which needs to be scheduled.

If Untis encounters problems during the scheduling of the very first 30% of periods and, if this very first optimisation runis unable to schedule certain periods, the first thing to do is to increase the number of timetables to be generated and the number of optimisation steps. If the tool is still unable to schedule the periods, you can assume that the input data contain input weaknesses or even errors.

3.4.1.1 Example

Errors and input weaknesses are described in greater detail below. The following example provides a brief introduction to the percentage planning function.

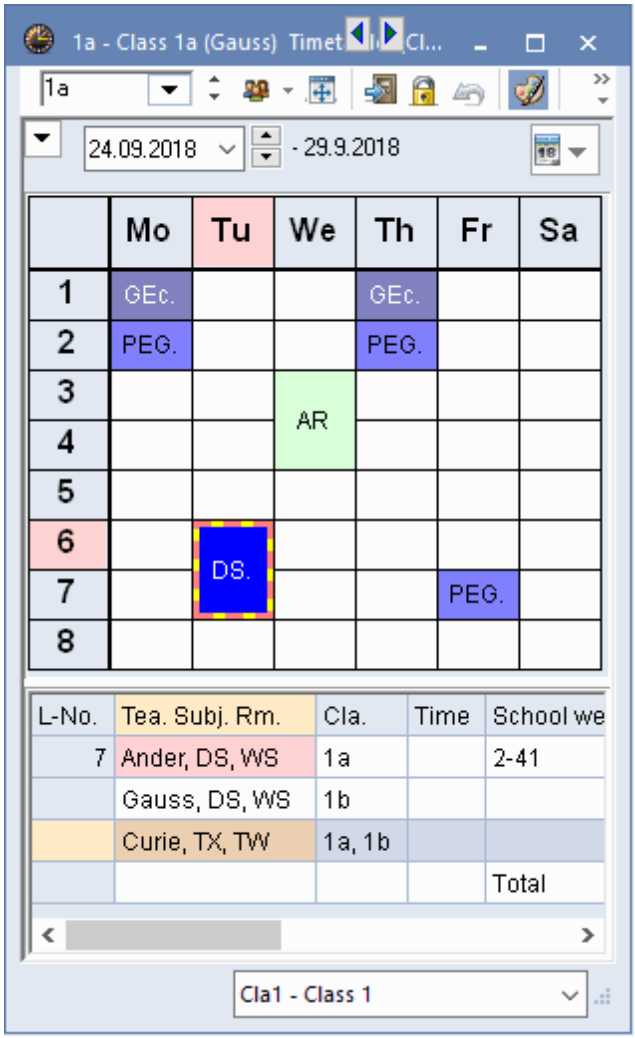
1. Open the file demo2.gpn.
2. Delete all timetables via the menu item 'Scheduling | Reset the Timetable' on the 'Start' tab.

3. An information window appears. Click <OK>.
4. Carry out a timetable optimisation run (via the 'Optimisation' button on the 'Start' tab) and enter the value 30 in the field '% of periods to be scheduled'.
5. Display the timetable for class 1a (go to the 'Start' tab, click on the 'Classes' button and go to 'Class timetable portrait').

The timetable for class 1a should correspond approximately to the timetable shown in the figure below. There may be slight variations in display depending on the software version you are using.

Please note that as mentioned before, your percentage entry applies to the entire school and not to individual classes. The example shows that less than 30% of the periods for class 1a have been scheduled. The software scheduled proportionately more periods for other classes. This shows that this class has less difficult lessons than any other class.

6. Click on the subject 'Design'.



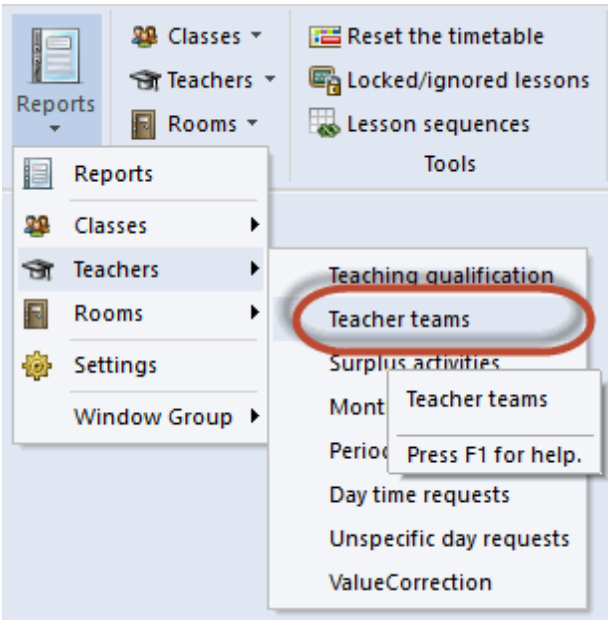
The period details window shows that the subject Design is difficult to schedule because three teachers are involved in the lesson (Andersen, Gauss and Curie) and two rooms are required (the Workshop and

the Textiles workshop). Furthermore, another class (1b) takes part in the lesson. If Untis attempted to schedule this lesson towards the end of the optimisation run, the software would find it much more difficult to find a slot on the timetable that would suit all teachers, rooms and classes involved in the lesson.

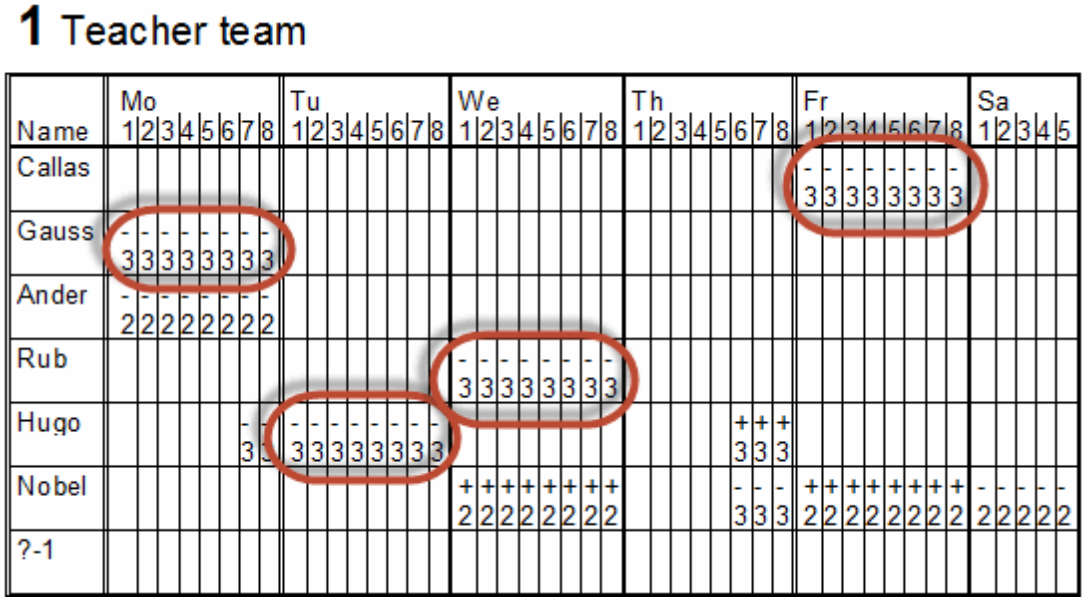
When the percentage scheduling function is unable to schedule periods, you can assume that inaccuracies and errors during data input are to blame.

3.4.2 Time requests

Time requests are another reason why the software may find it difficult to construct the perfect timetable. A number of predefined lists can help you search for input weaknesses and errors caused by time requests. Access the lists relevant for optimisation by clicking on the 'Scheduling' tab and go to 'Reports'.



The following example is based on the conflicting period requests of a teacher team. The figures shows that Thursday is the only day which is not blocked for all teachers involved.



A lesson consisting of three single periods could not be scheduled for this teacher team without violating a '-3' time request (something the optimisation tool would never do) or the single period condition (something the optimisation tool might do, depending on your weighting settings for conditions such as 'Avoid errors with double periods').

For further information on teacher teams, please refer to chapter 'User tips | Teacher teams'.

3.4.3 Options

An important point is the distinction between 'must' and 'can'.

The settings '2-2' for a 4 period lesson in the field 'double period' **forces** Untis to scheduletwo double periods. The setting '1-2',however, leaves the decision to the algorithm, if two of the four periodsare scheduled as single or as double periods. The more freedom optimisation has, the better the result.

3.4.4 Locked periods

Try not to restrict the optimisation tool by manually scheduling a large number of lessons. Reconsider if some periods really need to be scheduled manually (please refer to chapter 'Manual Scheduling').

3.4.5 Weightings

When the software is unable to schedule large numbers of periods, it makes sense to call up the weighting dialogue again and to determine if the setting 'extremely important' (5) is strictly necessary in all of the cases. In order to resolve an input weakness, it is often sufficient to reduce the setting of one or two items by one level to 'very important' (4) (see also the chapter 'General notes' under 'Weighting' above).

Increase the percentage of the periods to be scheduled until you are certain that all the input weaknesses have been resolved.

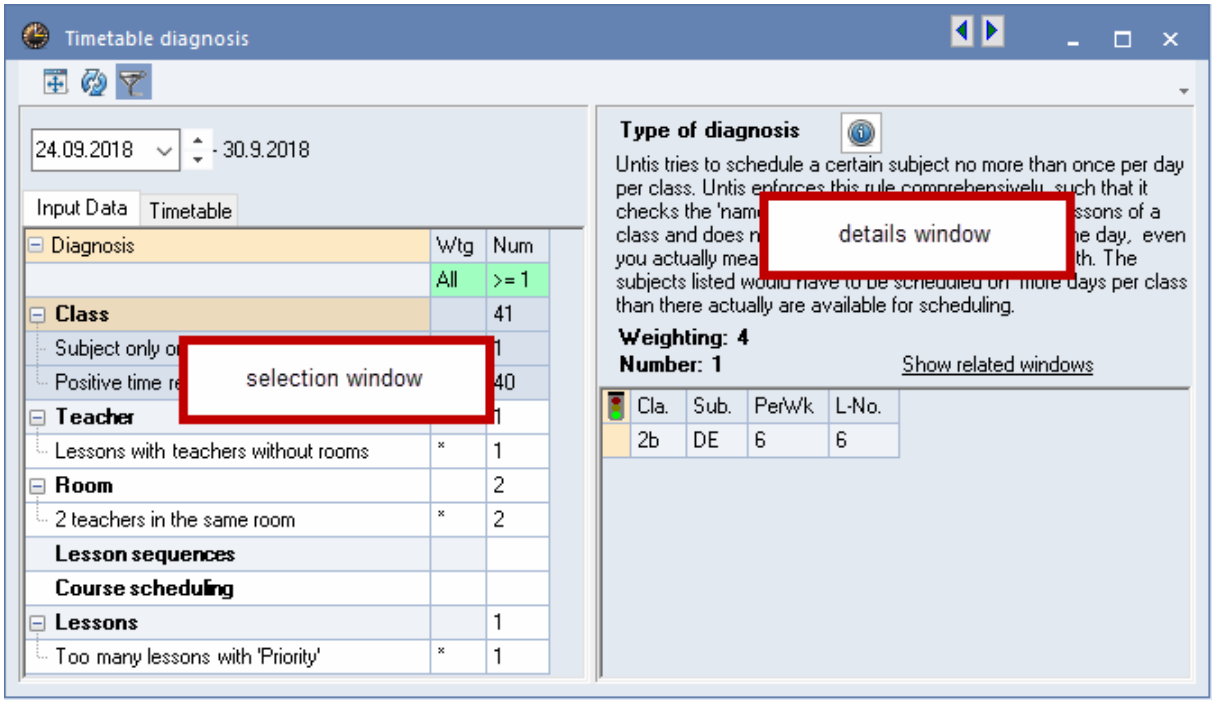
Use the more complex optimisation strategies only when you are certain that all entries are correct. An important tool for the identification and location of input errors and violations of conditions are the 'Diagnosis' and 'Overall Diagnosis'tools. These are described in the following chapter.

3.4.6 Diagnosis

With the diagnosis function you can analyse on the one hand the entered data **before** you create a timetable and on the other the outcome of optimisation **after** you created it.

Tip:
Invest adequate time for the analysis of the messages under the tab input data and to correct any weaknesses of the input data. The quality of the calculated timetable directly depends on the quality of the entered data. When framework conditions were entered incorrectly, inconsistent or not at all, then the best algorithm cannot create a good timetable.

Open the diagnosis window via the 'Diagnosis' button on the 'Start' tab. The window is divided into two sections: the selection window on the left and the details window on the right.



3.4.6.1 The selection window

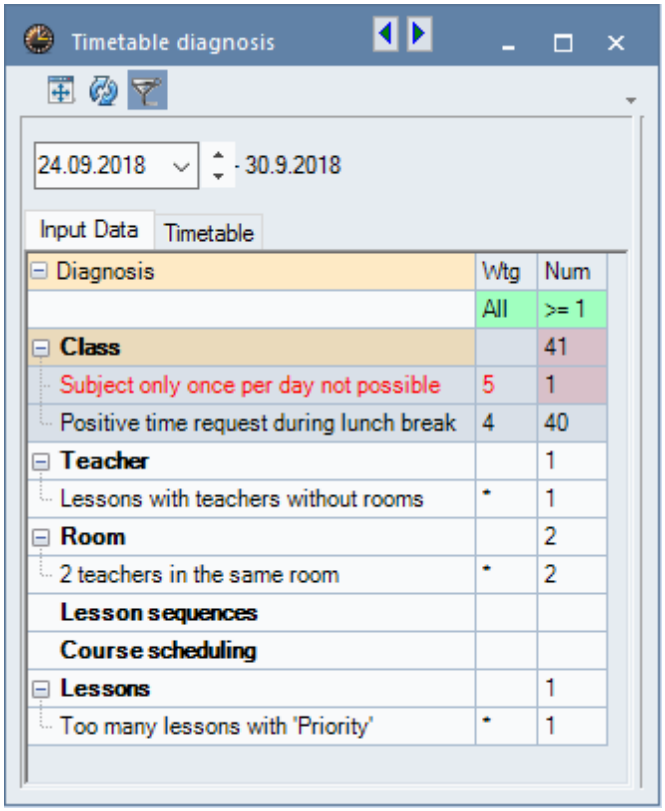
The selection window is divided into two sections.

- Possible problems with input data
- Violences in the timetable

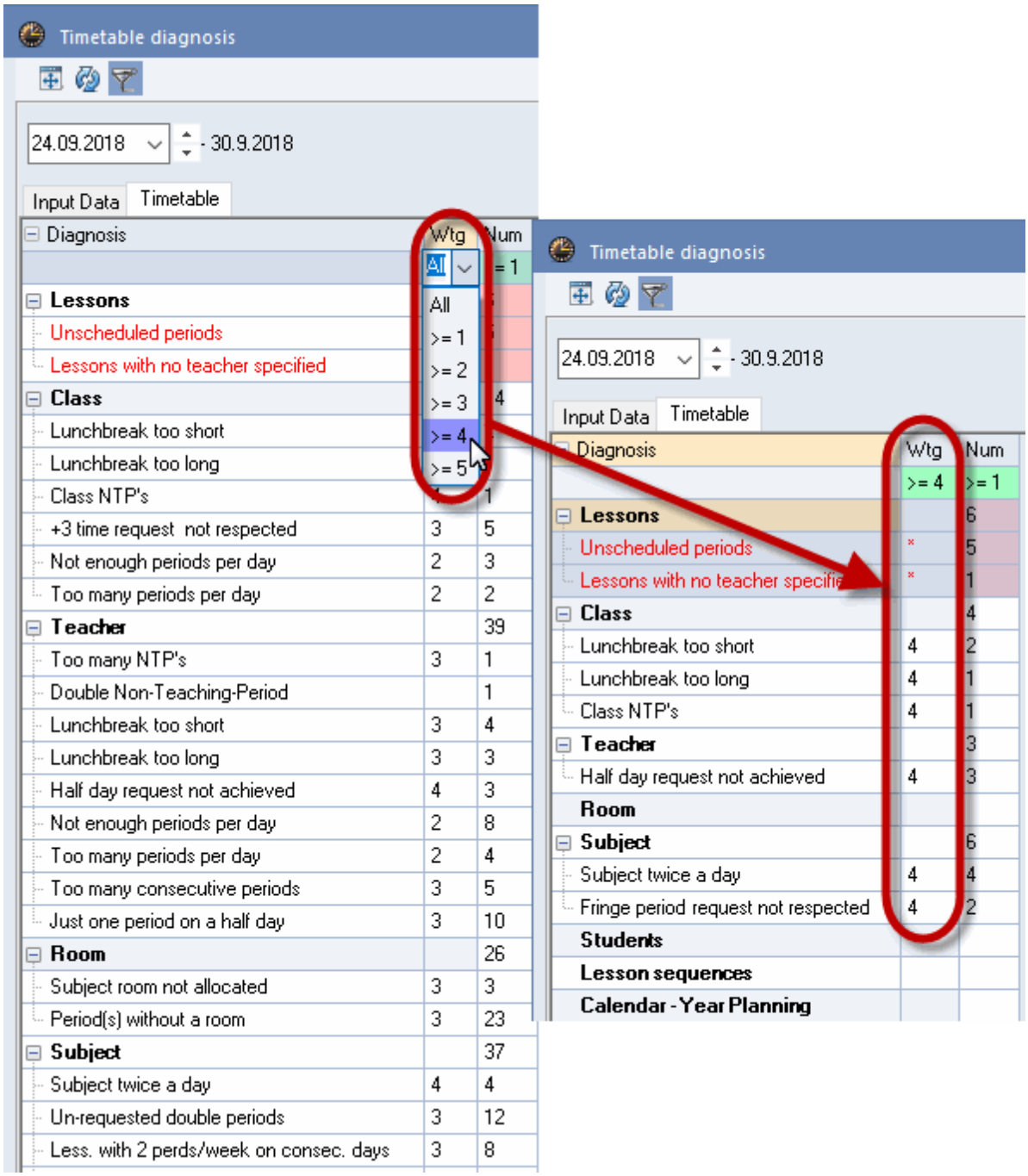
Via the two tabs in the upper part of the window you can switch between both sections of the window. Both sections have different headings which contain different diagnosis items of different topics. On the right side in the headings line the sum total of all violations of this topic is shown. If the number is highlighted in red it means that at least one severe problem (with a high weighting) has been detected. The different topics can either be opened individually just like in Windows Explorer or by clicking on the '+' symbol to unfold them.

The weighting of individual diagnosis items is shown in the column 'Wtg.', in the diagram the diagnosis item 'Subject only once per day not possible.' is weighted with 5. The weighting is defined in the

Weighting dialogue . Diagnosis items which have an asterisk * in the weighting column, cannot be weighted. The column 'Num' shows how many violations have been detected for the respective diagnosis item.



Only those diagnosis items are displayed by default which show violations. This is visualised if you click the <Filter> button in the toolbar, as well as by filter fields highlighted in green (entry >=1 in 'Num' column).
The diagram shows how displaying diagnosis items can be restricted to those violations, for example, which have weighting 4 or higher.



Resize the window>

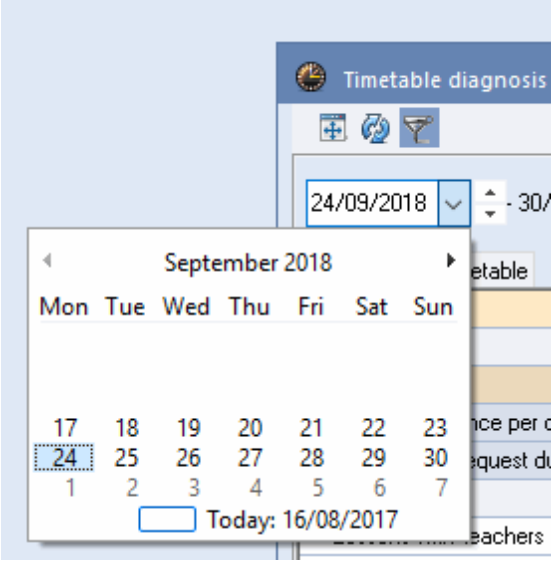
Click this button and the diagnosis window will be adjusted to its ideal size./h2>

Refresh window>

By clicking this button you start a new diagnosis run. (This will also apply if you close the diagnosis window and re-open it via the 'Start' tab and click the <Diagnosis> button anew.)

Please note that the diagnosis tool only diagnoses the timetable for one week – an essential precaution

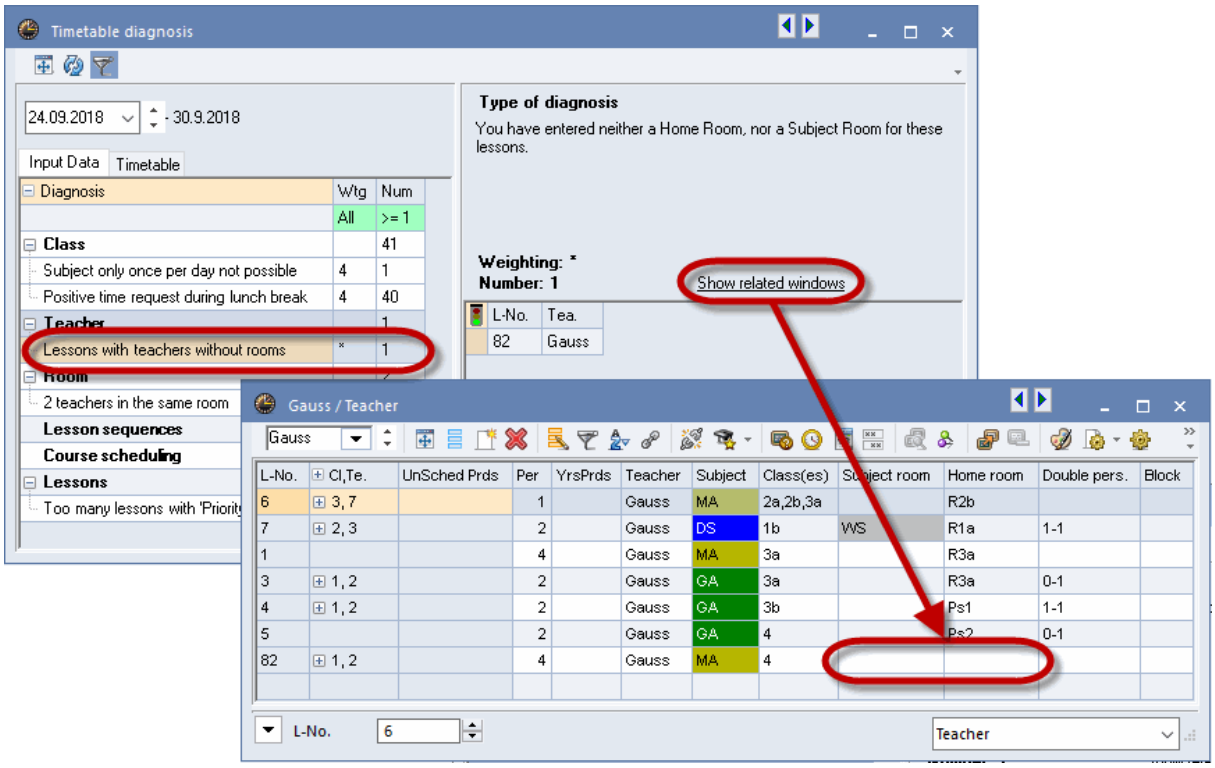
when using the module Multi-Week Timetable (or Multiple Terms Timetable) where different timetables may be in use in different consecutive weeks (e.g. for classes which do not last the whole year). When analyzing such timetables, specify by means of the date setting (below the above described control elements) which week you want to analyse.



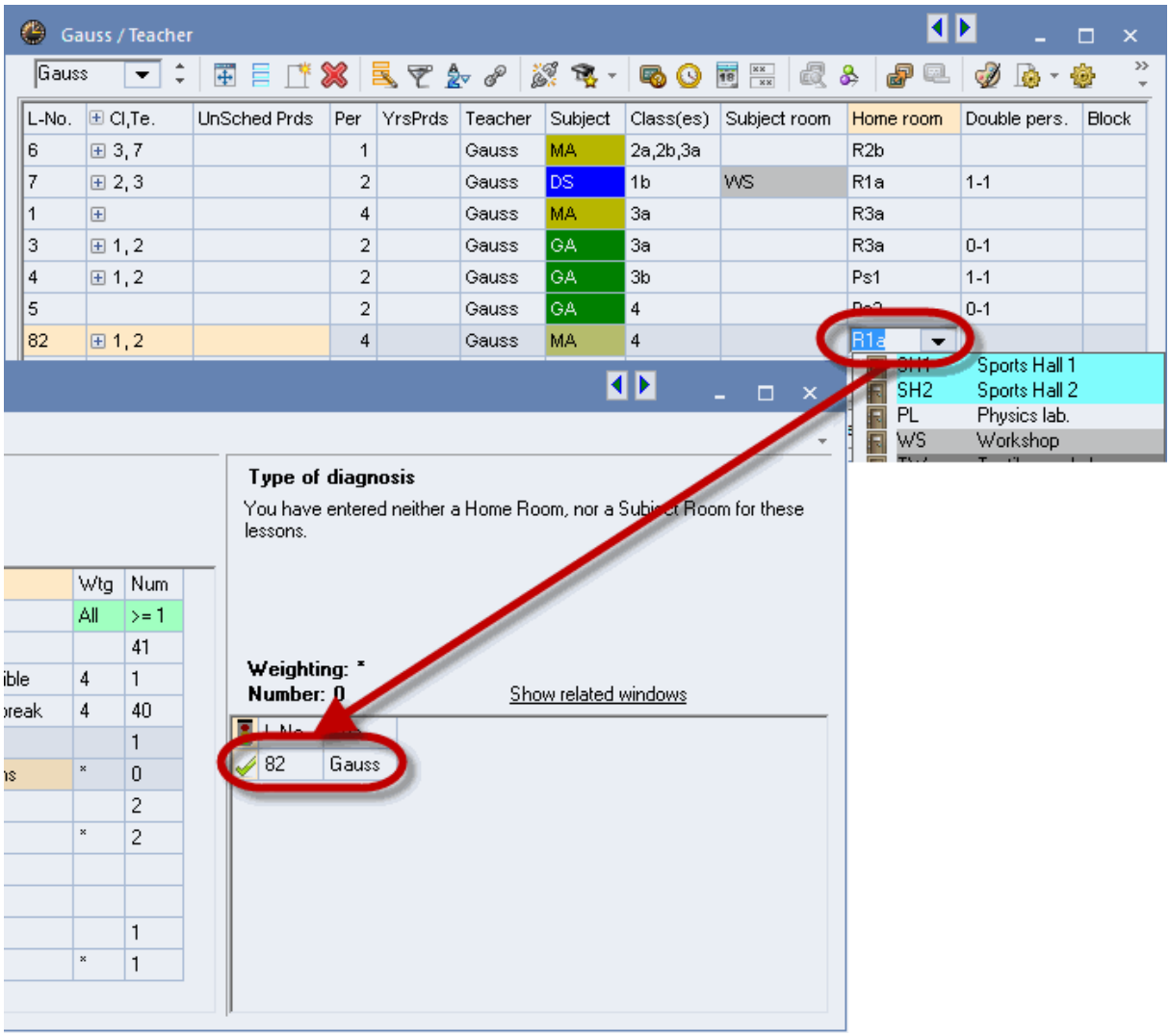
3.4.6.2 The details window

The details window on the right side of the diagnosis window allows you to obtain further information about individual items by selecting the item in the selection window.

By clicking on the link 'Show related windows' all dialogues relevant to the diagnosed problem are opened. The diagram shows, for instance, that no room was defined for lesson 82 for teacher Gauss.

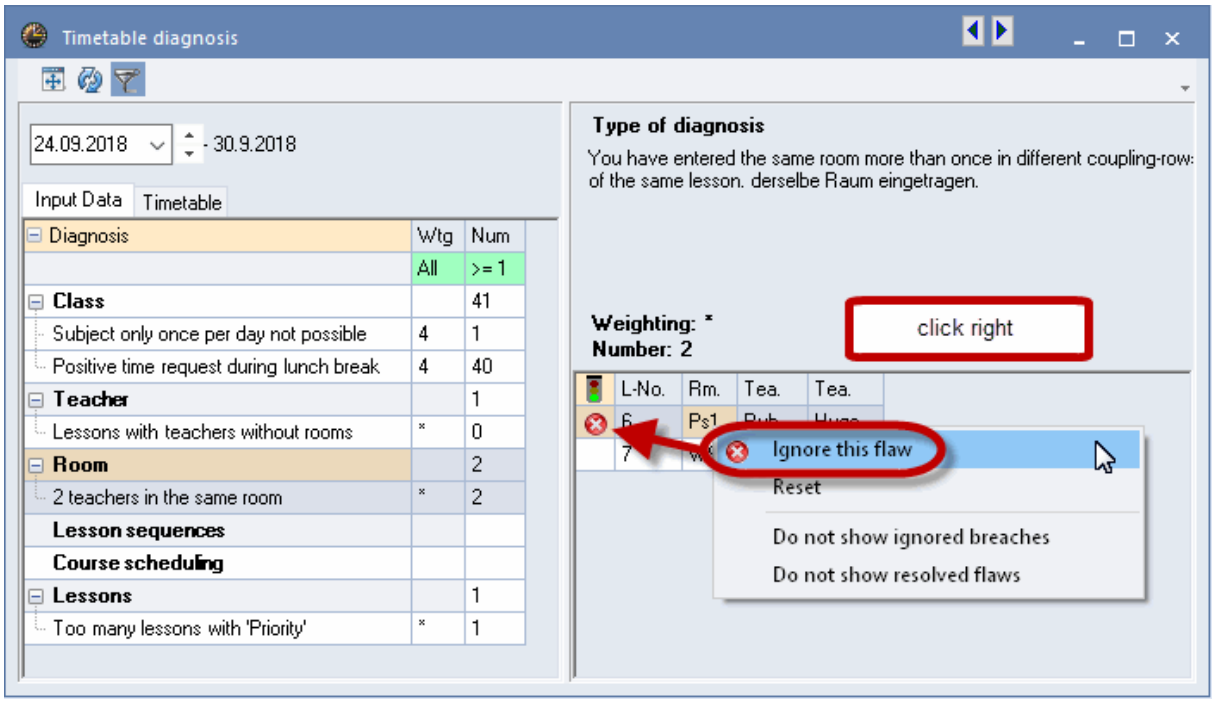


As soon as the problem has been solved it is shown by a check in the 'Status' column (traffic light icon) of the diagnoses window. As soon as a new diagnosis is run, this point is not shown any more.



The diagnosis indicates possible problems in data or in timetables. However, it may be that you intentionally have not defined a room for a lesson. In such a case you either ignore the entry in the diagnosis or mark the respective entry by clicking your right mouse button and select 'Ignore this flaw' in the context menu.

If you do not want to see these points in the list again, select 'Do not show ignored breaches' from the context menu of your right mouse button.

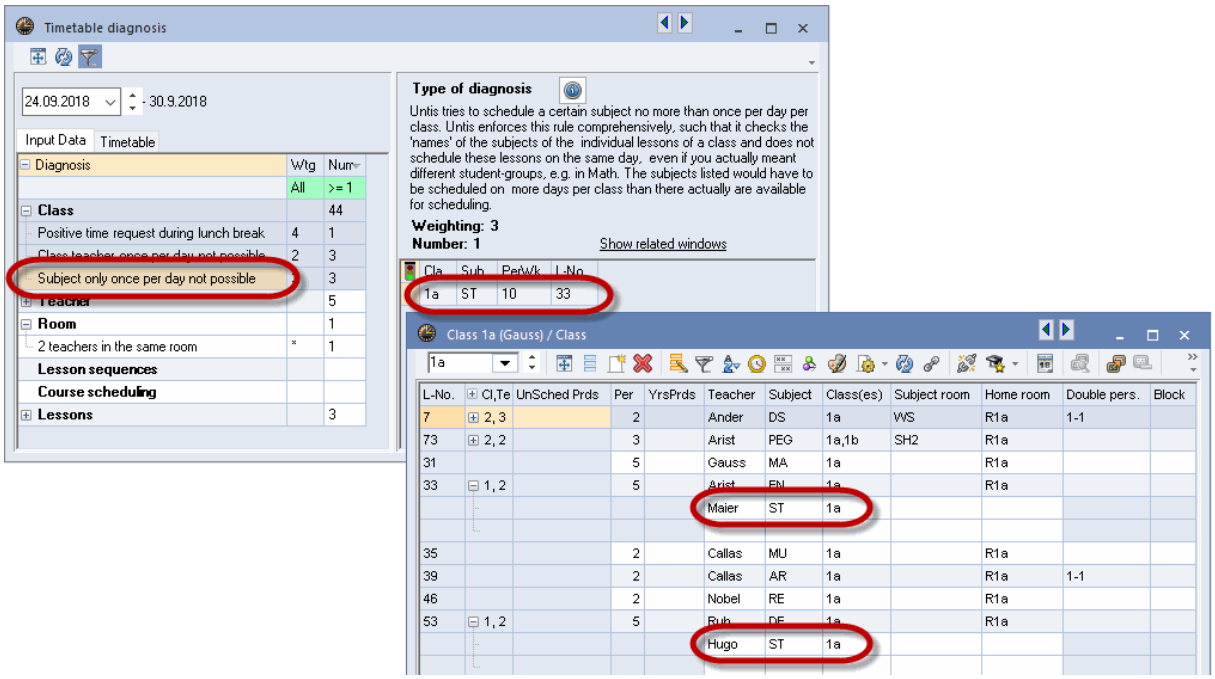


Note:
The point 'Ignore this flaw' shown in the context menu exclusively serves clarity within the diagnosis. It has absolutely no effect on a timetable optimisation run after the diagnosis.

3.4.6.3 Subject 1/day not possible

An explanatory text is displayed in the details window of the diagnosis for each diagnosis item. However, the item 'Subject only once per day not possible' under the heading 'Input Data | Class' deserves special attention. By default, the scheduling algorithm attempts to schedule a subject only once per day. The relevant subjects will be listed in the diagnosis, if this is not possible since too many periods have to be spread over the days available.

The figure below shows that a special tuition teacher is scheduled to take class 1a for the subject ST comprising 5 periods each of English and German. This means that 10 weekly periods are defined for the subject ST with class 1a. Untis would attempt to schedule this subject just once per day. However, since 10 individual periods cannot be fitted into a 5-day week, the issue will be listed.



Possible solutions for this concrete example:

- Set up double periods or block conditions
- Activate the '(2) More than once a day' option for the subject ST in the subjects master data
- Change the subject name of one of the lessons taught (e.g. 'ST_GE' for special tuition in German)

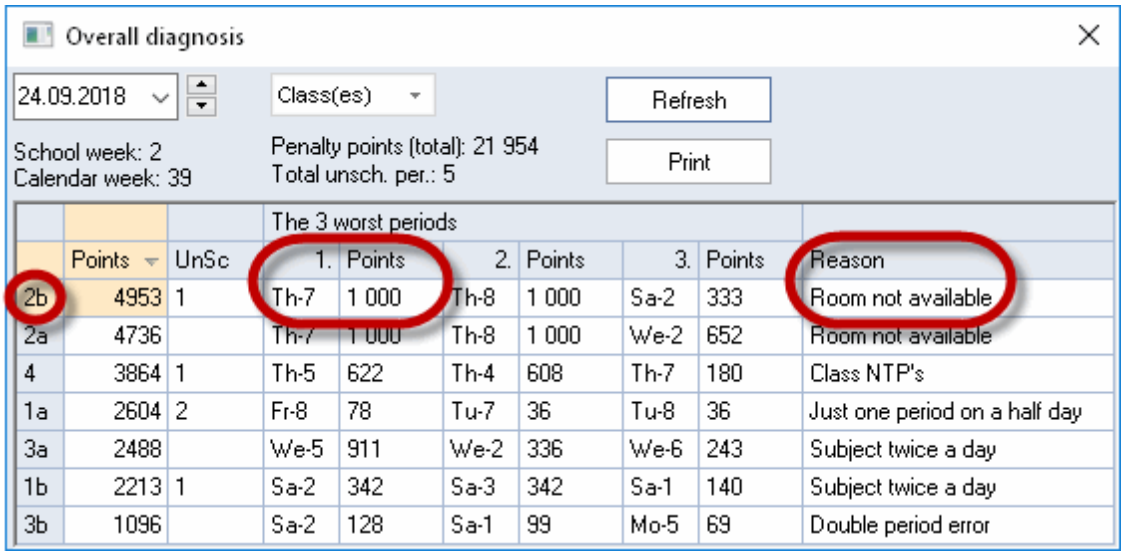
3.4.7 Overall diagnosis

The overall diagnosis function provides an overview of the classes and teachers that have ended up with the worst timetables (measured against your settings). Access the total diagnosis function on the 'Scheduling' tab via the menu 'Diagnosis | Overall Diagnosis'.

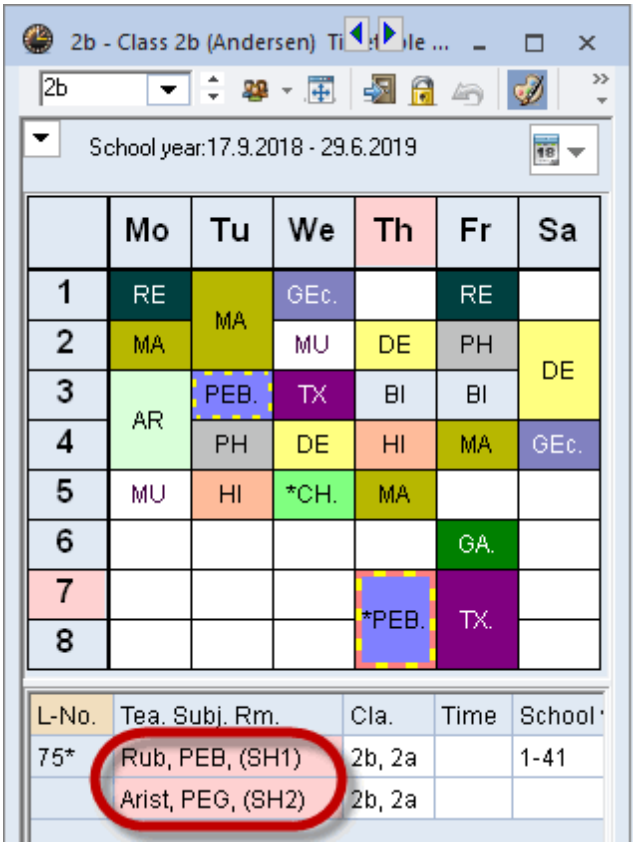
The overall diagnosis function applies to only one specific week just like the diagnosis function

Depending on the settings (class or teacher) the window lists all elements of your school in separate lines. The elements are sorted according to the column 'Points', these points indicate how good the quality of your timetable is concerning the respective element. The more points an alement has, the worse is the timetable.

All the other columns show the three worst periods per element, the diagram shows that the worst period of class 2b is, for instance, Thursday, period 7. Click on the points and the reason for this bad assessment will be shown in the 'Reason' column. Furthermore an accompanying timetable synchronises automatically to this period. In the example the reason for the bad assessment is 'Room not available', a better result could be achieved by scheduling a room.



			The 3 worst periods					
	Points	UnSc	1.	Points	2.	Points	3.	Points	Reason
2b	4953	1	Th-7	1 000	Th-8	1 000	Sa-2	333	Room not available
2a	4736		Th-7	1 000	Th-8	1 000	We-2	652	Room not available
4	3864	1	Th-5	622	Th-4	608	Th-7	180	Class NTP's
1a	2604	2	Fr-8	78	Tu-7	36	Tu-8	36	Just one period on a half day
3a	2488		We-5	911	We-2	336	We-6	243	Subject twice a day
1b	2213	1	Sa-2	342	Sa-3	342	Sa-1	140	Subject twice a day
3b	1096		Sa-2	128	Sa-1	99	Mo-5	69	Double period error



	Mo	Tu	We	Th	Fr	Sa
1	RE	MA	GEc.		RE	
2	MA		MU	DE	PH	DE
3	AR	PEB.	TX	BI	BI	
4		PH	DE	HI	MA	GEc.
5	MU	HI	*CH.	MA		
6					GA.	
7				*PEB.	TX.	
8						

L-No.	Tea. Subj. Rm.	Cla.	Time	School
75*	Rub, PEB, (SH1)	2b, 2a		1-41
	Arist, PEG, (SH2)	2b, 2a		

An empty field under 'Reason' indicates that the timetable for this class or teacher is already very good. The displayed period for the respective element may be one of the three worst placed ones, overall, however, it is fairly well placed. It is unnecessary, therefore, to change the period manually.

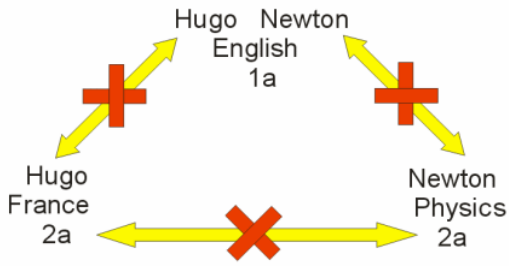
In short, the diagnosis function provides an overview of all timetables while the overall diagnosis function targets the worst timetables in the school and aims to improve them. The overall diagnosis window also

displays the causes of violations.

3.4.8 CCC-Analysis

In order to obtain a good timetable, it is important to locate possible bottlenecks that might cause an obstruction for the scheduling tool, and to eliminate these before the optimisation .

Such bottlenecks occur in the form of Critical Conflict Chains (CCC). These are defined as groups of lessons that cannot be scheduled at the same time due to a conflict between classes and/or coupled teachers.

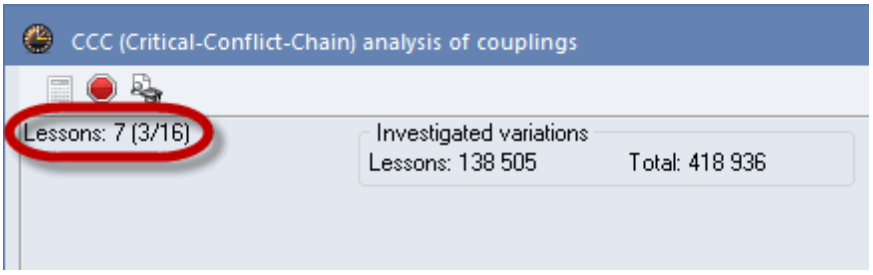


Note:
The total number of periods per week involved in a chain is a measure of how difficult it is for the software to schedule the lessons in the chain. If this number is greater than the number of periods available in the time grid, it is mathematically impossible to schedule all the lessons in this chain.

The CCC analysis is opened via the 'Scheduling' tab under 'Diagnosis | CCC Analysis' and starts searching for the longest of these chains. The analysis can take up to several minutes, depending on the size of your school.

3.4.8.1 Information during the analysis

During the analysis, you will see the number of the lesson currently being analyzed, i.e. scanned for its dependency on other lessons, in the upper part of the window (on the right hand side of the word 'Lesson'). The two numbers in brackets denote the number of couplings the software has finished analyzing and the total number of couplings to be analyzed, respectively.

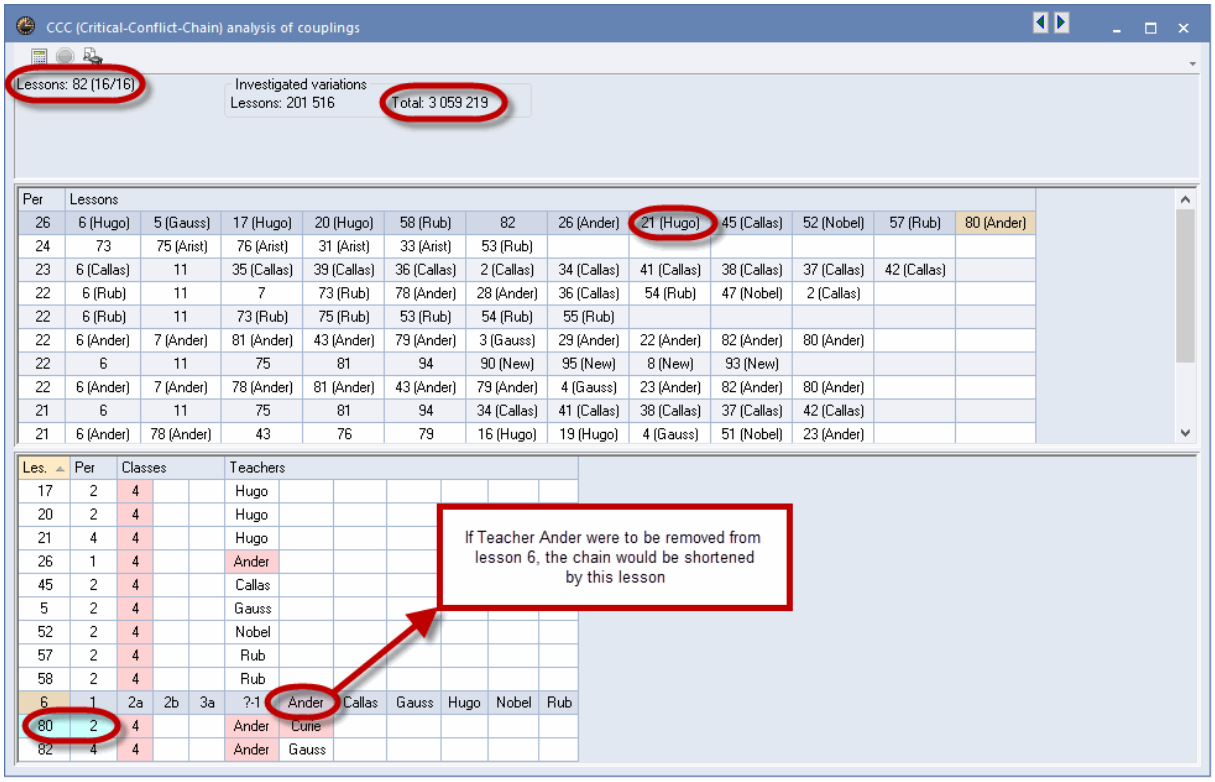


In addition, the information field 'Investigated variations' displays the number of combinations the software has finished analyzing.

3.4.8.2 The CCC window

As you can see in the upper part of the window, there are 82 lessons and 16 couplings, resulting in over 3 million combinations that need to be analyzed.

The middle part of the window
The middle part of the window shows a table of all CCCs listed in rows. The first column contains the total number of periods per week involved in each chain. The figures on the right are the lesson numbers of the lessons involved in the chains. The table also displays the abbreviated names of teachers in brackets next to some of the elements. The purpose of this function is described in a later chapter.



Per	Lessons											
26	6 (Hugo)	5 (Gauss)	17 (Hugo)	20 (Hugo)	58 (Rub)	82	26 (Ander)	21 (Hugo)	45 (Callas)	52 (Nobel)	57 (Rub)	80 (Ander)
24	73	75 (Arist)	76 (Arist)	31 (Arist)	33 (Arist)	53 (Rub)						
23	6 (Callas)	11	35 (Callas)	39 (Callas)	36 (Callas)	2 (Callas)	34 (Callas)	41 (Callas)	38 (Callas)	37 (Callas)	42 (Callas)	
22	6 (Rub)	11	7	73 (Rub)	78 (Ander)	28 (Ander)	36 (Callas)	54 (Rub)	47 (Nobel)	2 (Callas)		
22	6 (Rub)	11	73 (Rub)	75 (Rub)	53 (Rub)	54 (Rub)	55 (Rub)					
22	6 (Ander)	7 (Ander)	81 (Ander)	43 (Ander)	79 (Ander)	3 (Gauss)	29 (Ander)	22 (Ander)	82 (Ander)	80 (Ander)		
22	6	11	75	81	94	90 (New)	95 (New)	8 (New)	93 (New)			
22	6 (Ander)	7 (Ander)	78 (Ander)	81 (Ander)	43 (Ander)	79 (Ander)	4 (Gauss)	23 (Ander)	82 (Ander)	80 (Ander)		
21	6	11	75	81	94	34 (Callas)	41 (Callas)	38 (Callas)	37 (Callas)	42 (Callas)		
21	6 (Ander)	78 (Ander)	43	76	79	16 (Hugo)	19 (Hugo)	4 (Gauss)	51 (Nobel)	23 (Ander)		

Les.	Per	Classes			Teachers						
17	2	4			Hugo						
20	2	4			Hugo						
21	4	4			Hugo						
26	1	4			Ander						
45	2	4			Callas						
5	2	4			Gauss						
52	2	4			Nobel						
57	2	4			Rub						
58	2	4			Rub						
6	1	2a	2b	3a	?-1	Ander	Callas	Gauss	Hugo	Nobel	Rub
80	2	4			Ander	Curie					
82	4	4			Ander	Gauss					

The CCC details window
If you click on an entry in the middle part of the window, the bottom part of the window - the details window – is refreshed. In the example lesson 80 (Ander) was selected. In the details window the cell with lesson number 80 and the cell with the number of periods per week are now shaded light blue. Several other cells are now shaded red.

The details window now displays the following information: the elements involved in lesson 80 with a total of 2 periods per week are the class 4 and the teachers Ander and Curie.

Some lessons involve several classes and teachers (e.g. No. 6, 3 classes, 7 teachers). In this case all elements involved are listed next to each other in the columns 'Classes' and 'Teachers'.

The cells shaded red highlight the reason why the displayed lesson cannot be scheduled at the same time as the lesson selected in the middle part of the window. Lesson 80, for instance, cannot be scheduled at the same time as lesson 5, since both lessons involve class 4. Lesson 6,however, involves a different class, but it cannot be scheduled at the same time as lessons 82, 80 or 26, since they are

taught by teacher Ander.

3.4.8.3 Shortening CCCs

The longest chain – the first row in the middle part of the window – contains 27 periods that cannot be scheduled at the same time, since this would lead to conflicts, as described above.There also may be time requests defined for each teacher, class and lesson and each lesson may have additional conditions imposed on it.

Note:
A large number of chains with many periods may reduce the possibilities of scheduling very quickly.

You now have the option of shortening the chain by assigning a different teacher to individual lessons.

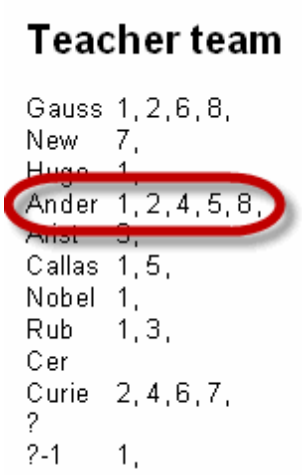
The teacher with whom a swap would shorten the chain by the most periods, is marked as critical. The CCC-Analysis shows his/her short name in brackets next to the lesson number in the middle part of the window.

If there is no critical element displayed, no improvement is to be expected by, for example, a high number of classes in volved.

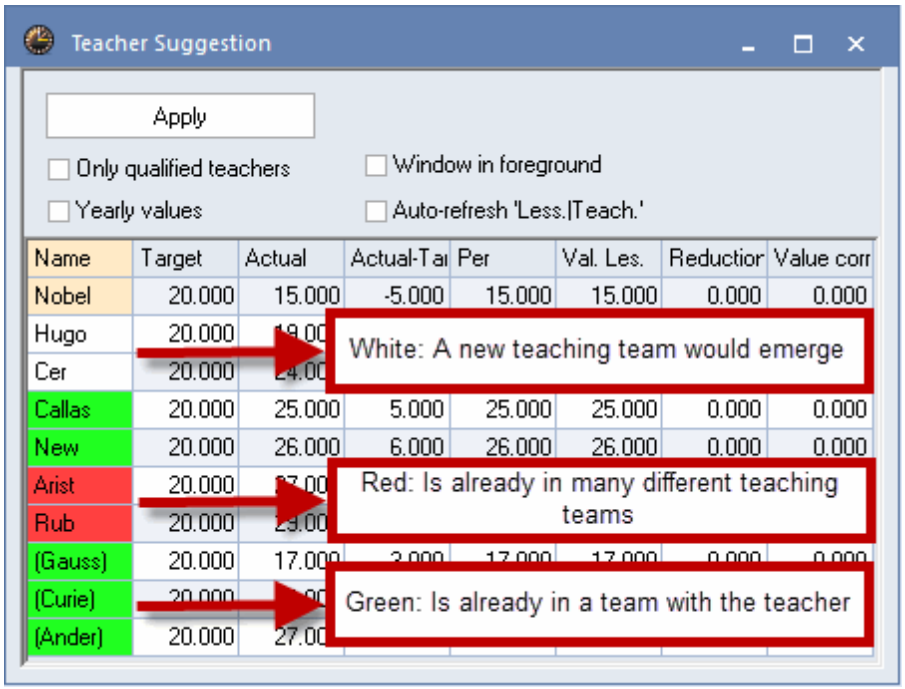
3.4.8.3.1 List of teacher teams

Via the <Displays the list of teacher teams> button or the <Print list of teacher teams> button you will get a handy reference of the composition of the teacher teams at your school.

At the end of the list the teachers and the teacher teams (couplings), in which they are involved, are displayed. The higher the number of the teacher teams is the more difficult the scheduling of the lessons of this teacher is from this point of view. In our example, it is teacher Ander who is scheduled in five different teacher teams.



The inverse conclusion of this is that the lower the number of the different teacher teams is the easier it is to schedule a timetable. If teacher Ander, for instance, has already been scheduled and coupled with Gauss, it would be good if this team will be coupled in other lessons, as well. The lesson planning and value calculation modules help with e.g. colour codes in the teacher suggestion. For further information please go to the module manual.



4 Manual Scheduling

4.1 Manual scheduling

Untis offers several different possibilities for manual scheduling (the scheduling, shifting and deleting of periods): the manual scheduling in the timetable , the scheduling timetable and the scheduling dialogueThe most important functions such as scheduling, shifting, swapping, locking and deleting of periods as well as the manual room allocation are possible with all three tools. The scheduling timetable and the scheduling dialogue offer special functions and additional information.

4.2 Scheduling periods in the timetable

The simplest way of scheduling periods, which does not even involve learning new windows, is by scheduling in the regular timetable. The following tasks can be carried out manually on a normal class or teacher timetable:

- plan unscheduled lessons ,
- lock periods ,
- swap periods that have already been scheduled,
- show swap suggestions ,
- delete periods directly in thetimetable ,
- delete periods and
- allocate rooms manually.

4.2.1 Scheduling periods

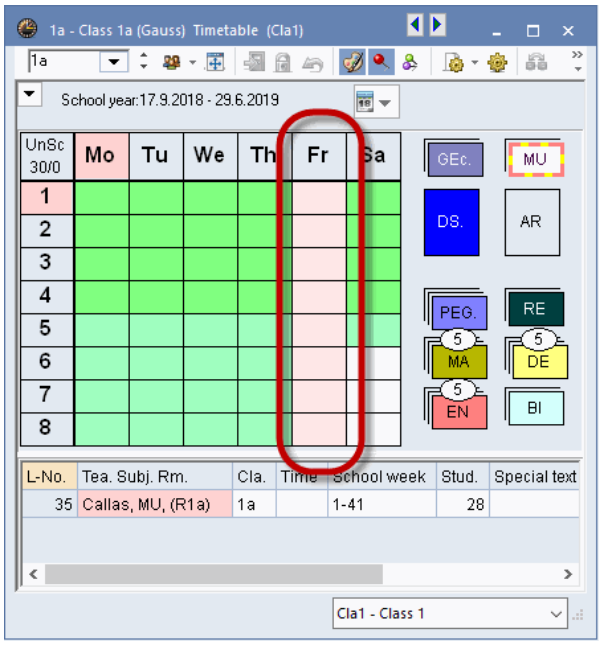
The aim of the first example is to place periods in an empty timetable and lock them to prevent the automated scheduling tool from moving them during a later optimisation run.

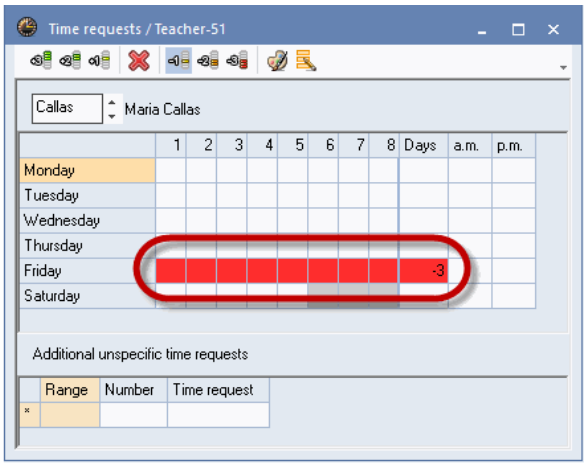
1. Open the file demo.gpn and delete the current timetable via 'Scheduling | Reset the timetable'
2. Unscheduled periods will now be displayed next to the timetable and can be placed in the timetable using drag & drop.

Clicking on a period that you wish to schedule will display possible time slots in the timetable.

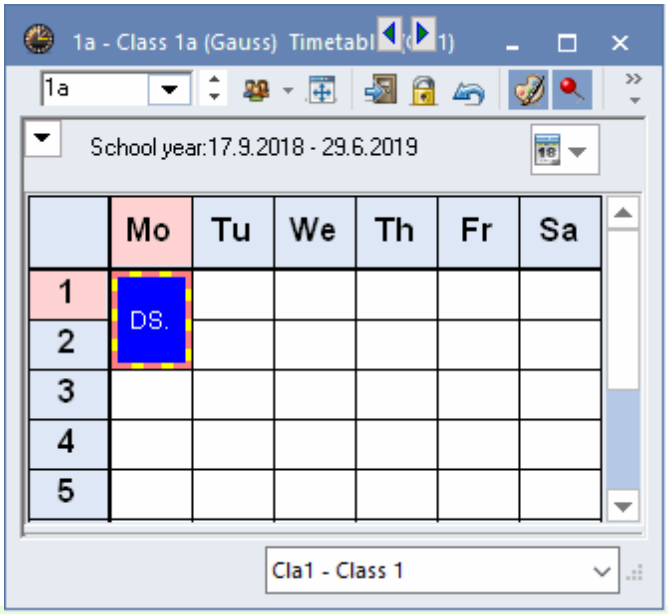
Fields which are highlighted green indicate that these would be good slots to place the period avoiding the risk of a clash.

The software also takes into consideration any additional settings you have made. For instance, Friday is not displayed as a possible day for the lesson 'Mus' for class 1a because teacher 'Callas' has been allocated a day off on Friday ('Teachers | Time Requests').

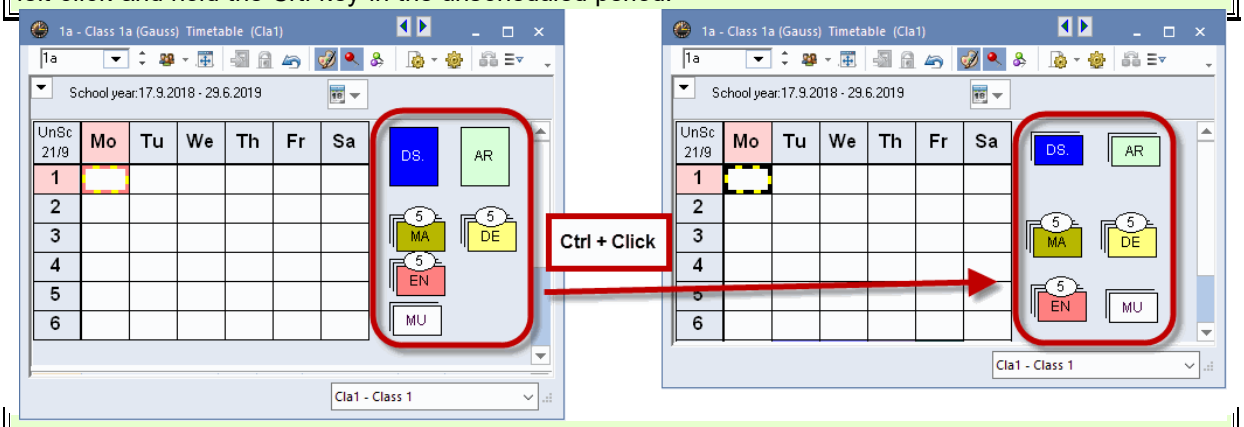




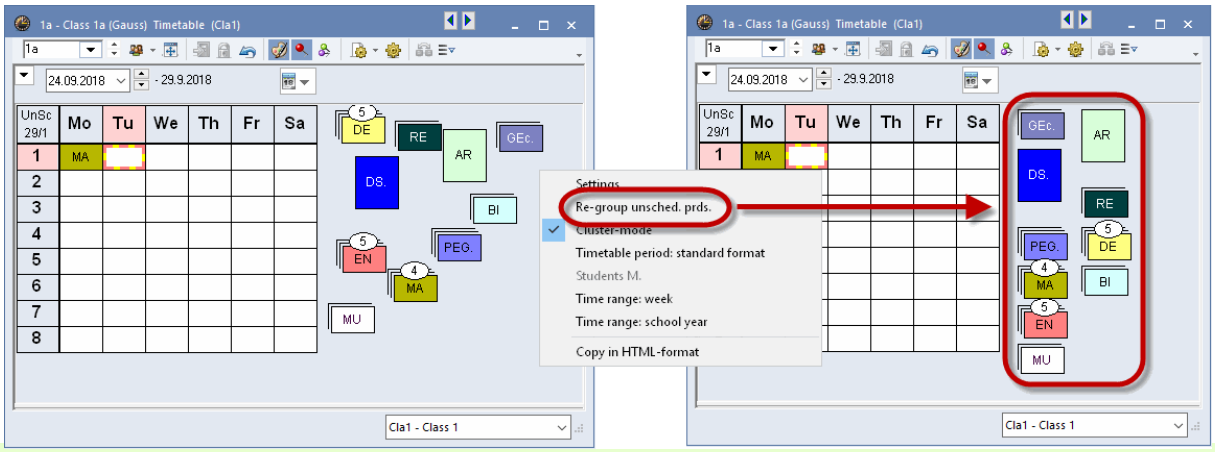
Tip:
You can use the <Colour coding> button in the 'Time requests' window to specify the display colours for the different time requests. This is necessary, if for example there are difficulties in distinguishing between red and green.
Lesson cells highlighted in purple indicate that it is possible to schedule the lesson without a clash as far as class and teacher are concerned but that room availability (i.e. the room allocated to the lesson and all alternative rooms are not free) prevents the lesson being scheduled (see figure).
If you position a period on a purple cell, a dialogue with the following options will open:
br>- Remove interfering lesson: The room is removed from the other lesson which creates a conflict with your current scheduling. Consequently, this lesson will not have a room anymore:
- Create clash: The room is scheduled by both lessons, a room clash is created.
- Do not schedule room: The room is not scheduled in the current lesson. You now can select another room via the room allocation dialogue. For more information go to 'Room allocation' .
Lessons are automatically displayed and scheduled as single or double periods (or blocks) in accordance with settings made for double periods under lessons.



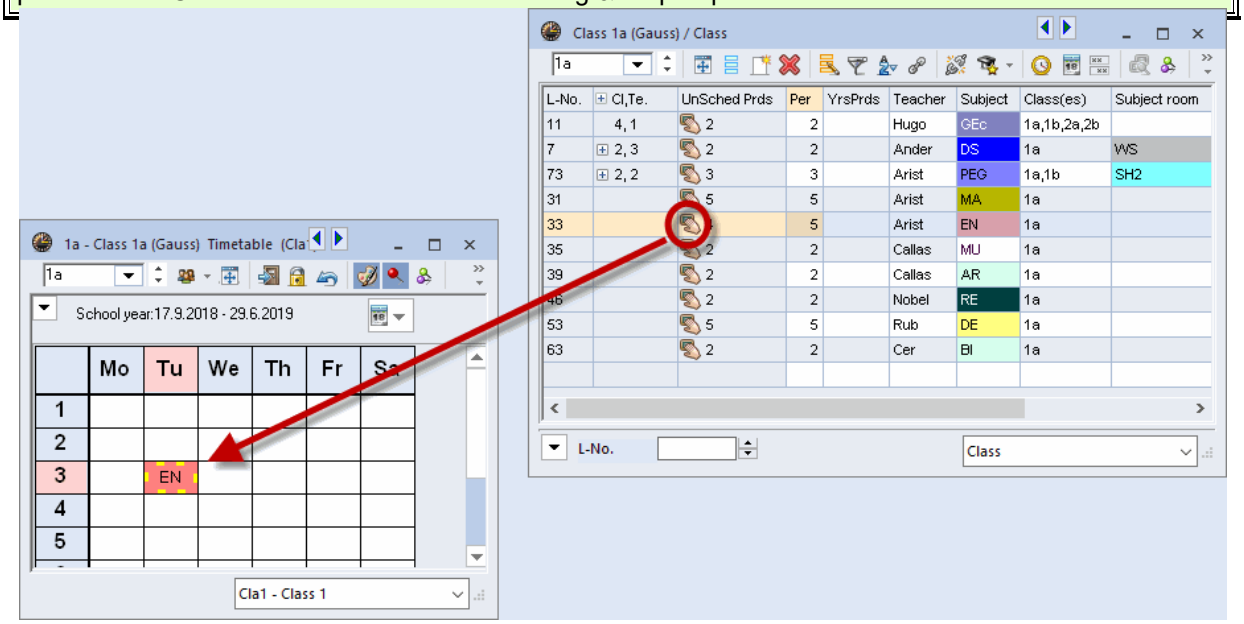
When there is more than one unscheduled period of a particular lesson, the individual periods will be displayed stacked. When there are more than three periods, the number of unscheduled periods will also be indicated. If you want to split a double period in order to be able to schedule it as a single period, just left-click and hold the Crtl key in the unscheduled period.



When you schedule any periods, the unscheduled periods are immediately grouped anew in such a way that the still to be scheduled periods are as close to the timetable as possible. If you want to sort the unscheduled periods differently, simply deactivate the function ‘Always sort unscheduled periods‘ under 'Settings | Miscellaneous | Timetable'. You now can position the periods at any place you want next to or below the timetable. If you want to then re-sort the periods, right-click in the field next to the timetable and select ' Re-group unsched. prds.', the stacks will automatically be repositioned.

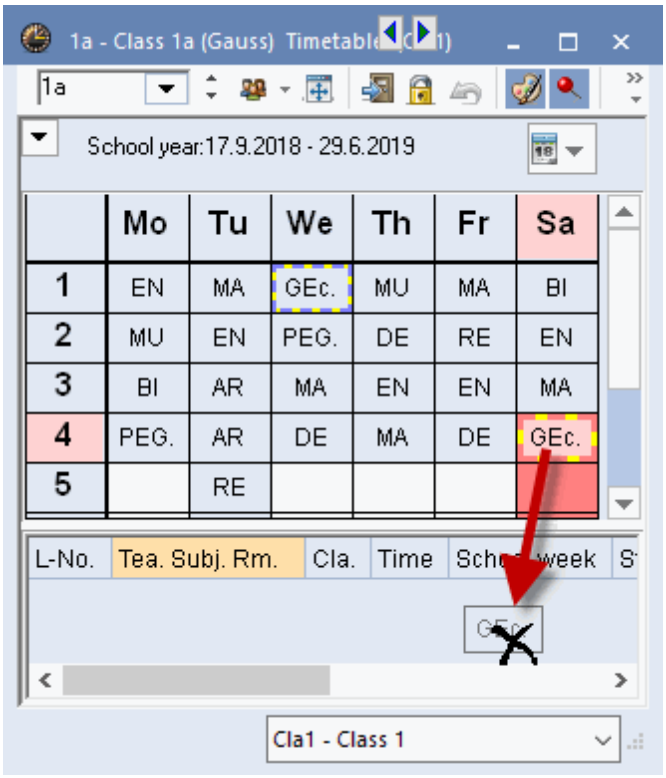


Alternatively, you can schedule the periods from the lessons window. To do this, click on the relevant period in the 'Unsched Prds' column and use drag & drop to position it in the timetable.



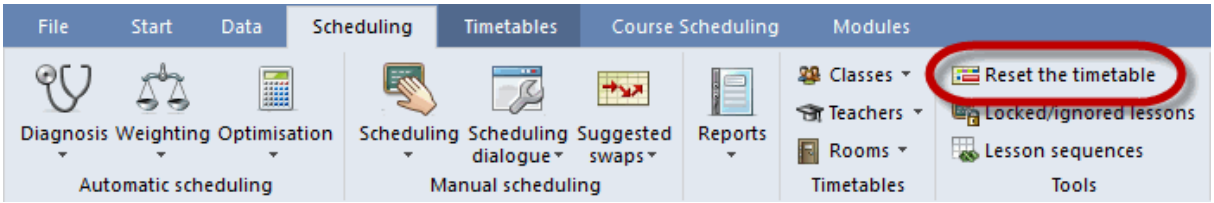
4.2.2 Unscheduling periods

You can also unschedule periods by dragging them into the section with the unscheduled periods or into the timetable details window and dropping them there.



Alternatively you can unschedule an active period by pressing the <DEL> button.

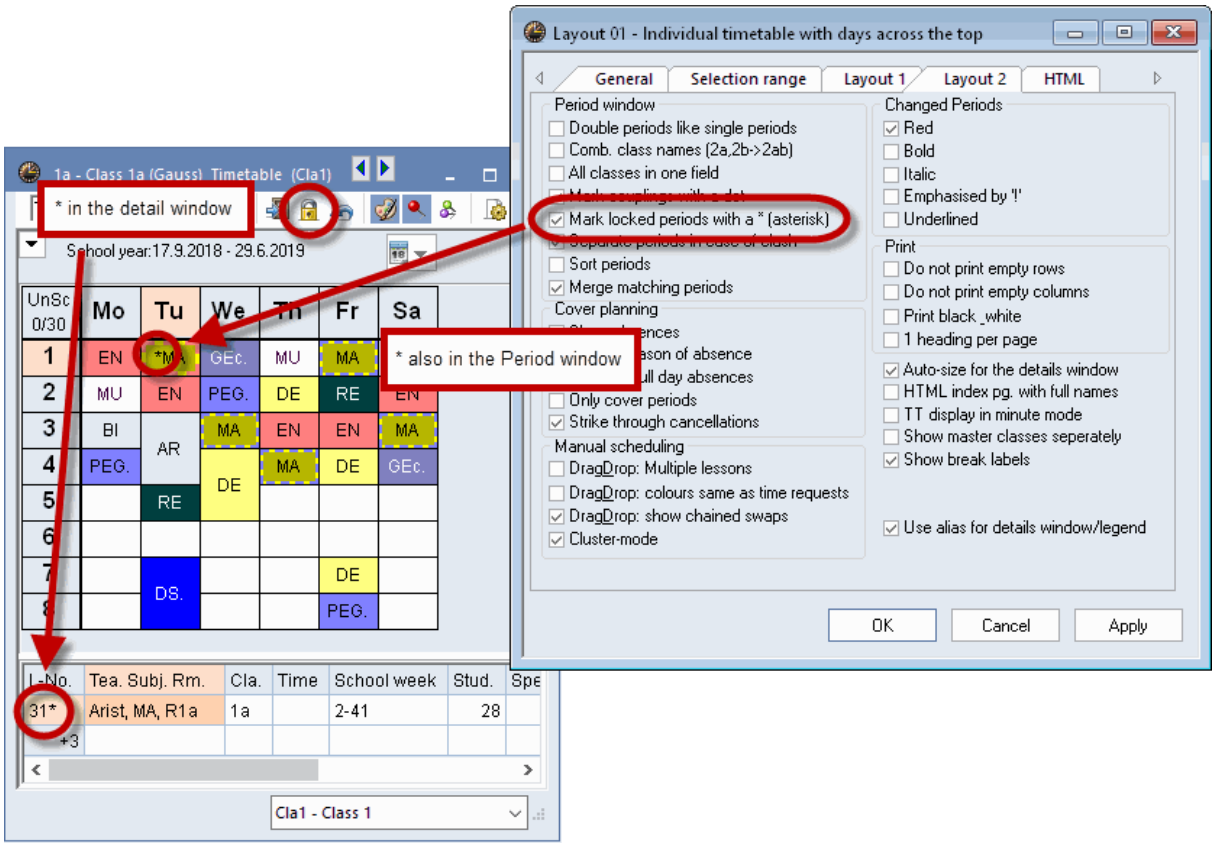
If you want to de-schedule all scheduled periods at once, go to ‘Scheduling’ and click on ‘Reset the timetable’ at the top right.



4.2.3 Locking periods

If you want to lock a period in place, i.e. this period will not be changed by the automated scheduling tool, then click on <Lock period> in the tool bar of the timetable. Alternatively, lock the selected period by pressing F7. The same key can be used to unlock a period.

Locked periods are marked with an asterisk (*) in the period details window next to the lesson number. You can also choose to display the asterisk in the timetable period (on the 'Layout 2' tab under <Timetable - Settings>).



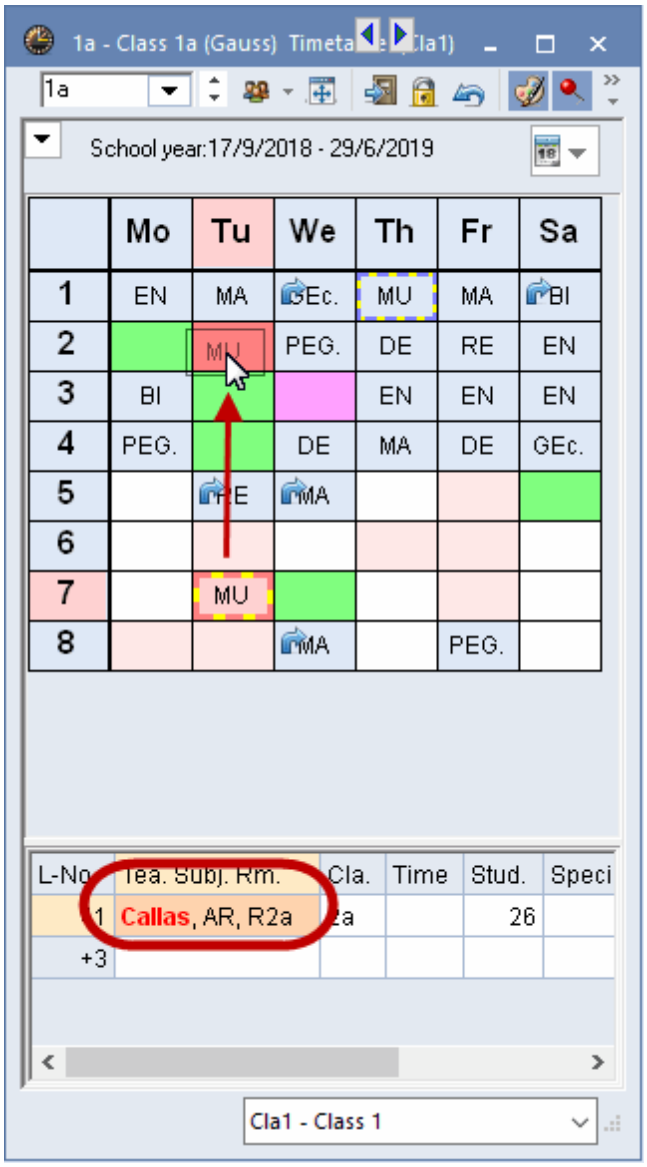
Tip:
You can see all locked periods in the window 'Lessons | Locked Lessons'. This window also allows you to unlock the lessons at the different levels. Please refer to chapter 'Locked lessons' for more detailed information.

4.2.4 Stunden verschieben

Periods can easily be moved from one slot in the timetable to another using drag and drop.

Empty green cells denote slots in the timetable where a lesson may be scheduled without risk of clash. The different shades of green indicate the suitability of the positions for the dragged lesson. The darker, the better. The evaluation depends on the parameters you have entered (time requests, double periods, weighting, etc.).

Red fields indicate that the scheduling would be possible without clashes but the timetable would be significantly worse because of e.g. a blocking (time request -3). White fields show that scheduling without any conflicts is possible. The details window shows for which element a clash would occur.

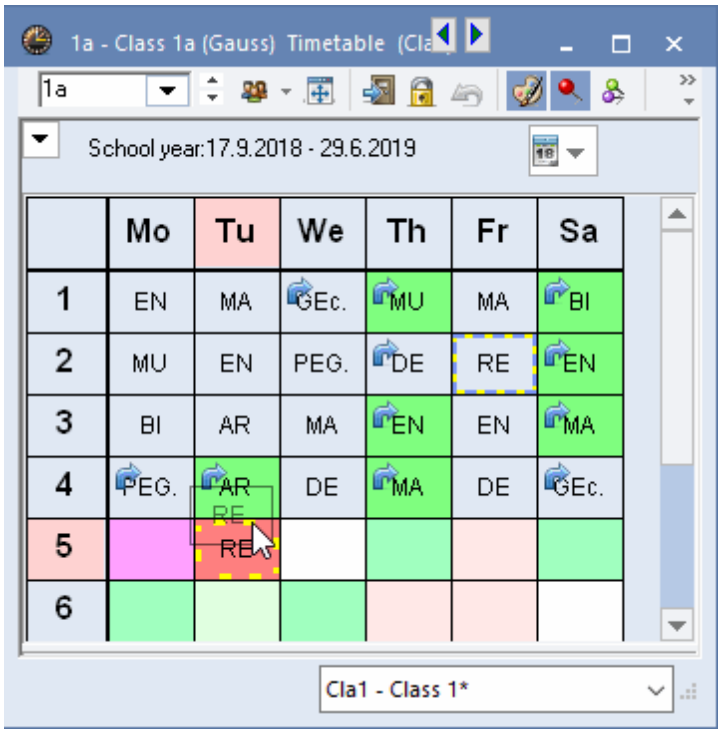


Cells highlighted purple indicate that the room allocated to the lesson is not available.

When you move double periods or blocks, they are offered as double periods or blocks. However, if you only want to move one period, press the Ctrl. key and click into the timetable, similar to when you schedule periods. Double periods and blocks are now displayed as single periods and can be moved individually. If you want to have this function available permanently then go to the settings of the timetable, go to ‘Layout 2’, and check the box ‘Double periods like single periods’.

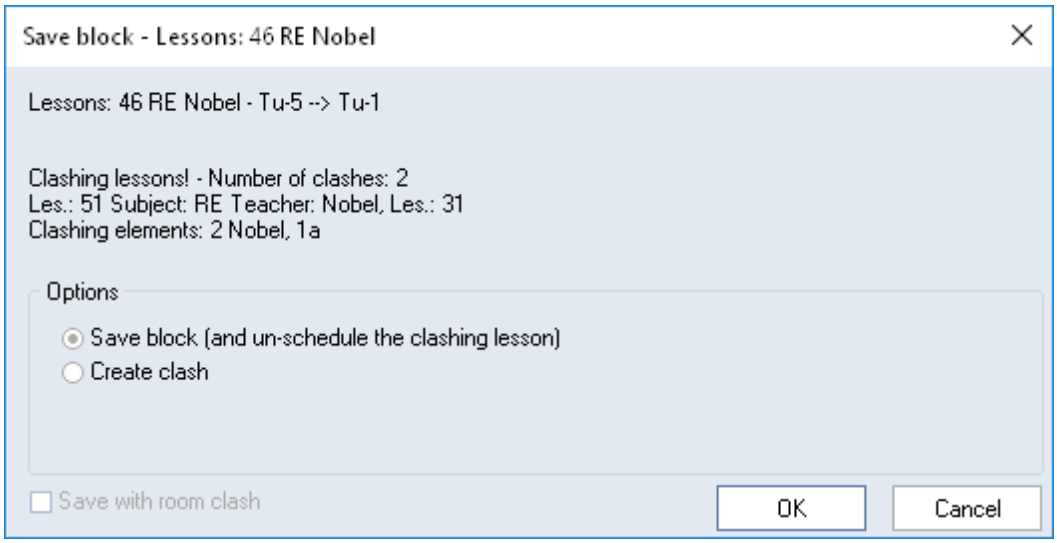
4.2.5 Swapping periods

If you select a period in the timetable and move it by holding down the left mouse button, already scheduled periods may show certain features:



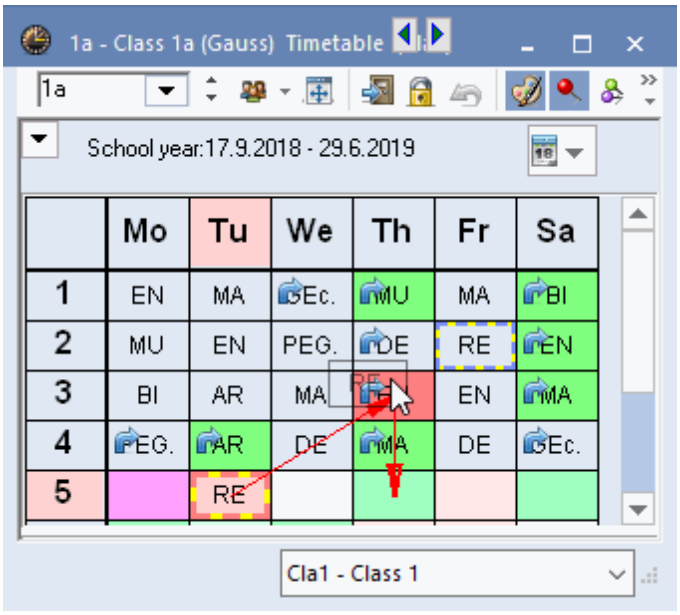
a) No marking of the period

If you want to drag&drop Tu-5 of class 1a to Tuesday first period, you see that the first period is not marked, i.e. it is not suitable for a swap, because it would collide with the period. If you still drop it on Tu-1, Untis will ask you if you want to save the block and un-schedule the clashing lesson or if you want to create a clash.

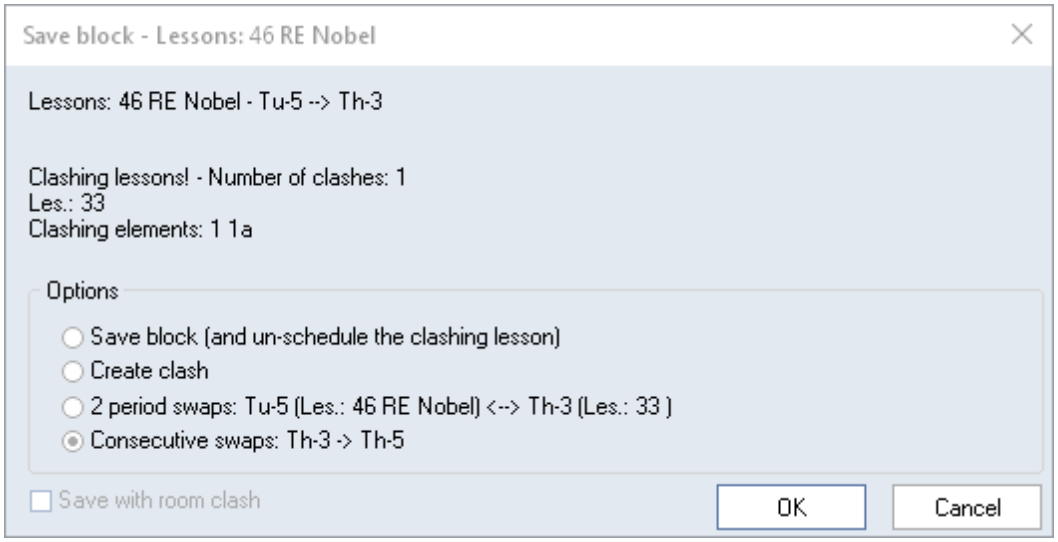


b) blue arrow

If a scheduled period has a blue arrow in the left top corner, a swap chain is possible with this period. In our example this would be e.g. Wendesday first period. In the timetable the swap chain is symbolised with red arrows.

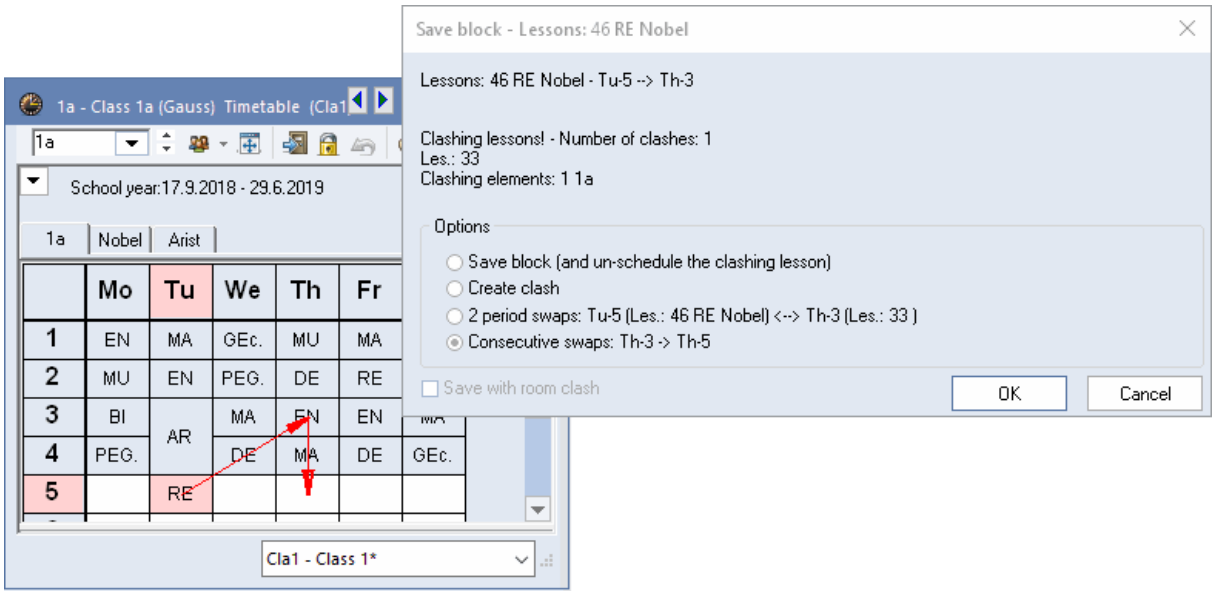


If you drop the period and confirm, the periods will be swapped.



c) blue arrow and green background

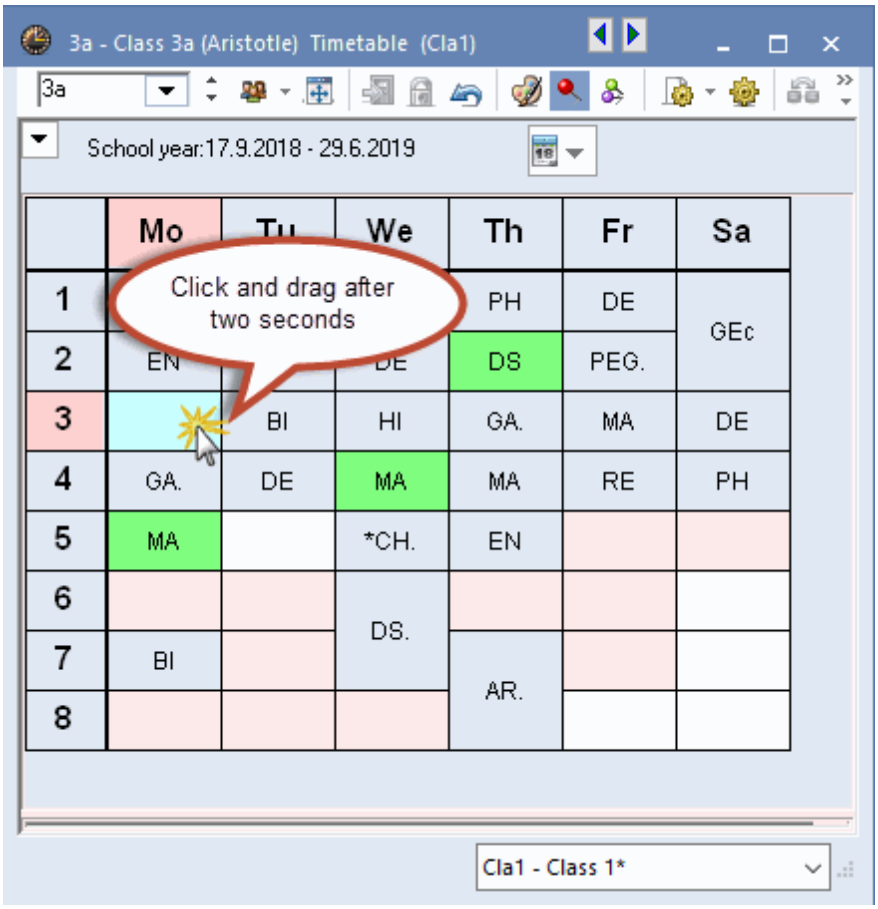
Periods with a green background are also suitable for 2 period swaps (e.g. Th-1). If you drop a period on such a position, in the appearing dialogue you can decide if you want to have the 2 period swaps (Tu-5 with Th-1) or if you want to make consecutive swaps.



4.2.6 Suggestions for NTPs

If you want to move a period, for example from Mo-1 to Tu-3 you can easily do this via drag and drop. However, how do you find out, if it is possible to fill a non-teaching period with an already scheduled lesson?

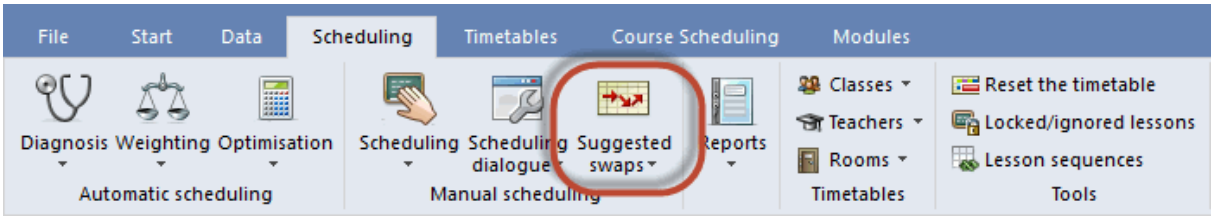
Click on the position you want to fill in the timetable and hold the left mouse button down for at least two seconds, then move the mouse. Scheduled periods which can be moved to this position will be shown in green.



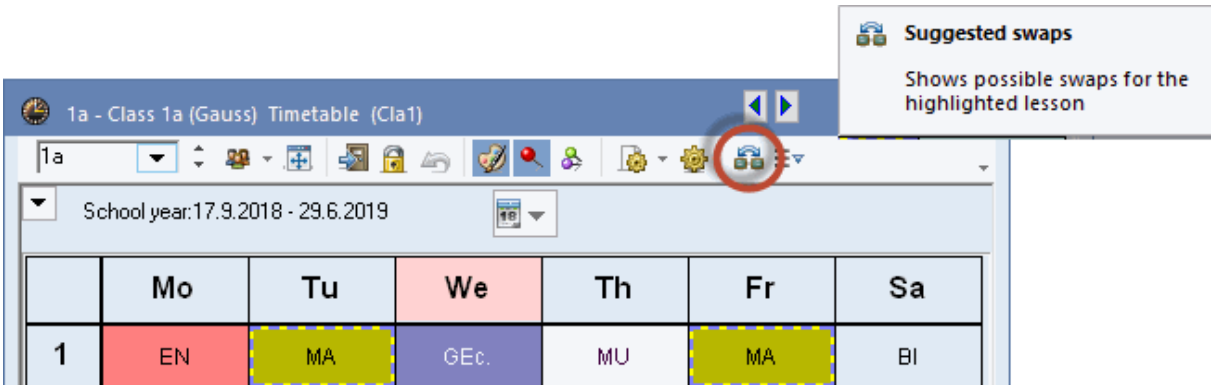
4.2.7 Swap suggestions

In addition to the swap suggestions offered to you when you drag and drop a lesson there is a separate function providing you with additional possibilities.

Via the 'Scheduling' tab you can open a window group for 'Sugggested swaps'.



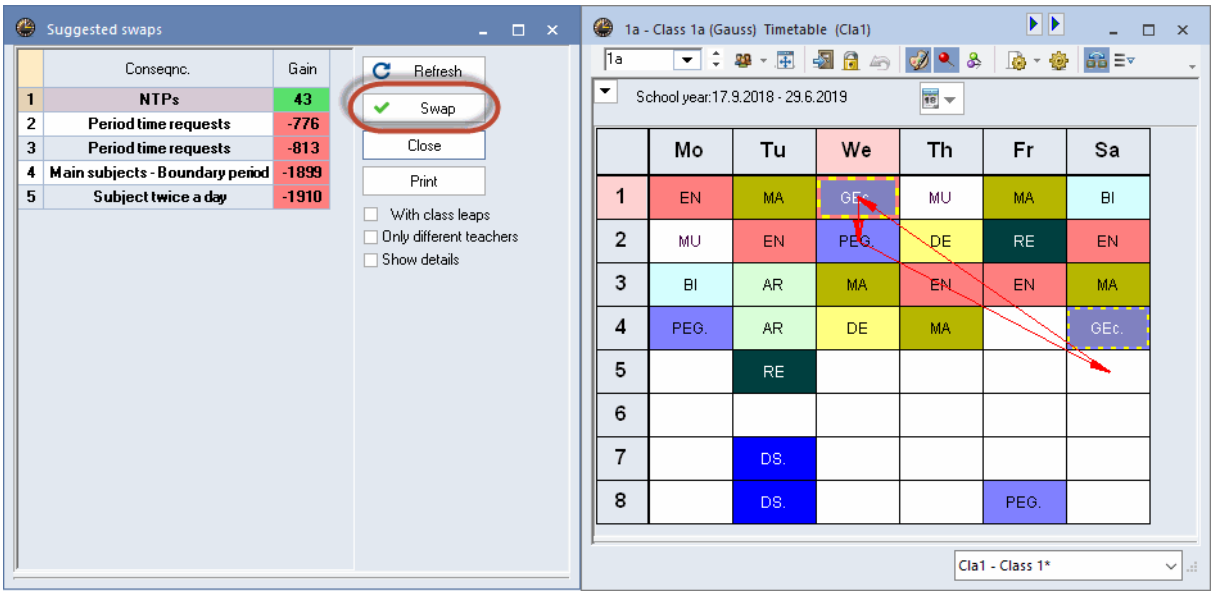
Alternatively this function can be accessed via the <Suggested swaps> button for each individual timetable of a class.



2-way, 3-way and 4-way swaps are suggested for the class. The 'Gain' column indicates whether the timetable would improve (positive values) or deteriorate (negative values) based on the data entered. With the <Refresh> button the swap suggestion is adjusted to the active period in the timetable.

The 'Conseqnc.' column displays the worst conflict that the respective swap would cause, if the timetable is likely to see a deterioration. If, on the other hand, the timetable is likely to see an improvement (positive value in the 'Gain' column) the category where the largest improvement took place will be displayed.

Possible swap suggestions are indicated in the timetable by red arrows. Clicking on the <Swap> button performs the selected swap.



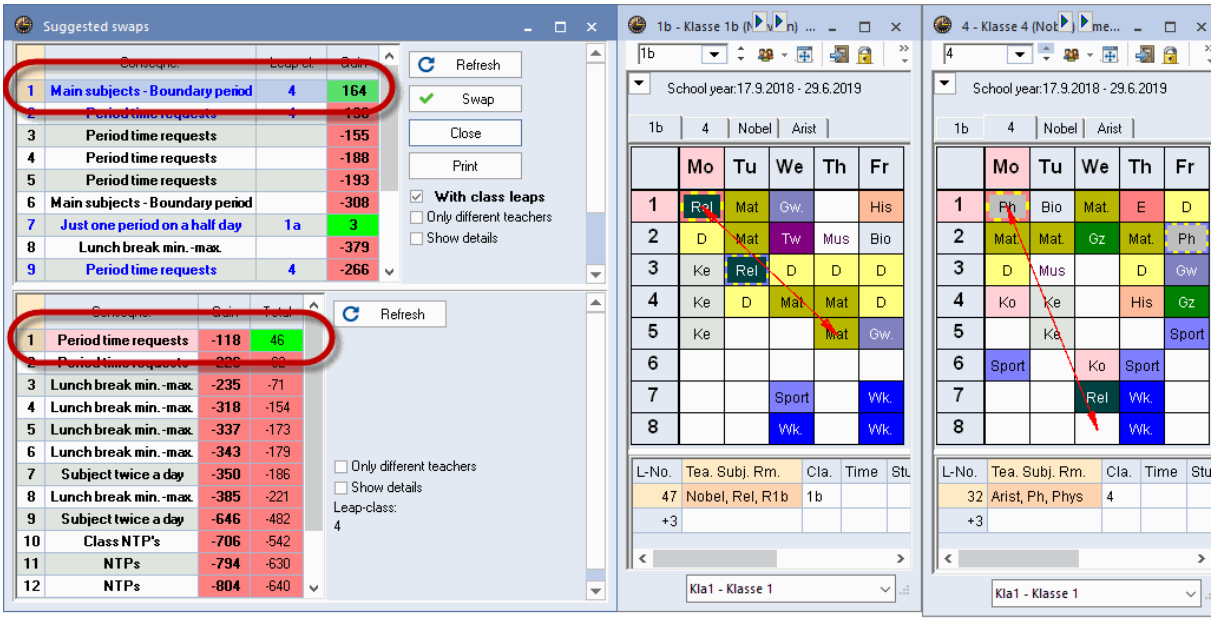
Cross-class suggestions

It is often necessary to perform swaps across several classes. To do this, check the box ‘With class leaps' in the 'Suggested swaps' window.

Example:

The religious education period for class 1b on Monday, 1st period is to be swapped. The swap with the

math period would bring an improvement of 164 points ('Gain' column). The potential gain is high, because fewer main subjects would be on prior to the boundary period on Thursday. However, it can only be performed without a clash if a second swap is effected at the same time.
Teacher Aristotle, who teaches physics to class 4, has a lesson planned with them on Monday, first period of the day. The so-called leap class is therefore class 4 and this indicated in the 'Leap cl.' column. The possibilities of moving this lesson of Aristotle with class 4 are displayed in the lower section of the 'Suggested swaps' window. The best possibility would, however, lead to a deterioration in the schedule of Aristotle of 119 points since it would result in a violation of one of his time requests-2. The difference in the evaluations of both swaps (+164 - 119) is displayed in the 'Total' column (+45).



Nur verschiedene Lehrer

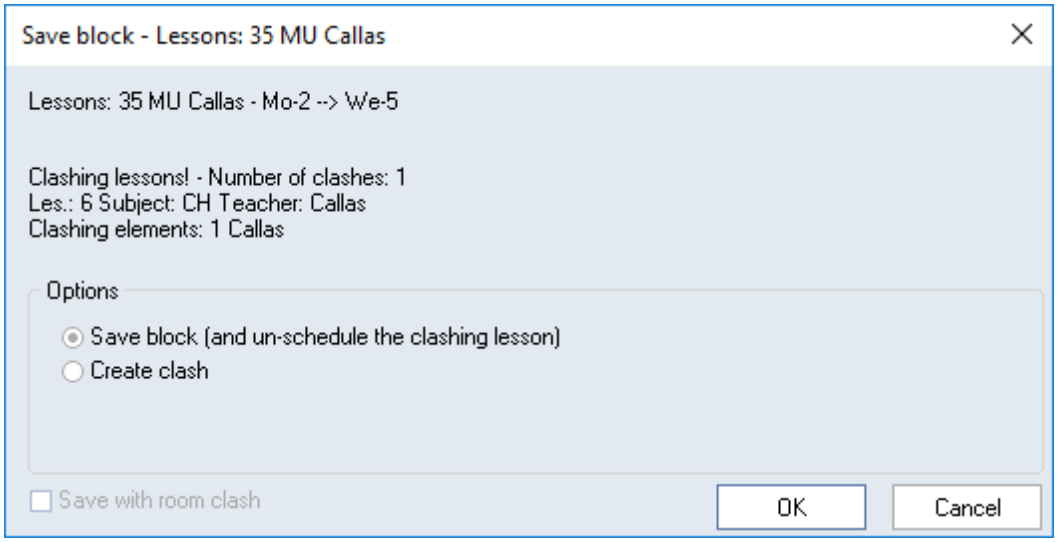
If a teacher takes a class for more than one subject, it is often undesirable for swaps to be offered between these subjects. Checking the 'Only different teachers' box results in such swaps not being displayed.

4.2.8 Scheduling periods with clashes

Moving a period to a non-highlighted cell is not possible without creating a clash. The lesson details window displays the lesson number and details of the lesson in conflict with the moved period.

If you decide to drop the period in such a cell, a window will appear showing the following two options:

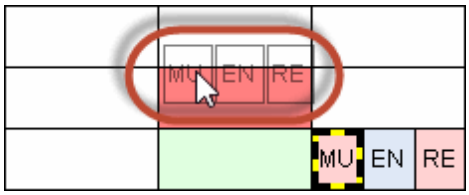
- <Cancel> - cancels the move.
- <<Save block> - the 'dragged' (i.e. active) period will be scheduled and the original period will be unscheduled.
- <Create clash> schedules the period with class and perhaps even teacher clashes. If you select 'Save with room clash' the room will be scheduled twice, as well.



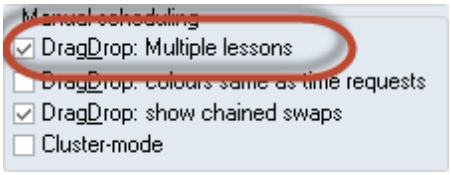
The period details window displays all the elements of the lessons scheduled at this time. Display conflicts in the timetable (e.g. courses in the same cluster) by activating the option 'Separate periods in case of clash' ('Layout 2' tab under<Timetable Settings>). Please refer to chapter ' Timetable display | customised views | Layout 2'.

Each of these lessons can be selected and moved separately.

You can also move all lessons that lie on one position in one single operation. Hold the <Ctrl> key and click on the respective period. All lessons in this period are selected and you can move them simultaneously.



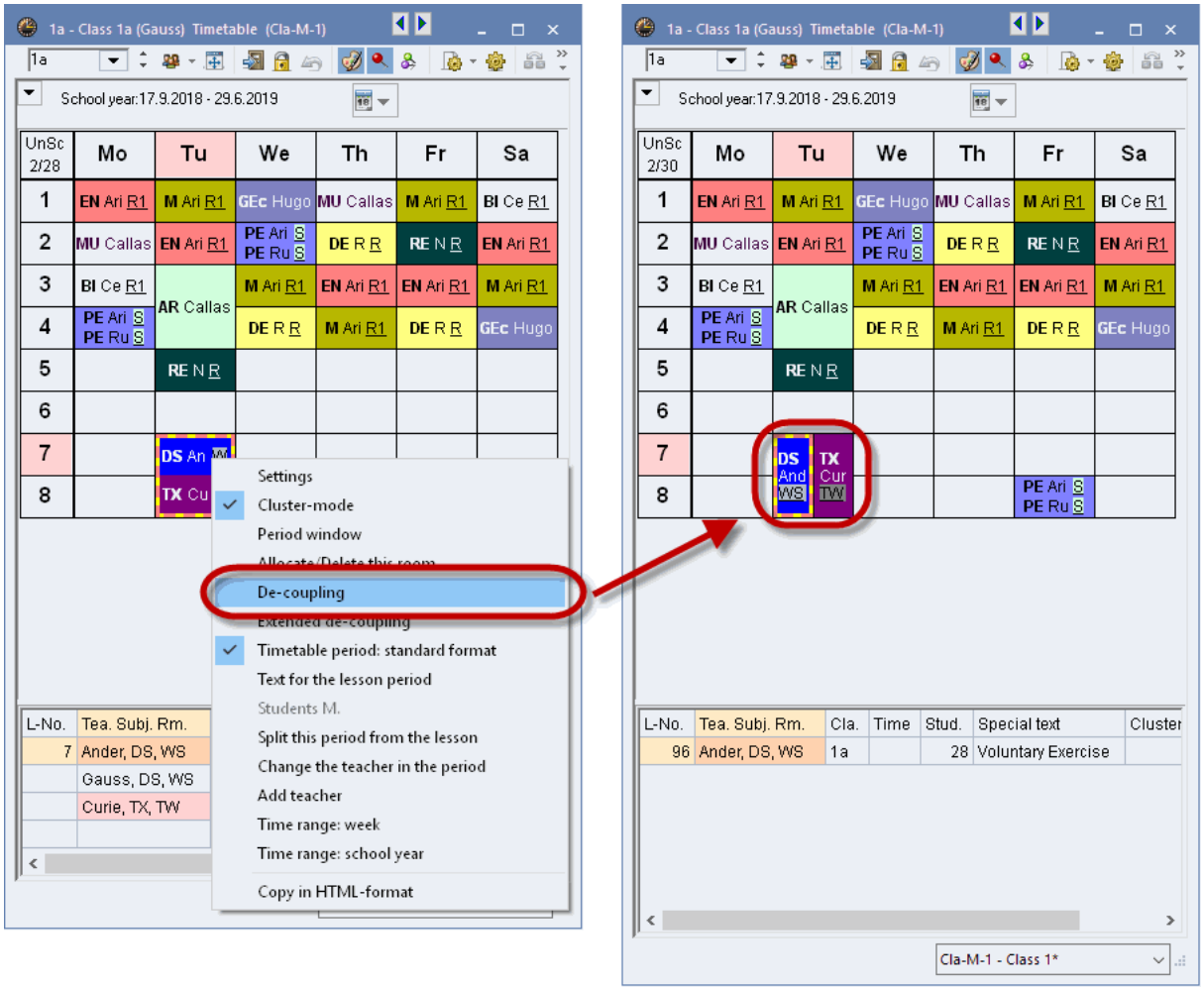
If you would like to activate this function in general then go to <Settings>on the ‘Layout 2’ tab and check the box: 'DragDrop: Multiple lessons' an.



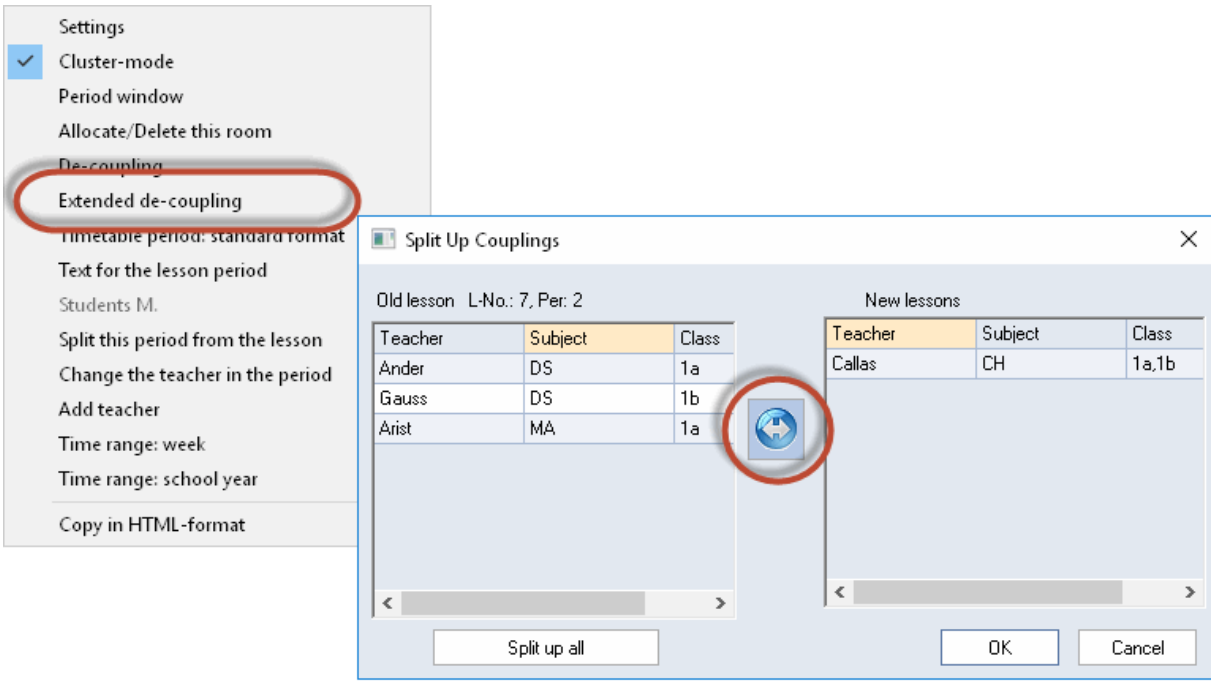
4.2.9 Decoupling in the timetable

A coupled lesson can be decoupled directly in the timetable and the new lesson that is thereby created can be scheduled in another position.

Example: The coupled lesson in periods 7 and 8 on Tuesdays is to be decoupled as teacher 'Ander' is to teach his group on Thursdays. Click on the period with the right mouse button and select 'Decouple'. The lesson is then decoupled and the new lesson with teacher 'Ander' can be easily rescheduled using drag and drop.



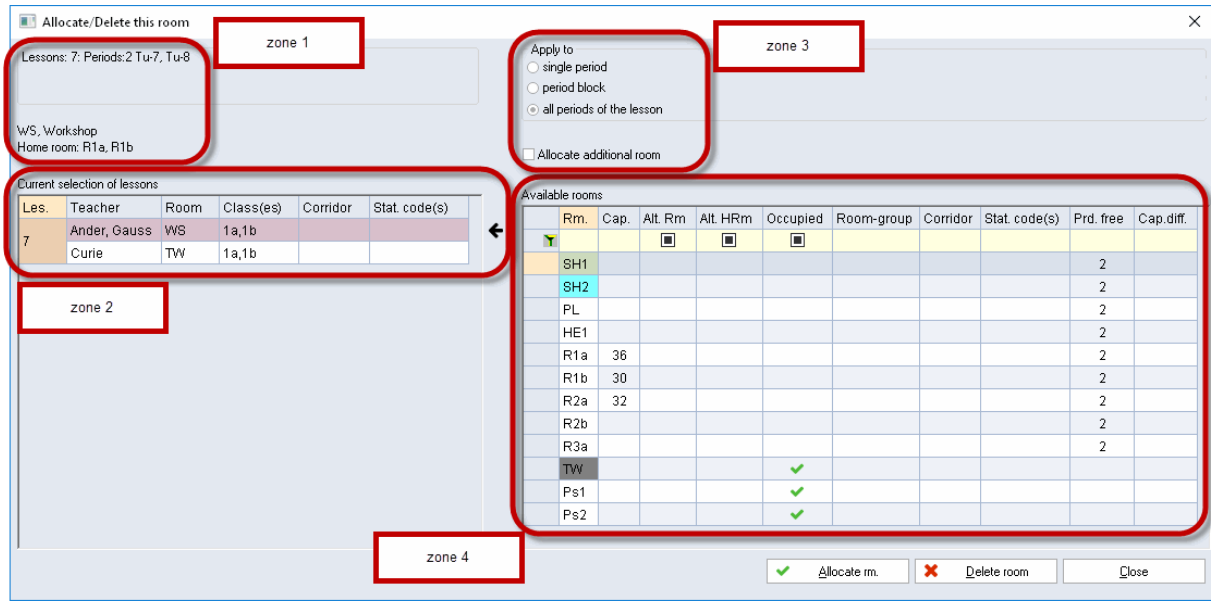
In larger couplings you can define in detail which coupling lines should be de-coupled from the existing lesson via the function 'Extended de-coupling'. In our example only the chemistry lesson shall be de-coupled:



4.2.10 Changing and allocating rooms

Via the Room allocation dialogue you can allocate a room to a certain period, you can delete an allocated room or change it, or you can allocate an additional room to a period. There are 3 possibilities how to get to this dialogue:

- Go to < Allocate / Delete this room > in a timetable
- By clicking right in the timetable and selecting < Allocate / Delete this room >
- By clicking in the timetable and pressing and holding the key combination Ctrl+R



In area 1 of the dialogue you see the selected lesson, the scheduled lessons and the currently allocated rooms. Also the home rooms of the lessons are displayed here, in this case a subject room has been scheduled.
In the area below – area 2 – you see details to this lesson. Under 'Current selection of lessons' you can select the coupling line for which the room should be changed for couplings. The black arrow points at the active line.

Area 3 shows the different types of periods you can select from regarding applying a room change:

- a single period – the selected period
- a period block (in the case of a double period or block)
- all periods of the selected lesson

You also can add a room by clicking the option 'Allocate additional room'. If you check this box and select a room, then this room will be added to the first room.

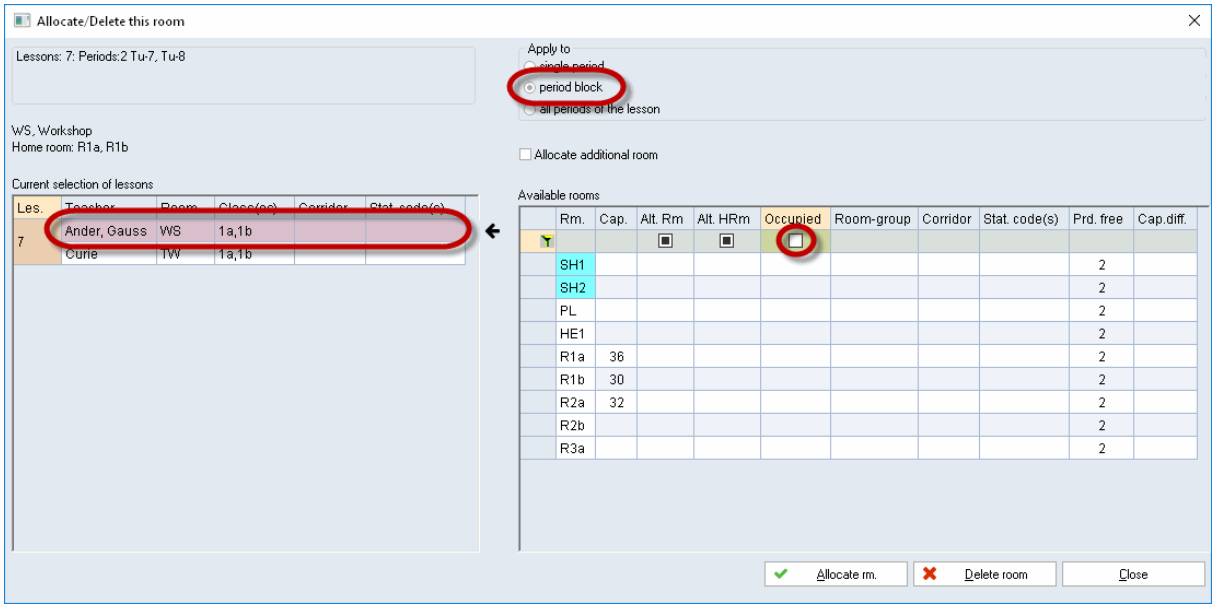
Area 4, 'Available rooms' lists the rooms recorded in the master data. You can limit the selection to certain rooms by using the filter. For more detailed information on how to filter in Untis please refer to the chapter 'Master Data | Editing formats | Filtering'.
Here you also get additional information on the rooms in the different columns. When you right-click on the heading you can hide or show columns. You also can hide or show the filter line this way.
The following columns and information is available:

Rm.: Short name of the room.
Cap.: Room capacity provided it has been recorded in the master data.
Alt. Rm.: This is an alternative room for the respective room allocated to the lesson.
Alt. HRm.: The respective room is an alternative room of the home room of the class.
Occupied: The respective room is free or occupied, the green tick means ‘occupied’.
Room group: The room groups to which the room is assigned.
Corridor: The corridor in which the room is located provided it has been recorded in the master data.
Stat. code(s): The statistical codes provided there have any been recorded in the master data of the room.
Prd.free If the option 'All periods of a lesson' has been selected, this column shows the amount of periods when the respective room is free.
Cap.diff. The difference between the room capacity and the number of students provided that both numbers have been recorded in the master data or in the lessons. A positive figure means that the room is big enough, a negative figure means that the room is too small for the number of students.

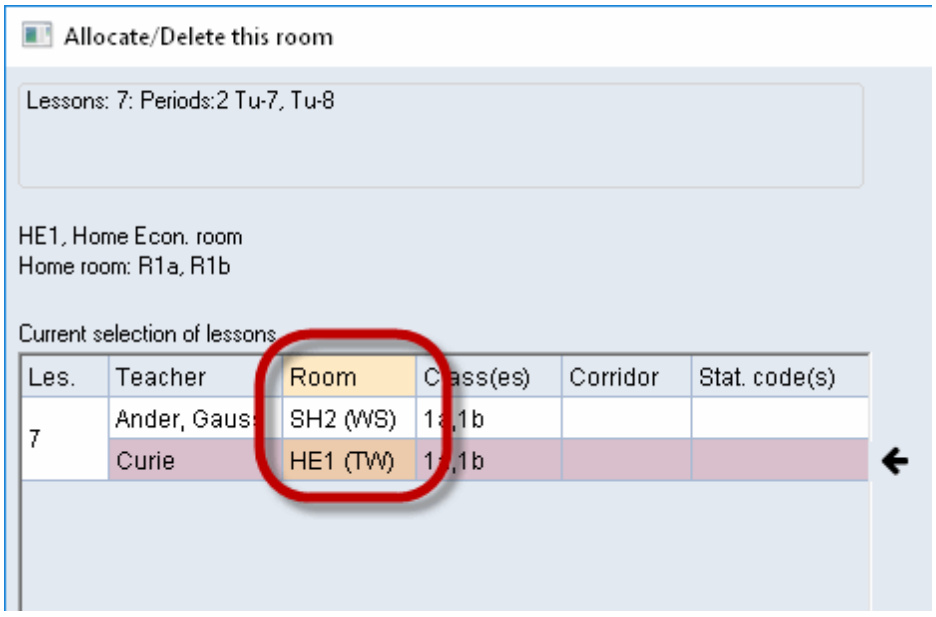
Tip:
Go to the heading with your mouse and a tool tip will describe in brief the meaning of the different abbreviations.

Let’s assume that you want to assign different rooms to Design on Tuesday in periods 7 an 8.

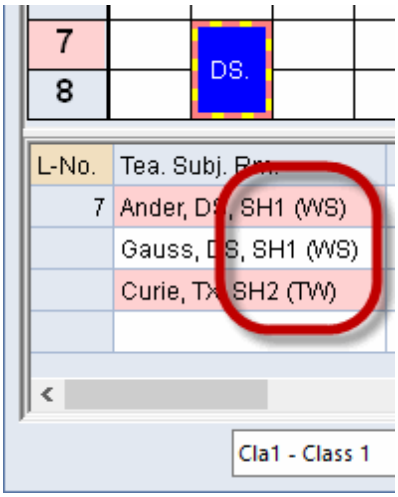
1. Open the demo.gpn file and open a timetable of class 1a.
2. Go to Tu-7 and open the room allocation dialogue.
3. In our example the room allocation for all periods of the first coupling line of this lesson shall be changed. For this we only want to show the rooms which are not occupied.



4. Now select a room (e.g. R1a) and click <Allocate room>. In lieu of the workshop, room R1a has now been allocated. The workshop is in parantheses next to R1a as additional information.
5. Click on the second row in the left pane and substitute the room 'TW' with another room (e.g. 'PL'). Instead of using the <Allocate rm.> button, you can allocate the new room with a double click.



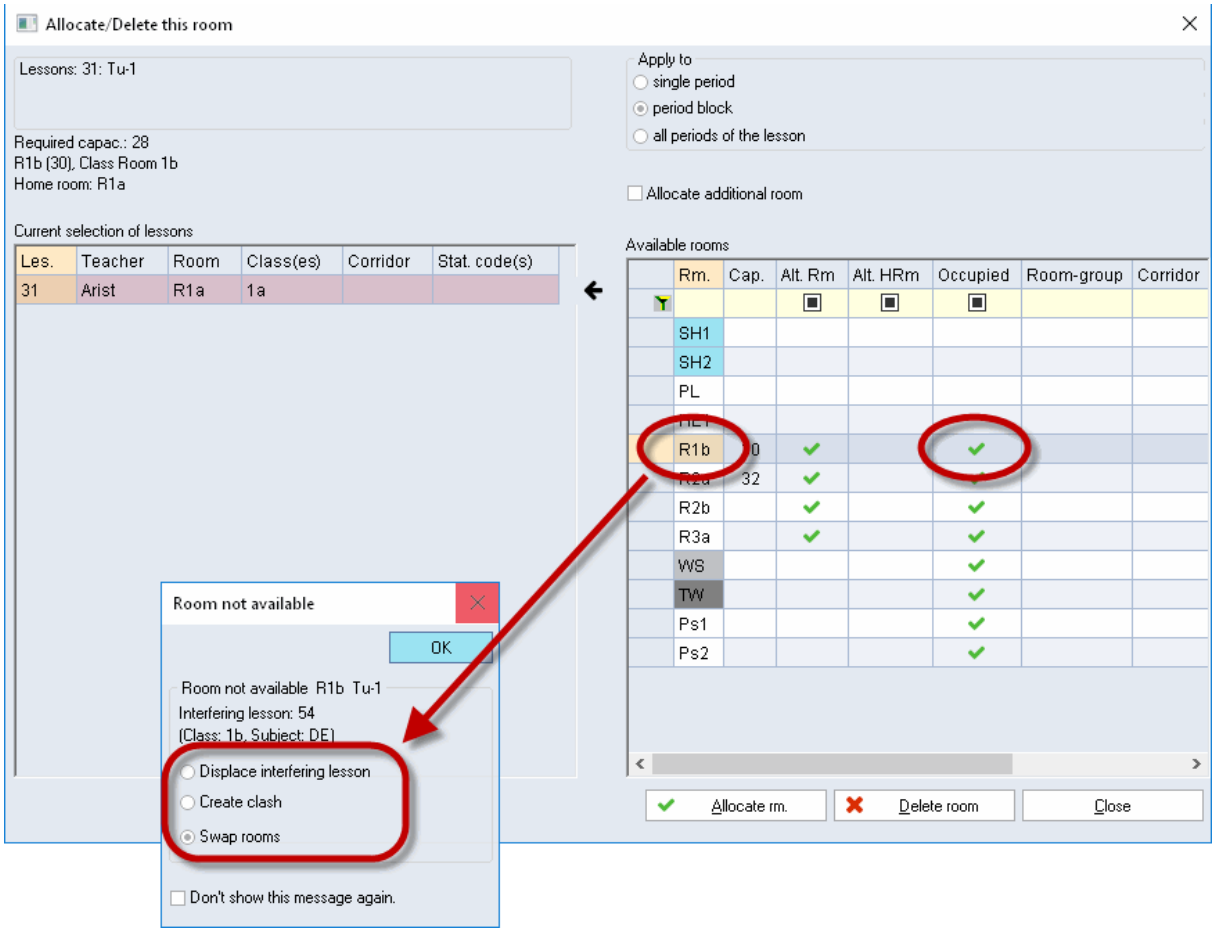
In the details window of the timetable you work on you now see that periods 7 and 8 have been allocated new rooms. The originally scheduled rooms appear in parentheses next to the new room.



By clicking <Delete room> you can delete a room you have already scheduled.

If you select the option 'Also show occupied rooms' in the room allocation dialogue, you will also see those rooms which are occupied in the current period. If you wish to assign one of these rooms you have the following options:

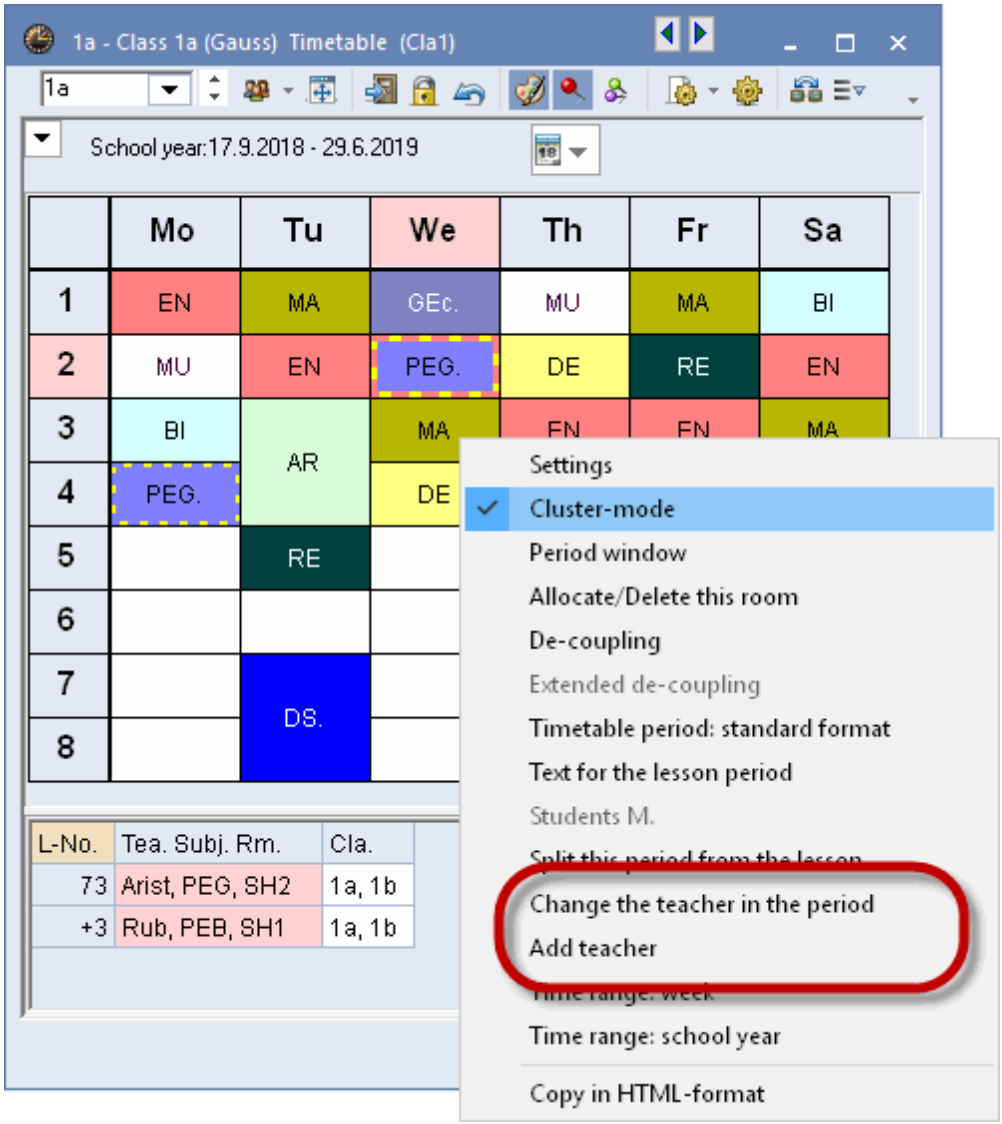
- to remove the conflicting lesson,
- to create a clash or
- to swap rooms.



A change of room allocation can also be carried out in overview timetables. For further details, please refer to the chapter 'Planning in the overview timetables'.

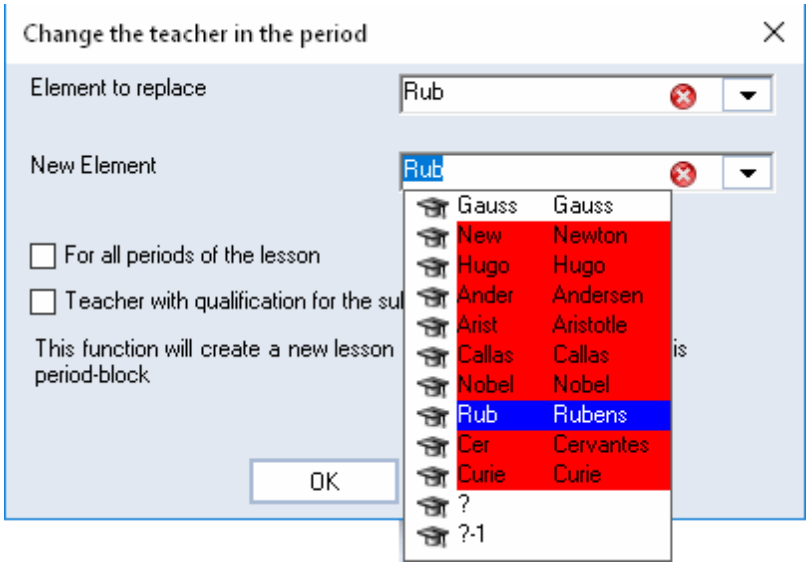
4.2.11 Change or add teacher

You also have the possibility to add or change a teacher to a period in the timetable. Right-click on the respective period and in the list you will see the functions 'Change the teacher in the period' and 'Add teacher'.



Change the teacher in the period

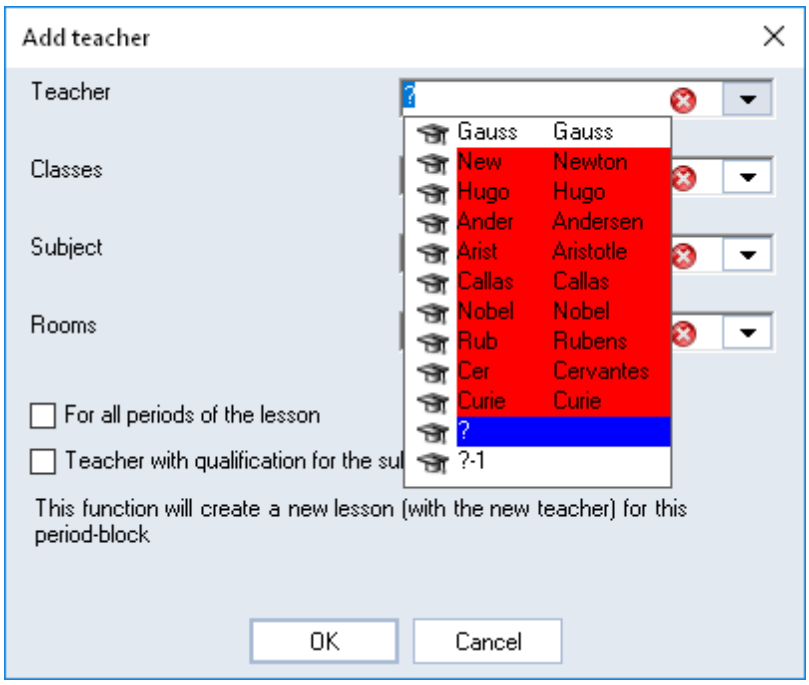
If you click on 'Change the teacher in the period', you can select another teacher for this period in the dialogue popping up under 'New element'. Teachers who are already scheduled for the respective time are highlighted in red.



If, for instance, the teacher is changed in one period of a 5 hour lesson, Untis automatically creates a new one period lesson with the selected teacher. The 5 hour lesson is reduced to 4 hours.

Add teacher

You can add a teacher via 'Add teacher' to any given period.

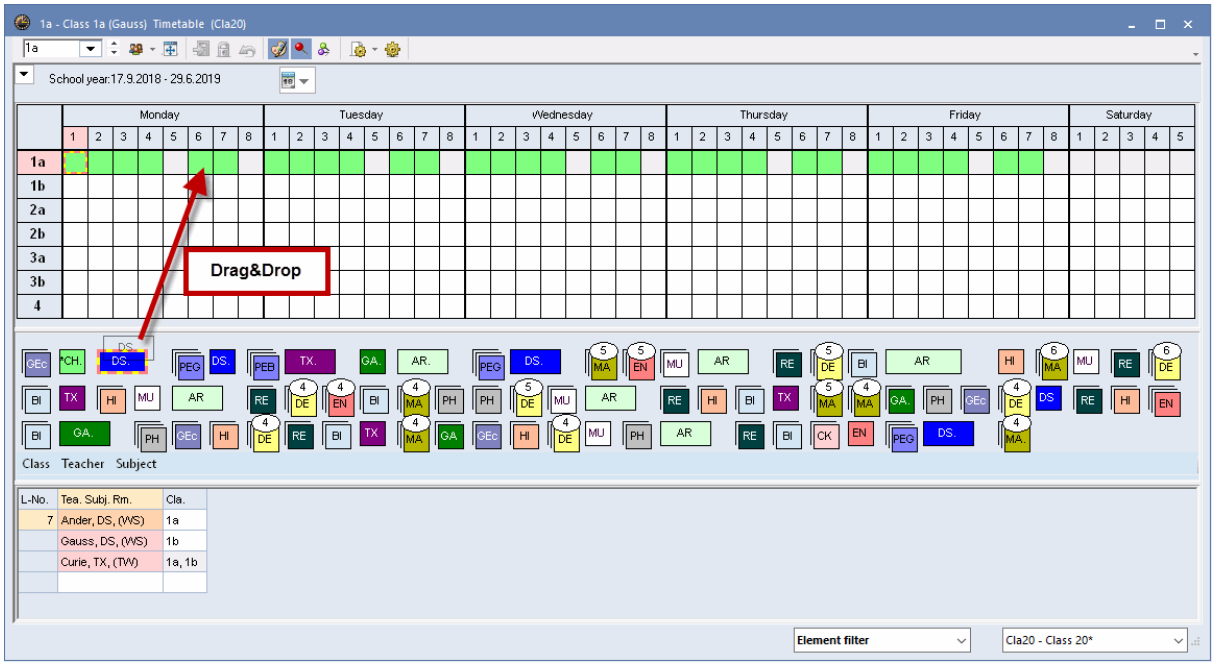


Also in this dialogue you see which teacher would basically be available. A new lesson is created and the added teacher is coupled with the scheduled teacher.

The following options can be selected in the dialogue 'Change the teacher in the period':
- 'For all periods of the lesson' changes the teacher in the selected period and in all periods of this lesson.
- 'Teacher with qualification for the subject' only appears when you work with the 'lesson planning' module and limits the selection to those teachers who are qualified for this subject according to the recorded data.

4.2.12 Planning in the overview timetables

You are not limited to the single timetables for manual planning. You can also use the overview timetables for classes and teachers. This helps you keep an overview of all teachers and classes.

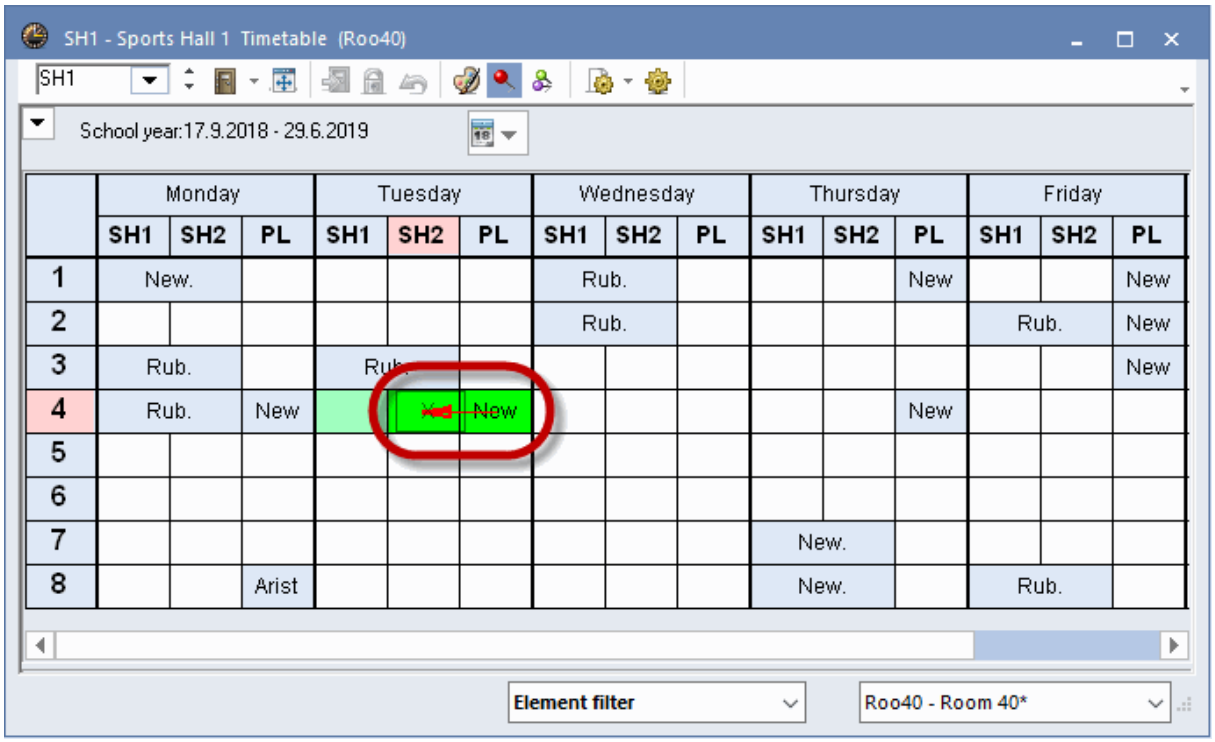


The unscheduled periods are displayed as little cards below the timetable and can be scheduled via drag and drop.

For a better overview, you can reduce the display to single classes by selecting the elements you want from the selection list. Hold the <Ctrl> key down and click on the respective elements. You also can permanently save these filters. For more details please refer to the chapter 'Timetable display | Timetable formats | Overview Timetables'.

Change room in overview timetable

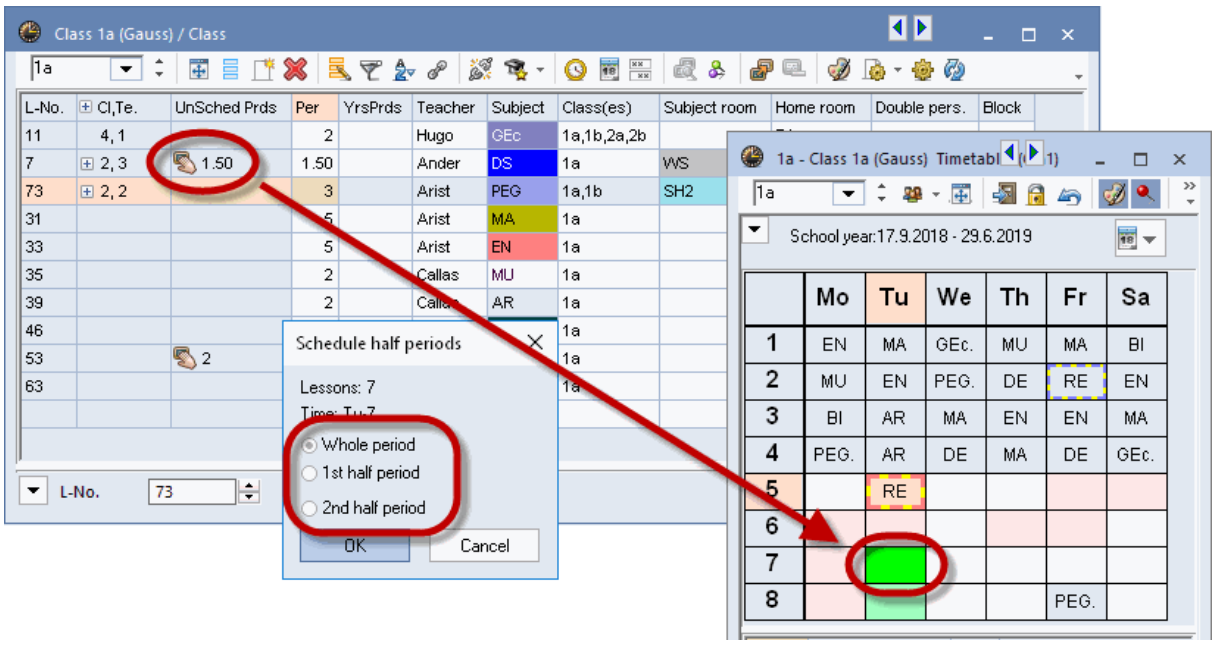
As an alternative to the room allocation dialogue, you also can change a room in any room overview timetable. Just drag the period from one room to another. If the room is already occupied, the rooms are swapped.



4.2.13 Scheduling half periods

If you do not always schedule full lessons, you will have to decide in which part of the period the half lesson should be placed.

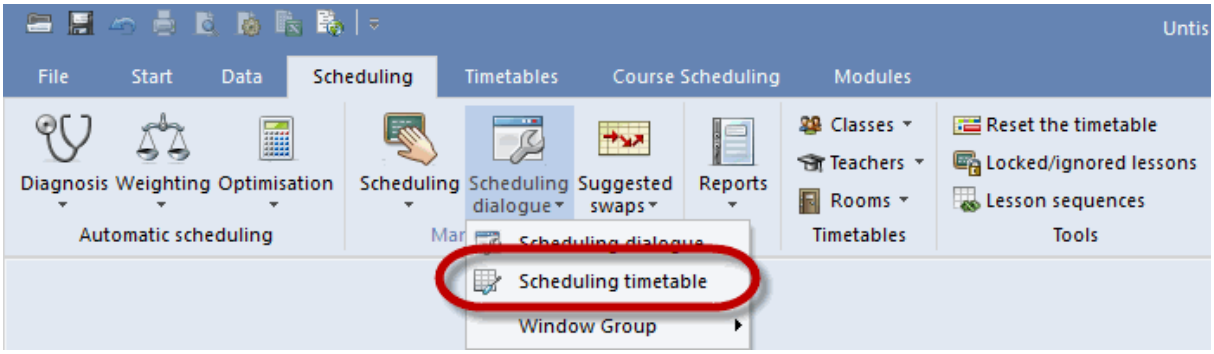
When scheduling a lesson block (e.g. 1.5 periods) Untis will ask whether you wish to schedule the complete second period or whether the half lesson should be scheduled in the first or second period.



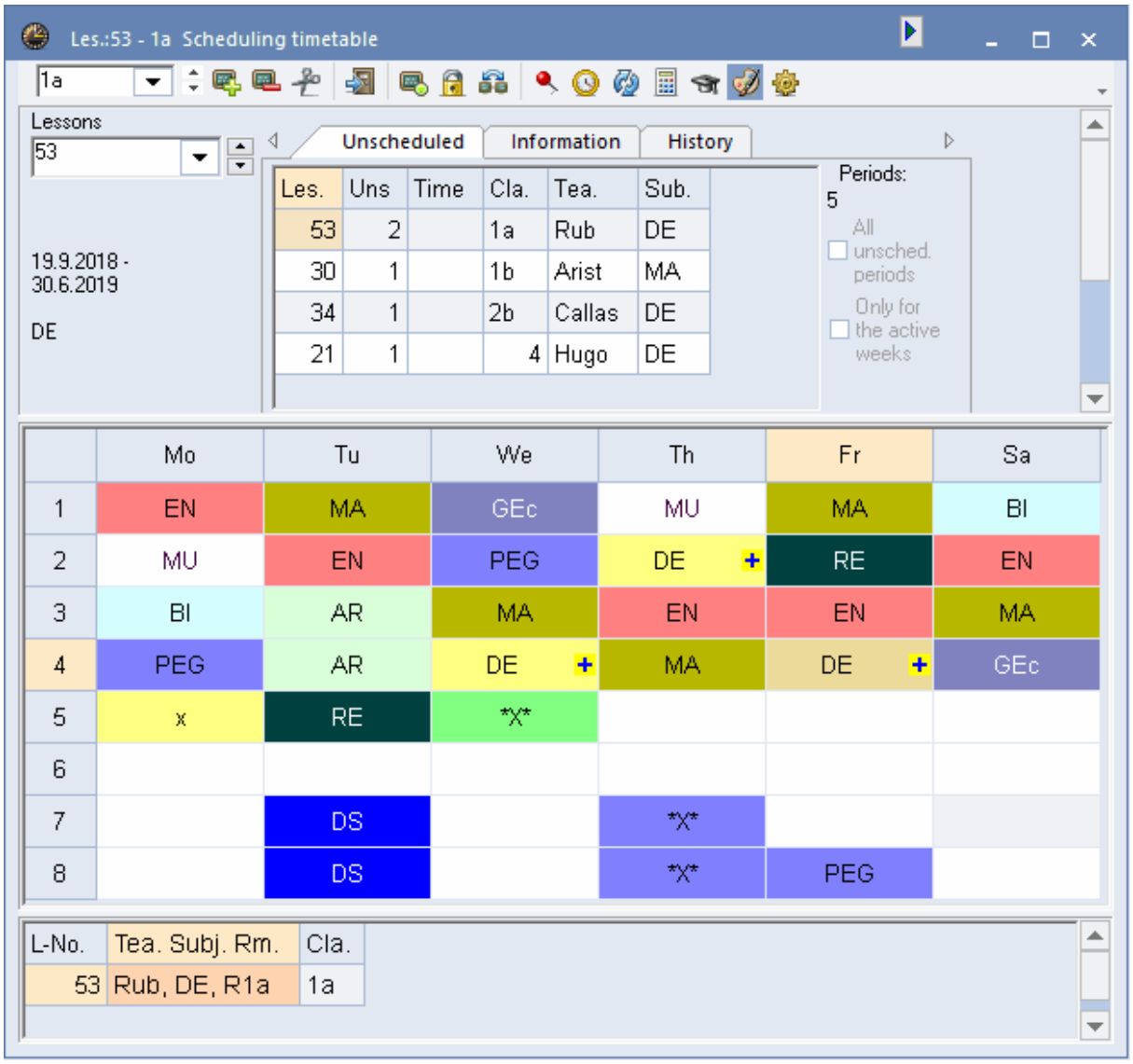
In the case of a lesson lasting a half period, you must decide whether lesson should take place in the first or second half of the period.

4.3 Scheduling timetable

You can also make manual changes to your timetable in the scheduling timetable. All functions for manual scheduling described in chapter 'Scheduling in the timetable' are also available in the scheduling timetable. This tool also provides additional functions for scheduling lesson periods manually. Open the scheduling timetable by selecting 'Scheduling | Scheduling dialogue | Scheduling timetable' from the main menu.



The timetable for class 1a will open displaying additional information relevant for scheduling.



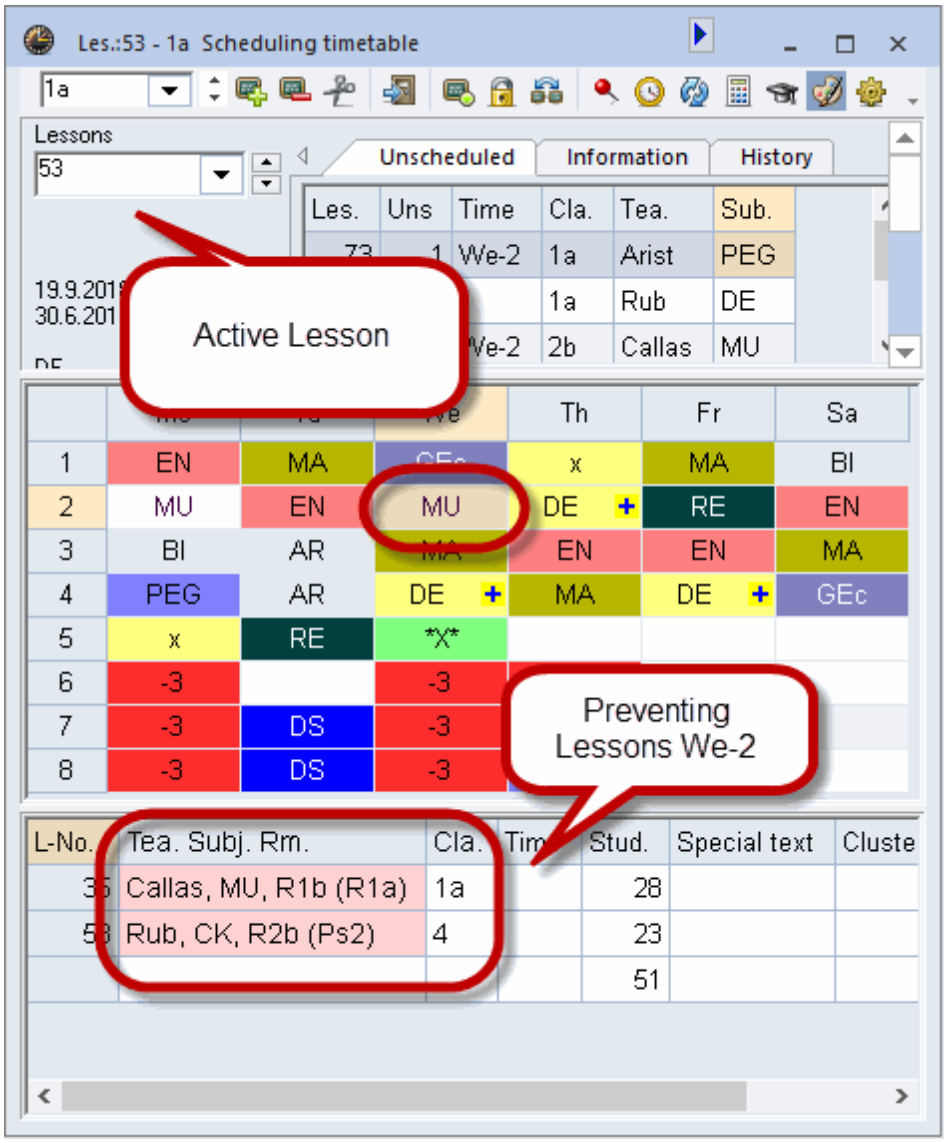
You can see the active class (1a) at the top left of the scheduling timetable. The 'Unscheduled' tab lists all lessons with unscheduled periods. Click on lesson 53 in the list of unscheduled periods. 2 periods are still not scheduled.

In addition to all scheduled periods, the actual timetable section of the window shows additional information about the active lesson.

The active lesson in the example is lesson 53 – German for class 1a with teacher Rub. Accordingly, you see the timetable of class 1a.

If you now wish to schedule a period of the lesson for the 1st period on Thursday, this would prevent teacher Callas' music ('MU') lesson with class 1a. However, this is not the only lesson that would prevent conflict-free scheduling on Thu-1. A lesson with teacher 'Rub' is also already scheduled for this slot. The details window of the scheduling dialogue displays this information, too.

The details window of the scheduling dialogue therefore indicates all lessons that would prevent a conflict-free scheduling of the currently active lesson.



4.3.1 Scheduling periods

+ .... Denotes a period of the active lesson

*** ....** Locked period of the active lesson (please refer to chapter 'Locking periods')

x.... Fields marked with a small x are already blocked by the teacher, for instance, teacher Rub is already scheduled to teach class 3a on We-6, which means that lesson 53 with teacher Rub cannot be scheduled for We-6 without creating a clash.

X.... A capital X shows a coupling involving the teacher.

***x*, *X*, *&*.....** A marker with two asterisks denotes locked periods creating a conflict (e.g. the PE lesson on Thu-7,8 involving teacher Rub). Locked periods cannot be moved by the automated scheduling tool (see chapter 'Locking periods').

&.... Denotes periods with several unavailable elements (classes and/or teachers).

-3.... Some periods, in which neither the class nor the teacher are busy, are marked with time requests. -3 indicates that it is not possible to schedule in these periods. The reason for this is that class 1a is blocked due to a time request (see 'Classes | Time requests').

You can schedule the active lesson in a period if a free slot. You have several possibilities now:
- double click on a free slot
- click on the symbol  ,
- press the <Insert> key.

	Mo	Tu	We	Th	Fr	Sa
1	EN	MA	GEc	MU	MA	BI
2	*MU	EN	PEG	DE	RE	EN
3	BI	AR	MA	EN	EN	MA
4	PEG	AR	DE	MA	DE	x
5	&	RE	*X*	GEc	x	x
6	-1	-3	-1	+3	X	
7	-3	DS	-1	*X*	&	
8	-3	DS	-1	*X*	PEG	

Room allocation
Click on lesson 21 on the 'Unscheduled' tab. As you can see, some periods are highlighted in purple. This indicates that the allocated room (and all alternative rooms) are already occupied.

	Mo	Tu	We	Th	Fr	Sa
1	PEG	DS	GA	PH	BI	MA
2	CK	DS	RE	HI	GA	MA
3	HI	MU	MA	CK	RE	DE
4	DE	BI	GEc	+3	GEc	EN
5		MA	*X*	DE		
6	AR			+3		
7	AR			PEG		
8	PH			PEG		

For purposes of clarity, the colour codes defined in the master data and displayed in the scheduling timetable can be deactivated by clicking on 'Show lesson colours'  .

4.3.2 Locking periods

Lock scheduled periods by clicking on <Lock period> if you wish the scheduling tool to ignore them during the optimisation run. The locked lesson will now be marked with asterisks (*, *x*, *X*) and cannot be moved by the optimisation tool.

4.3.3 Swapping periods

Find a suitable swap partner for a period on the same class timetable by dragging the period away (hold down the left mouse button). Every period on the timetable suitable for swapping will be highlighted in green and marked with a double arrow. Drop the period in a slot of your choice and confirm the move by clicking on the option '2 swap' and the swap will be carried out.

4.3.4 Scheduling periods with clashes

As a rule, Untis assumes that each teacher, class and room can only be involved in a single lesson at any one time. The software displays a warning whenever you are attempting to schedule an element (class, teacher, room) that is unavailable for the period in question.

In a similar way to scheduling in the timetable, lessons can also be scheduled with collision (see chapter 'Scheduling in the timetable | Scheduling with clashes').

4.3.5 Deleting periods

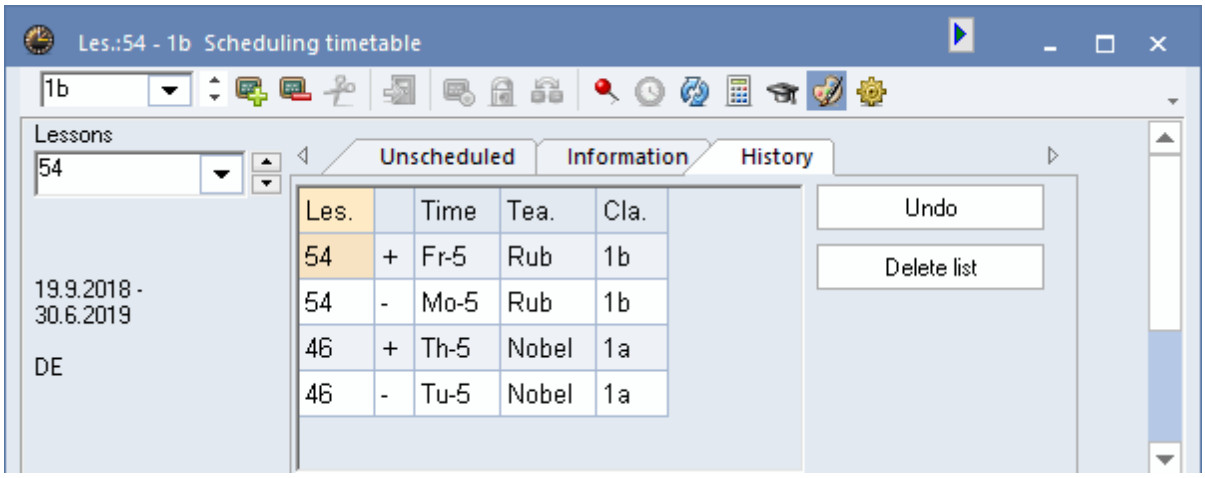
Deleting periods Delete scheduled periods by selecting the period and clicking on <Delete Period>  or by pressing the <DEL> key. The lesson will appear in the 'Unscheduled' window again. Alternatively, delete the active lesson with a double click.

4.3.6 Allocating rooms

Use the button <Allocate / Delete this room> to allocate a room to a specific period or to delete (or change) rooms already allocated. You can call this function from the timetable, the scheduling timetable of the scheduling dialogue.

4.3.7 Undo

Each planning step carried out in the timetable or the scheduling timetable is logged on the 'History' tab and can be undone – step by step – using the <Undo> button. Clicking on <Delete list> will delete all the planning steps shown in the list and the entering of the new planning steps starts again.



All the functions described in chapter 'Scheduling timetable' can also be called from the scheduling dialogue.

4.4 The scheduling dialogue

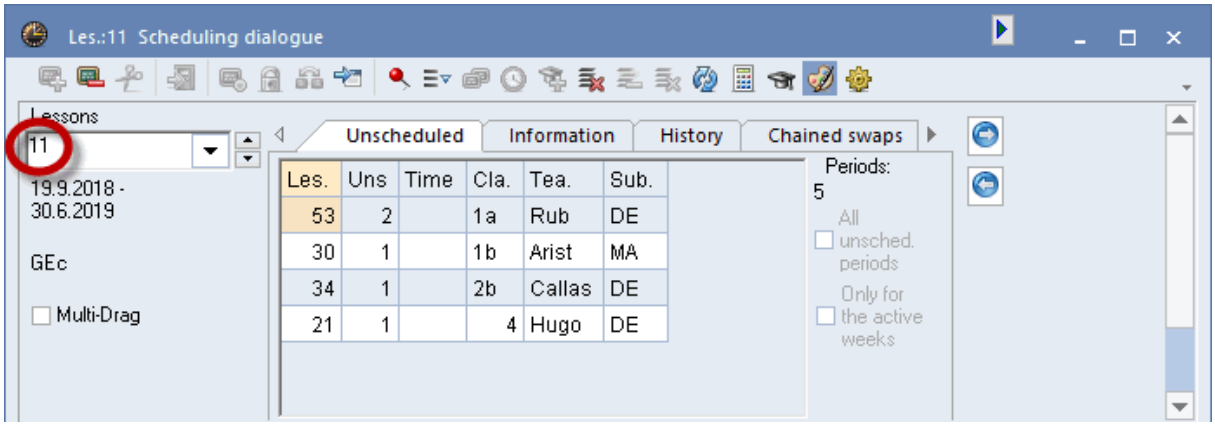
The scheduling dialogue provides functions for placing and moving periods manually. Similar to a peg board, the periods of the week are arranged in columns next to each other and the single elements (teachers, classes, rooms) in rows below each other.

4.4.1 General

The following example provides an overview of the type of information displayed in the scheduling dialogue

4.4.1.1 The selection field

The selection field of the lesson shows from the view of which lesson information is displayed. In this case it is lesson 11.



Instead of entering a lesson number you also can search for a lesson in the selection field. By entering a class, a teacher or a subject, you will find the respective lesson. So if you, e.g. enter '1a', all lessons of class 1a will be shown, if you enter 'DE', all German lessons will be shown.

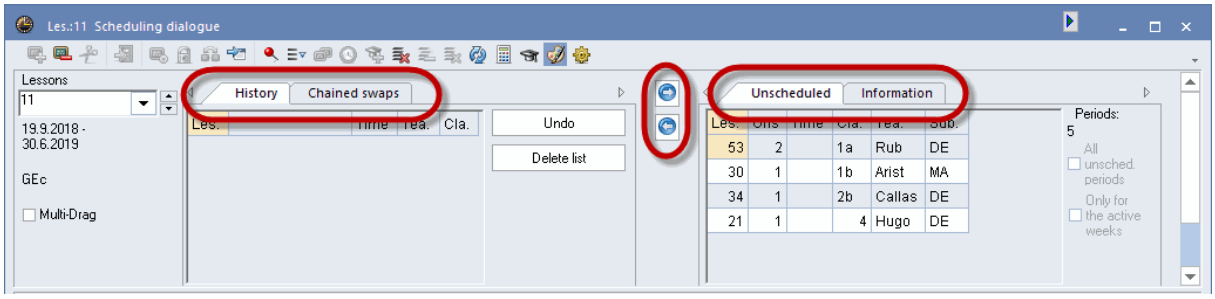
4.4.1.2 Tabs

The tabs provide information on:

- 'Unscheduled' gives you an overview of all unscheduled periods.
- 'Information' provides additional information on the active lesson such as the number of unscheduled periods.
- 'History' shows the last changes. You can undo single steps of your scheduling.
- 'Chained swaps' provides you with additional options for swapping periods in the scheduling dialogue.

For more information please refer to the chapter 'Swapping periods | Chained swaps'.

The individual tabs of the scheduling dialogue can be arranged side by side by clicking the two arrows. This makes better use of the timetable window space and helps keeping the overview.



4.4.1.3 The period details window

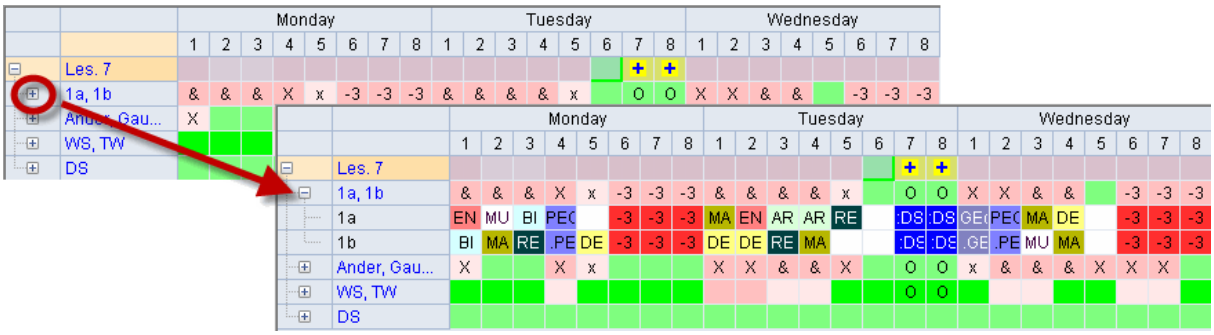
The lower section part of the scheduling dialogue shows information relating to the active lesson. This corresponds to the display of the period details window in the timetable. Please refer to chapter 'Timetable display' for a detailed description of the fields.

The centre section contains details on all the classes, teachers and rooms involved in the active lesson for the entire week

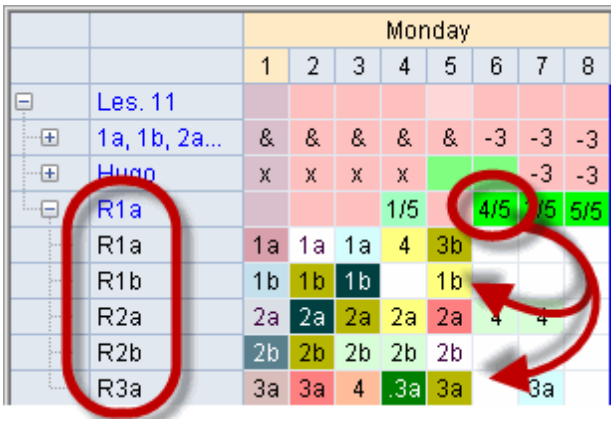
4.4.1.4 Timetable window

In the timetable window you see all elements involved in a certain lesson grouped according to elements. There is, for instance, a totals row for all classes involved in this lesson. In this totals row you see a period marker like in the scheduling timetable. For more detailed information regarding the period marker please refer to the chapter 'Scheduling timetable | Scheduling periods'.

When you click on + at the beginning of the totals row the dialogue shows all elements involved. In our example, classes 1a and 1b are involved in lesson 7.



The same principle holds true for teachers. Provided that you have defined alternative rooms in the master data, Untis shows the respective room and its alternative rooms in the scheduling dialogue when you expand the room window. The totals row shows how many rooms are free. '2/5' means that 2 of 5 possible rooms are free at that time.

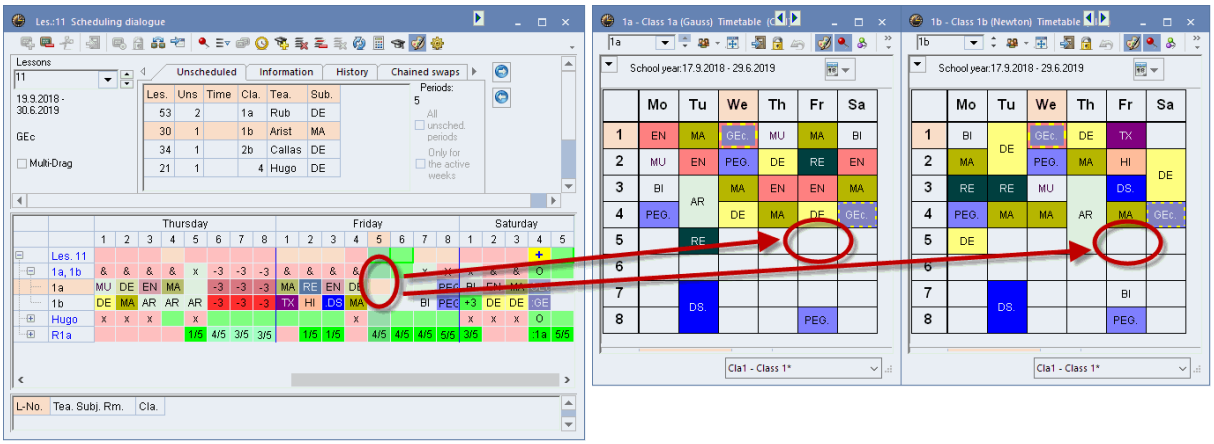


Tip: Space saving display for lessons with only a few elements
Check the box 'Do not show the totals if there is only one additional row' via the settings of the scheduling dialogue. This view is clearer for displaying lessons when e.g. only one teacher is involved, since the totals row will not be shown.

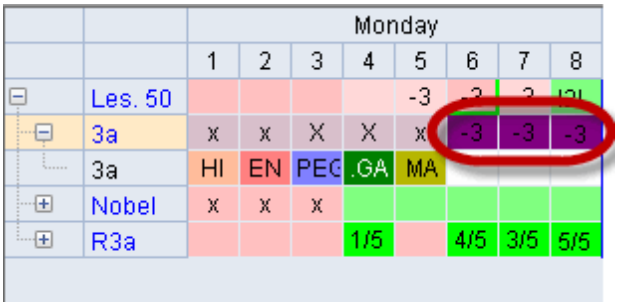
The + in the first line shows that lesson 11 is among others scheduled for Saturday, period 4.

If a slot is free in the grid this means that this element (teacher, class, room) can still be scheduled at this time. In our example Fr-5 in classes 1a and 1b is still free. You can double check this easily by referring to the class timetable.

In the line of the lesson you see <!1!> for this period meaning that this position is a good slot for this active lesson would. <!1!> is the best suited available slot, <!2!> second best and so on and so forth.



Respective time requests for the lesson and for all elements involved are shown in the defined colours. If a time request has been defined for a teacher in the master data, then it will be shown in the teacher's line.
If there are unspecific time requests, they will be shown in a different colour, depending on your settings for time requests. In our example the unspecific time request is highlighted in purple:



Tip:
A time request defined in the master data or in the lesson can be deleted in the scheduling dialogue by clicking on <Delete period>, by pressing the <Del> key or you can change it in the time request window.

4.4.2 Scheduling functions

In the scheduling dialogue several functions are available for you:

Scheduling periods
Deleting periods
Scheduling periods with clashes
Moving periods with drag & drop
Undo
Allocating rooms
Activate new lesson
Locking periods
Optimisation
Assessing the active time slot
Replacing teachers

4.4.2.1 Scheduling periods

Scheduling periods Schedule periods using one of the following options:

- By double clicking on a period
- By clicking on the button <Schedule the period> 
- By pressing the key <Ins>
- Via the context menu (right mouse button)
- Using drag & drop in the grid view from the list of unscheduled periods or from the lesson view

4.4.2.2 Deleting periods

Delete (i.e. de-schedule) periods using one of the following options:

- By double clicking on an active period
- By clicking on the <Delete period> button 
- By pressing the <DEL> key
- Via the context menu (right mouse button)
- Using drag & drop in the period details window

Deleting periods of a row
Click on <Delete periods of one row> if you wish to delete the entire timetable row of a particular element (e.g. class 1a).  .

Delete, Activate lesson
If you want to delete a non-active period and re-schedule it immediately, click on <Delete, Activate Lesson>  . This unschedules the lesson and automatically activates it so that you can schedule it in a different slot straight away. Alternatively, use the key combination CTRL+X.

4.4.2.3 Scheduling periods with clashes

Untis will warn you if you attempt to schedule a lesson that is already occupied by another class, teacher or room. In this case, perform a clash as described in chapter 'Scheduling in the timetable | Scheduling with clashes'.

4.4.2.4 Moving periods with drag & drop

Periods in the scheduling dialogue can be moved in the same way as periods in the timetable and the scheduling timetable.

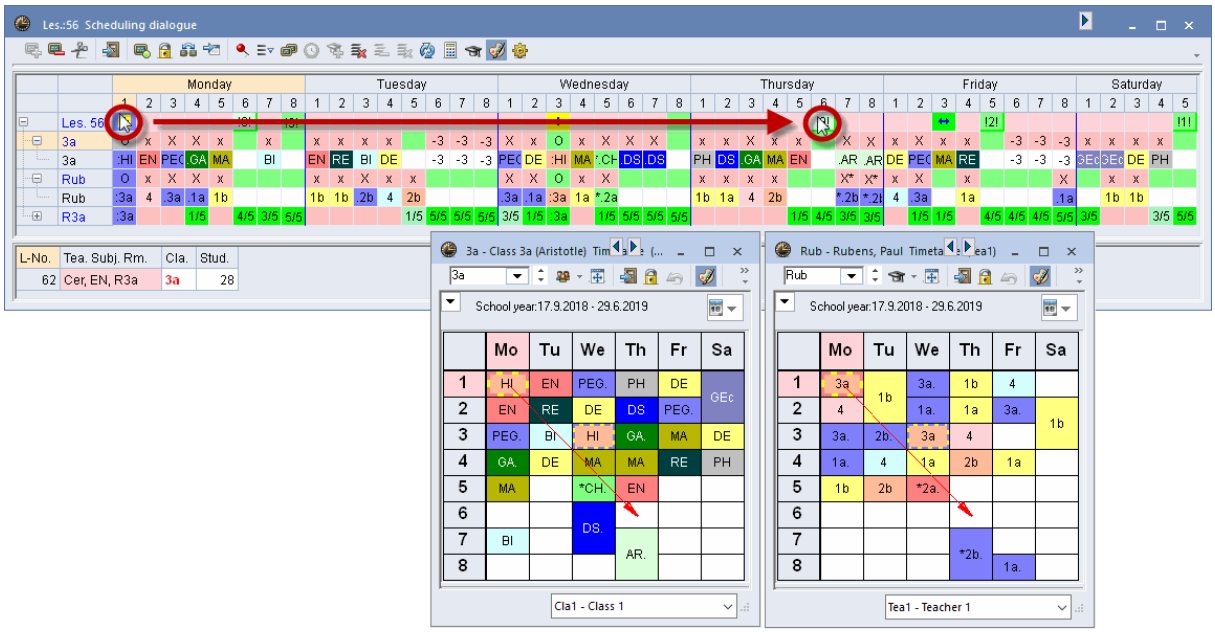
Click on a period in the scheduling dialogue and drag it away holding the left mouse-button pressed.

All periods where the lesson can be scheduled are highlighted green in the lesson row.

When the arrow passes over a scheduled period, the details of the lesson automatically appear in the period details window.

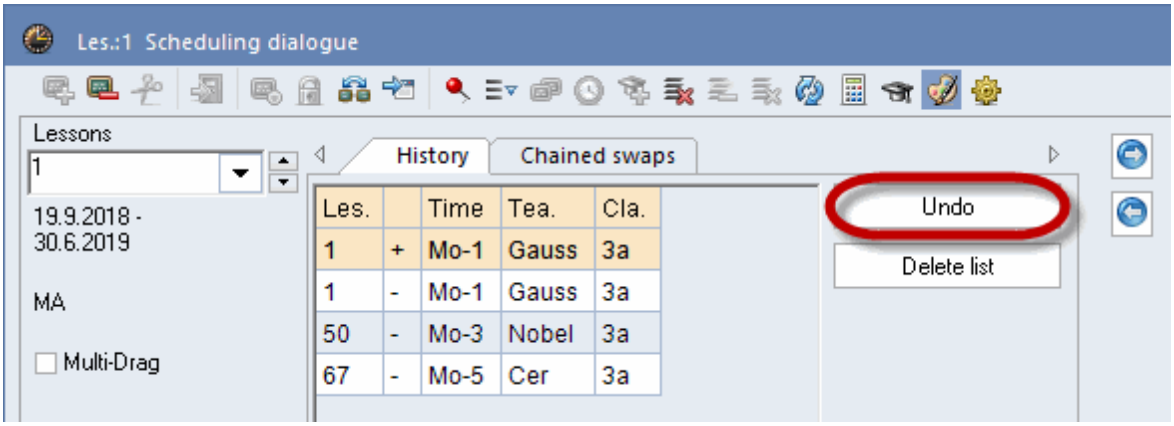
For purposes of clarity, red arrow markings show the possible slots in the timetable where the lesson can be moved. This enables you to see at a glance if the move would be advantageous for classes and/or teachers.
Drop the period in a suitable slot by releasing the left mouse-button.

Periods marked with the ↔ icon are available for swapping.



4.4.2.5 Undo

Undo each planning step carried out in the timetable or the scheduling timetable is logged on the 'History' tab and can be undone – step by step – using the <Undo> button. Clicking on <DEL> will delete all the planning steps shown in the list.



4.4.2.6 Changing and allocating rooms

Use the <Allocate/Delete room> option in the context menu of the scheduling dialogue (accessible via right mouse-click) to open the room allocation dialogue or press CTRL+R. The functionality of the room allocation dialogue is described in chapter 'Scheduling timetable | Changing and allocating rooms'.

When the cursor is placed in the room row under the active lesson and you click on the <Allocate/Delete this room> button, the room already allocated is deleted immediately and replaced with the designated room.

If you want to change a room in the scheduling dialogue you just drag the period in the rooms scheduling dialogue into the respective line.

4.4.2.7 Activate new lesson

Place the cursor on a lesson and click on the <Activate lesson> button to activate it. Alternatively, use the key combination <CTRL>+<ENTER> or double click on the lesson you wish to activate.

4.4.2.8 Locking periods

When you click on the cursor-selected period will be locked (or unlocked). Locked periods will not be moved by subsequent optimisation runs. Locked periods are marked with an asterisk (*) in the element row in the scheduling dialogue.

You can also highlight an entire area in the scheduling dialogue and then click on <Lock period> to lock all the selected periods. The same function is available via the context menu accessible by clicking the right mouse-button.

4.4.2.9 Optimisation

This function allows you to start the optimisation process from the scheduling dialogue.

The timetable is locked conditionally. When a timetable is locked conditionally, the periods already scheduled will not be affected by the placement optimisation process. The optimisation tool will only place unscheduled periods. The subsequent swap optimisation tool, however, may swap all the unlocked periods.

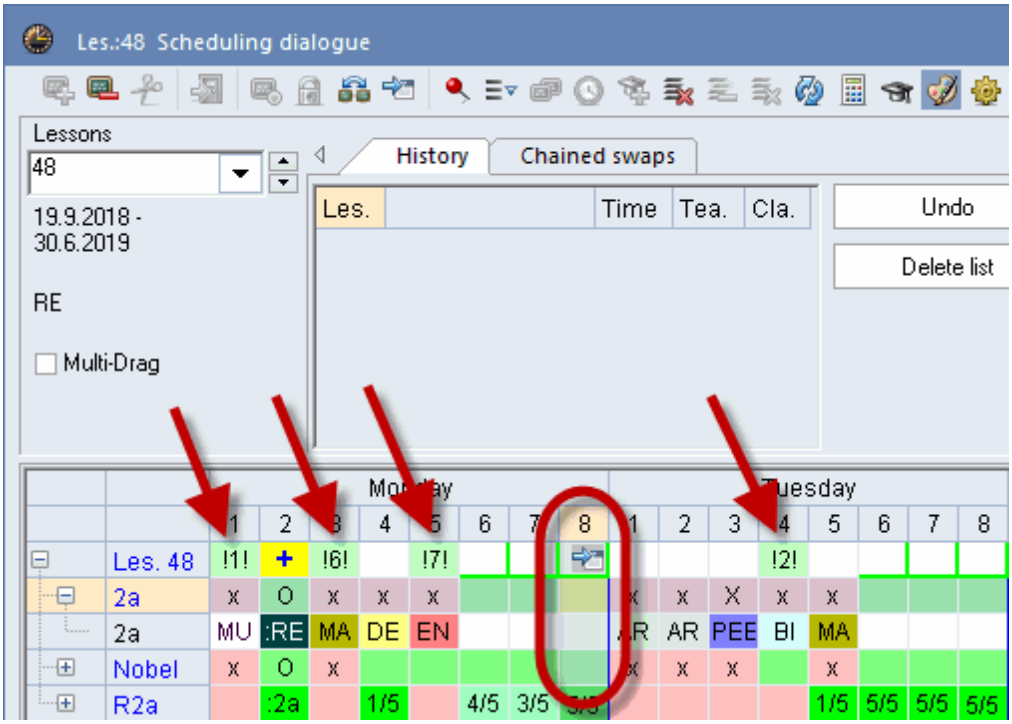
A timetable is calculated using strategy A.

4.4.2.10 Assessing the active time slot

This function assesses all the periods of the week to determine their suitability for scheduling at a specific time.

Position the cursor on a free period of the class and click on the button in the scheduling dialogue toolbar. The slot for which a lesson is looked for is indicated by the icon in the lesson row.

The software now assesses all the periods of the week to determine their suitability for scheduling in the selected time slot. The assessment results are displayed in the lesson row. The lower the value, the more suitable the time slot.



4.4.2.11 Replacing teachers

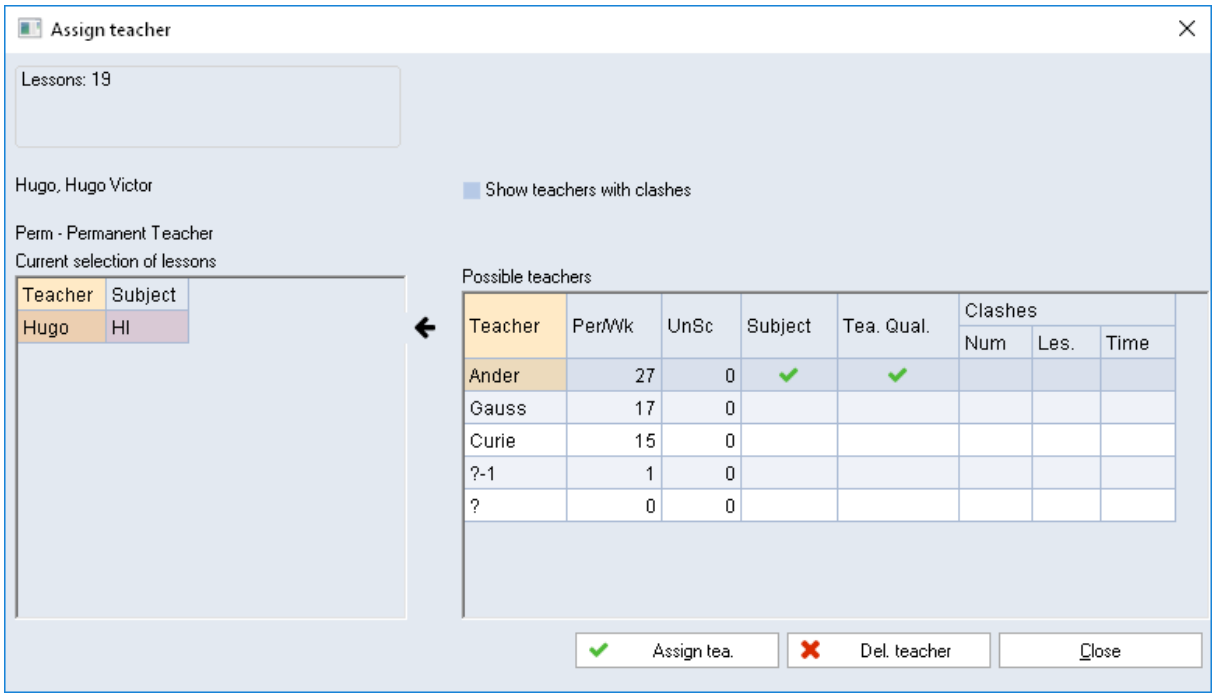
Use this function in the scheduling dialogue to replace one teacher with another.

Activate a lesson and click on  >. A dialogue will open where you can change the teacher for the lesson.

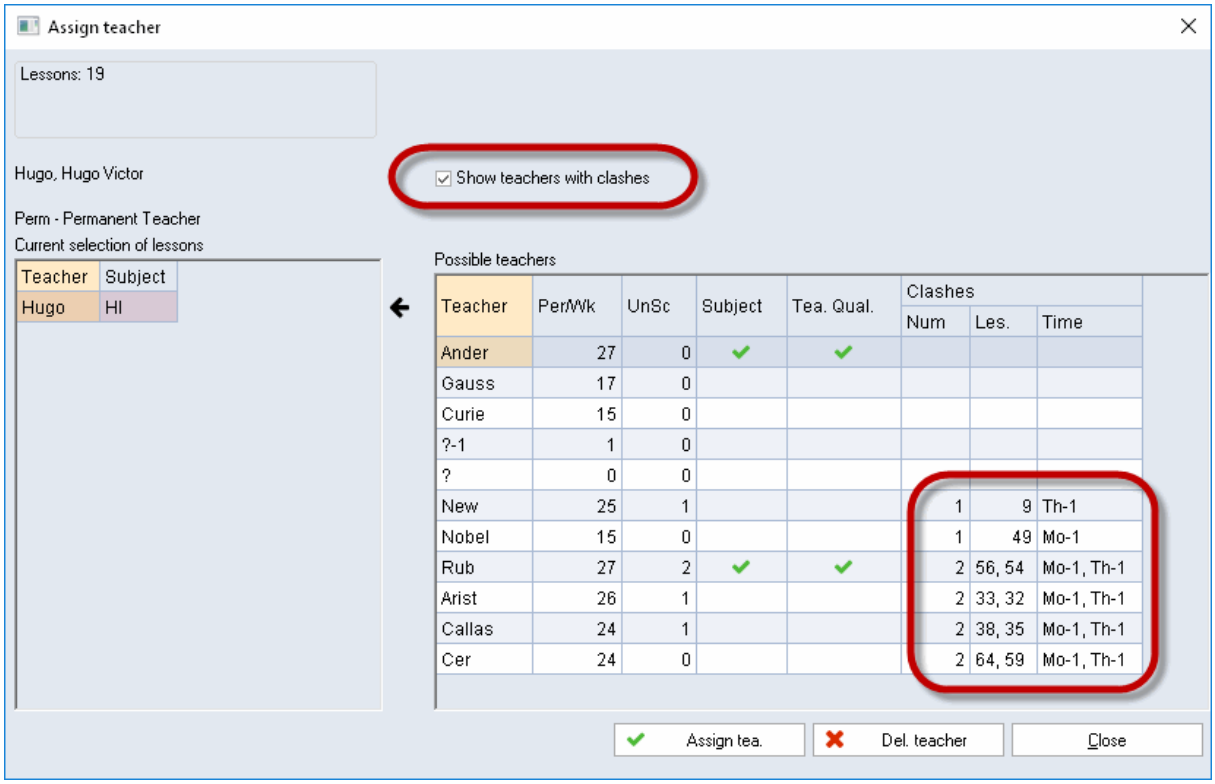
The left pane of the window displays the teacher(s) of the active lesson. The right pane displays all the teachers available (based on their own timetables) to take on ALL the periods of the active lesson. The following additional details are provided to facilitate the decision-making process:

- Per/Wk: Number of periods per week taught by the teacher
- UnSc: Number of unscheduled periods
- Subject: Teacher already teaches this subject.
- Tea. Qual. Teacher is qualified to teach this subject

The example shows that 'Ander', 'Arist' and 'Curie' could take the lesson. However, only 'Ander' has the qualification for the subject. Click on <Assign tea.> to assign the teacher to the lesson.



If you check the box 'Show teachers with clashes' all those teachers will be shown for whom changes in the timetable needed to be done in order to be able to assign them to this lesson. In this respect it is important to know how many clashes needed to be solved and when the clashes are.



4.4.3 Display functions

The functions described below can be used to change the scheduling dialogue display.

4.4.3.1 Displaying all teachers of a class

If the cursor is placed in a class row the timetables of all teachers involved in this class will be shown when you click the <Teachers of this class>button. Teachers not assigned to teach a class in this period are listed first, followed by uncoupled teachers.

Place the cursor in a teacher row to display the timetables of all classes in which the teacher is involved.

4.4.3.2 Display all classes, teachers and rooms

Use this function to display all classes, teachers and rooms in your school in the timetable rows of the scheduling dialogue. If you only wish to display classes, hold down the <SHIFT> key when invoking the function.

Place the cursor in a teacher row if you want all the teachers to be listed first (under the active lesson). In the same way, place the cursor in a room or class row if you wish to list rooms or classes first.

4.4.3.3 Display a 2nd lesson

This function displays not only the active lesson, but also the lesson on which the cursor is placed. The function 'Display a 2nd lesson' also allows you to display additional information on the cursor-selected lesson.

4.4.3.4 Deleting rows

Use this function to delete all the rows in the timetable window below the cursor position. Please note that the active lesson will still be displayed on the screen.

4.4.3.5 Show lesson colours

The colours defined for master data elements and individual lessons can be activated and deactivated using the <Show lesson colours> button.

4.4.3.6 Window logic

Like most functions in the Untis application, the scheduling dialogue communicates with all other windows.

Synchronisation

When you open a lesson view (or a timetable) and select a lesson, the scheduling dialogue automatically displays the active lesson and, vice versa - the lesson window and the timetable always show the lesson selected in the scheduling dialogue.

Locking the view

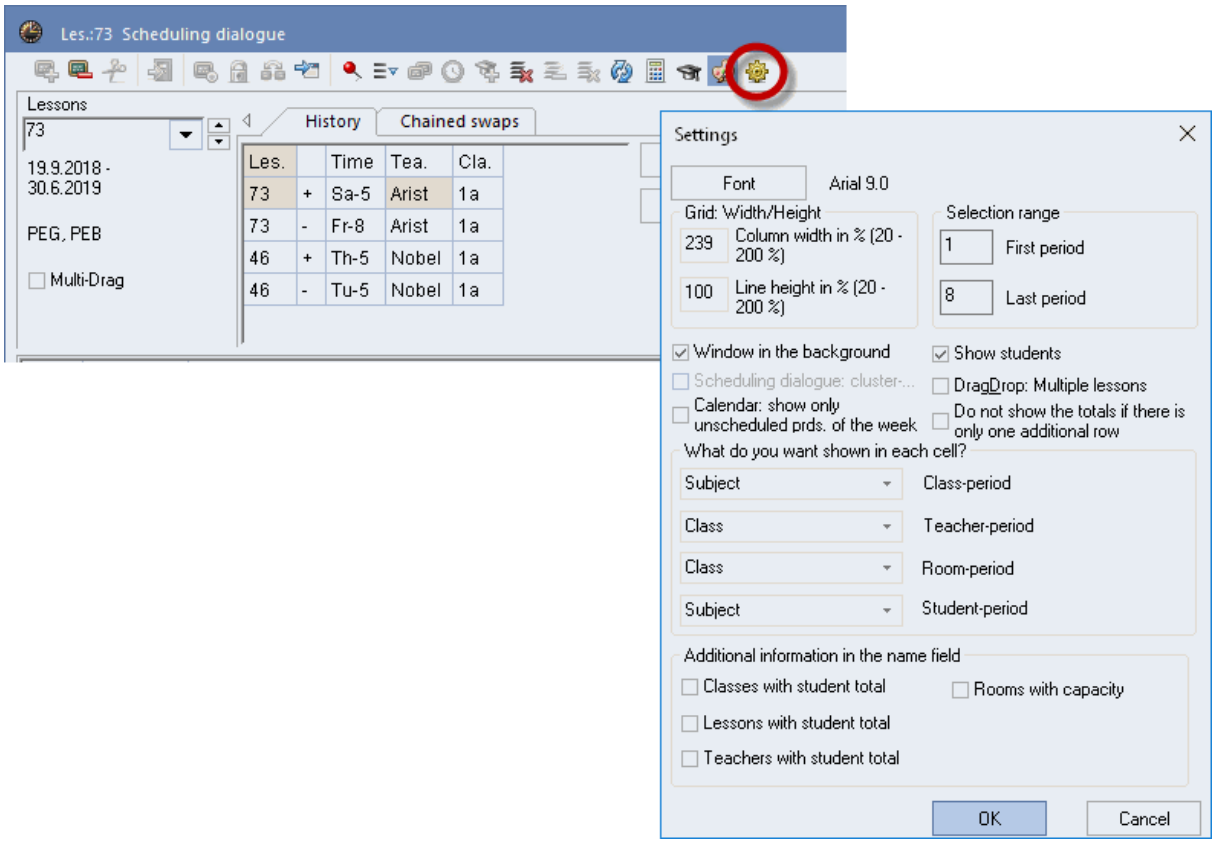
Activate the button <Keep the source lesson> to lock the display of the scheduling dialogue. .

Window in the background

As a rule, you can bring a window to the front (i.e. activate a window) by clicking on any part of the window. The scheduling dialogue allows you to suppress this behaviour by activating the option 'Window in the background' under <Settings>.

4.4.3.7 Settings

This function provides various settings affecting the layout of the scheduling dialogue.



Here you define general settings such as font size or the size of the cells, which you actually could also adjust by enlarging the columns or the cells with your mouse. With <Selection range> you define how many periods are displayed in the scheduling dialogue. If, e.g. you have 11 periods in your time grid you can define here that only periods 1 to 8 are shown. This function helps you to use your screen more efficiently.

In the area 'What do you want to show in each cell?' you define what kind of information is shown in the cells of the different elements. In the class cells, for instance, the subject is displayed.

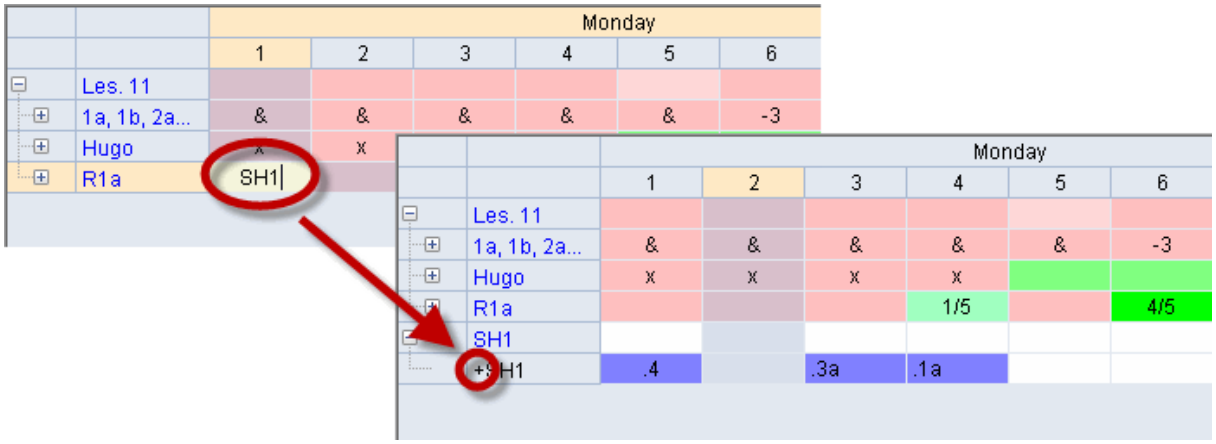
Work place specific settings
When using the Untis software on two different computers (e.g. at school and at home), you will rarely be working with two identical systems. Differences in hardware (screen display, graphics cards etc.) can necessitate annoying and time-consuming adjustments when switching from one system to another.

Your individual settings for the scheduling dialogue (e.g. font size, column width etc.) are therefore saved locally on your computer in the views.ini file.This saves you the trouble of having to re-enter your settings when opening the file on another computer.

4.4.3.8 Displaying a particular element

For accessing the timetable of any element (or lesson), simply enter the name of the element or the lesson number in any part of the timetable window and press <ENTER>

The example shows that the short name of Sports Hall 1, SH1, has been entered and consequently the room availability is shown.



This additional line is now displayed until you close the scheduling dialogue or you click the <Hide selected rows> button.

4.4.4 Shortcut keys

You can activate most scheduling dialogue functions also by shortcut keys, i.e. without the use of the mouse.

Use Ctrl +tab to switch between individual windows in Untis.

In the centre section of the scheduling dialogue, use the cursor keys to control the cursor. Additionally, the following key combinations are also useful:

Home: first period of the week
End: last period of the week

Alt +<right arrow>: same period next day
Alt + <left arrow>: same period last day

Various scheduling dialogue functions can also be activated using the following shortcut keys:

Insert: schedule period
Del: unschedule period
Ctrl + <X>: delete, active lesson
F7: lock period
Ctrl + <ENTER>: new active lesson
Ctrl + R: room dialogue
Ctrl + Shift + Enter: 2nd active lesson

4.4.5 Multi-timegrid

If you are using different time grids, the display in the scheduling dialogue depends on the active lesson. . The time grid of the active lesson is also the active time grid. Periods of the active time grid that are completely or partly blocked by periods of the other time grid are marked with the symbol O This applies to the scheduling timetable, too.

4.5 Swapping periods

It can happen that you want to place a lesson on another position even if this means that another lesson needs to be shifted to another place. The second lesson, which needs to be re-placed, either needs a free slot in the timetable of the elements involved or it will remove yet another lesson from its position. This chain of events will continue until a suitable slot has been found for every lesson.

Untis supports this intuitive scheduling method by chained swaps which can be carried out directly in the timetable by clicking on ‘Suggested swaps’ or ‘Chained swaps’.

4.5.1 Suggested swaps

This function offers swap suggestions for a cursor-selected period on a class timetable. To this end, Untis evaluates the timetable based on your weighting settings and indicates if the quality of the timetable will get better or worse.

Open this function by clicking on the <Suggested swaps> button in the scheduling dialogue. 

These functions are described in the chapter ' Scheduling periods in the timetable | Suggested swaps'.

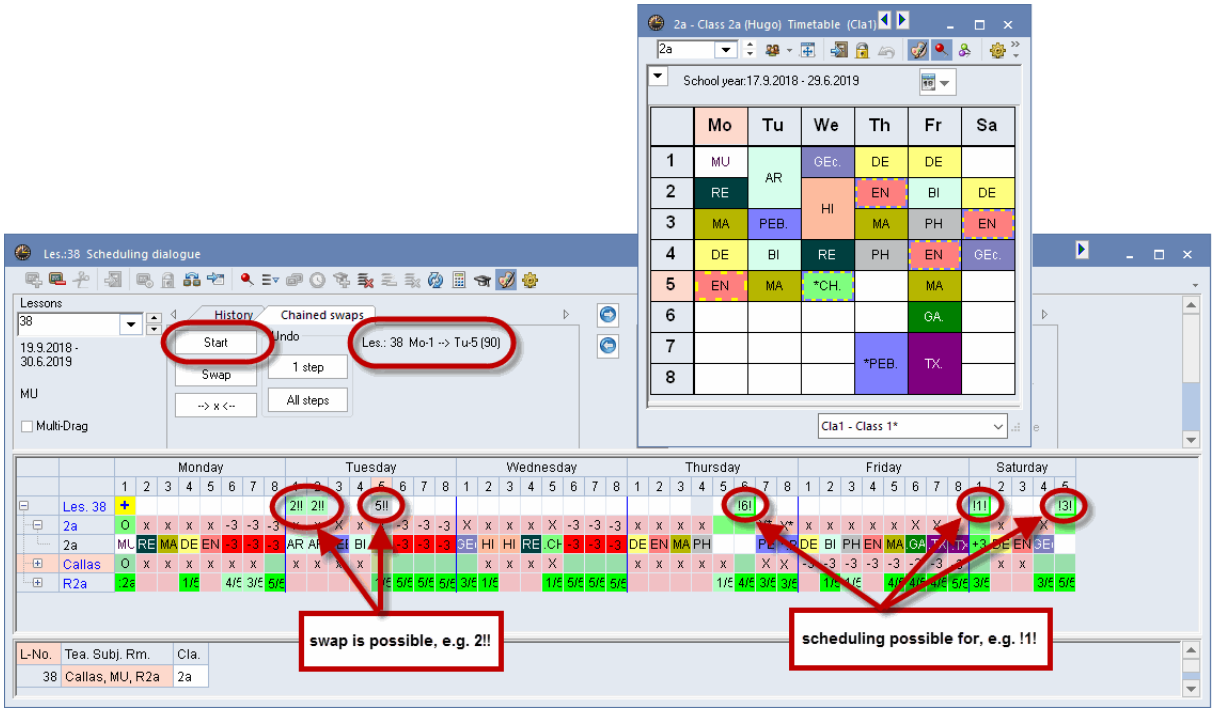
4.5.2 Chained swaps

The chained swaps function is accessible from the <Chained swaps> tab in the scheduling dialogue.

1. Open the file demo.gpn, the scheduling dialogue and a class timetable.

The aim of this exercise is to swap the cursor-defined lesson (lesson 38, Callas, MU, 2a) with a lesson in a different slot.

2. Start the swap chain by clicking on <Start> on the 'Chained swaps' tab.

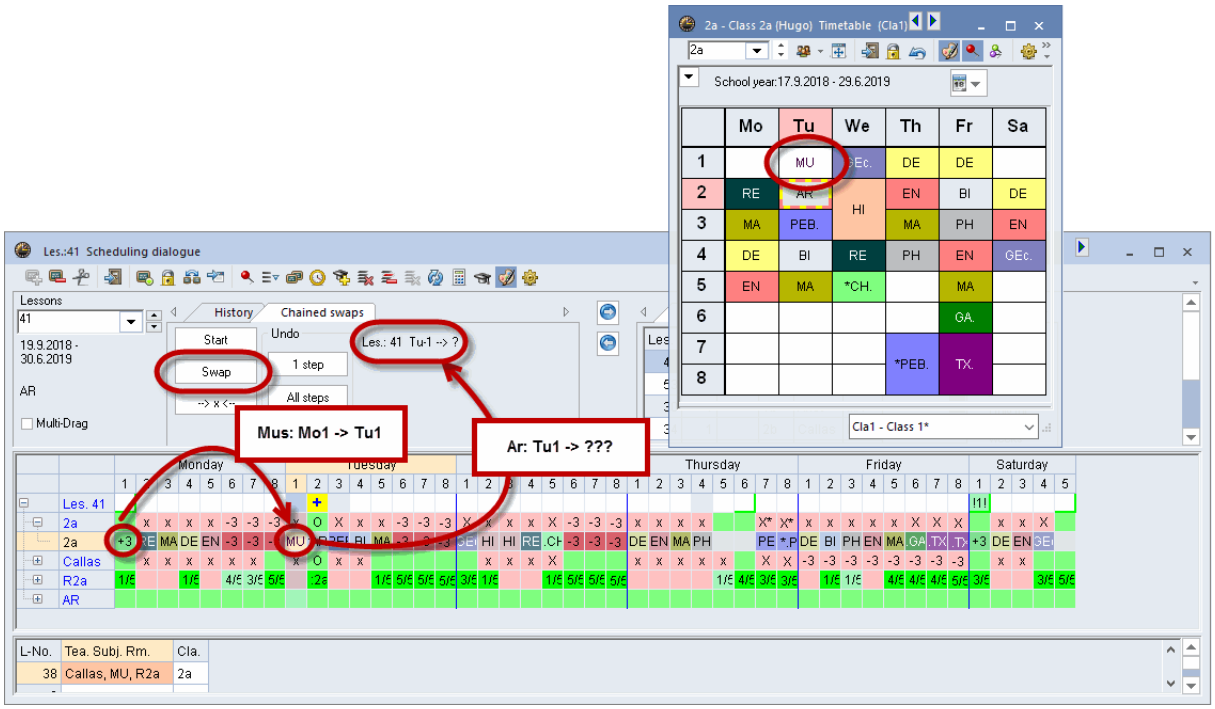


The lesson row now displays a series of number symbols in some of the cells in the time grid. The lower the value, the better Untis evaluates the position. Two exclamation marks after the number (e.g. 2!!) indicate that a swap to this position would displace a lesson already scheduled for this slot. One exclamation mark before and one after the number (e.g. !1!) indicate that a swap would not cause a displacement of another lesson, completing the swap chain.

You wish to move lesson 38 (Callas, 2a, MU) from Mon-1 to Tue-1. This will displace one period of lesson 41 (Callas, 2a, AR).

3. Position the cursor on Tue-1 and click on <Swap>.

The original period of lesson 38 has now been moved to Tue-1. The change is also reflected on the timetable Lesson 41 with one displaced period automatically becomes the active lesson.



Again, Untis marks suitable swap positions with numbers displayed in the lesson row.

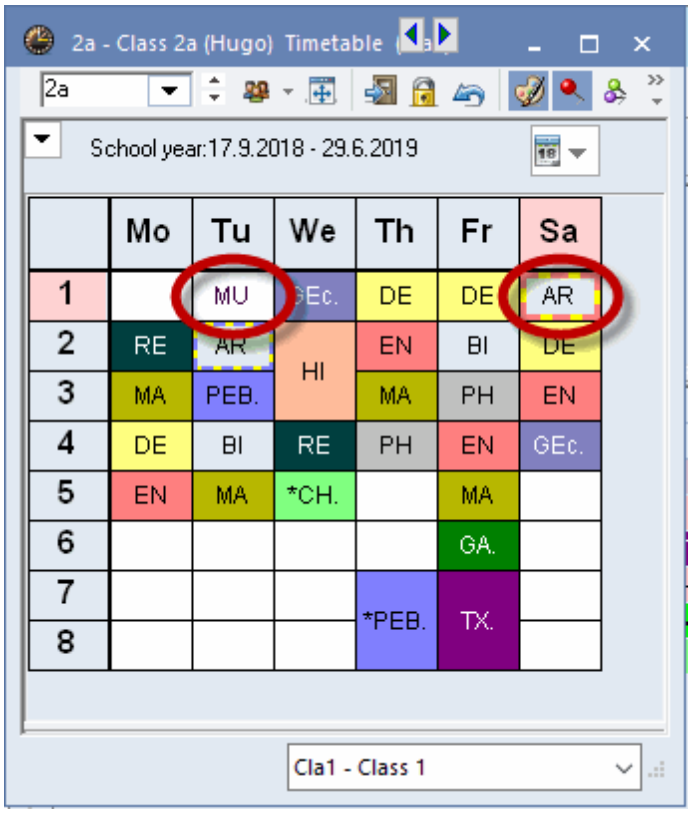
If you are dissatisfied with the swap results, you can undo individual steps of the process or even the entire swap chain

You now wish to schedule the displaced period of lesson 41 for Sat-1 The !1! indicates that this will not displace any further lesson and the swap chain will be complete.

4. Position the cursor on Sat-1 and click on the <Swap> button.

Lesson 41 (Callas, 2a, AR) displaced from Tue-1 has been moved to Sat-1. The swap chain is now complete.

Please note that function 'Chained swaps' only supports swaps that do not result in a significant decrease in timetable quality (based on the weighting settings you have entered). This means that only the swap partners identified in the lesson row can be used for swapping.



5 Timetable Display

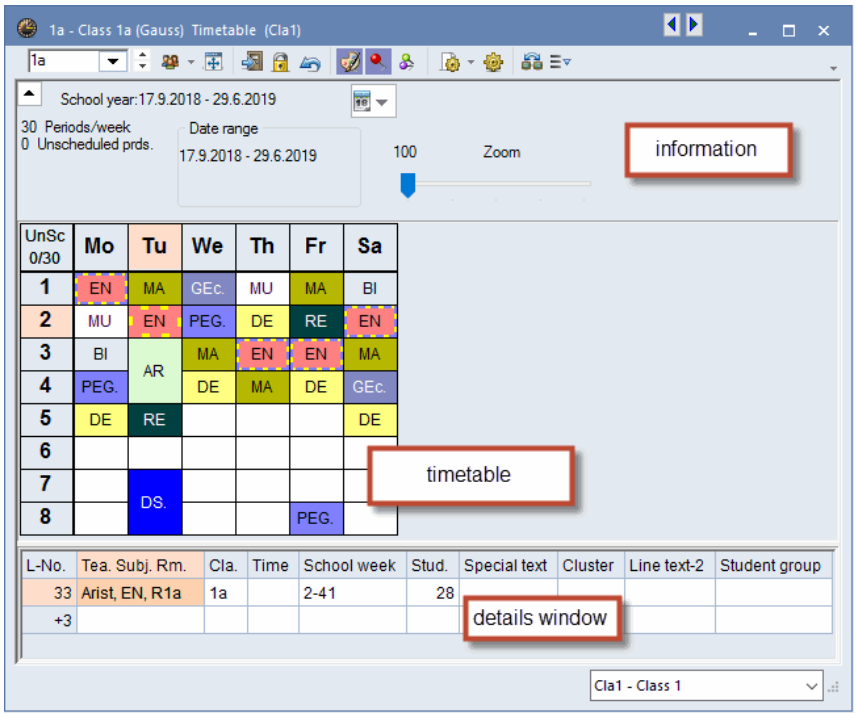
5.1 Timetable display

When the timetable is complete, the information needs to be presented in a clear and unambiguous fashion. Untis offers a number of different timetable layouts and numerous timetable display options. The following chapter provides an overview of predefined timetable displays and shows the different methods of shaping timetable layouts to suit individual requirements.

5.2 Window set-up

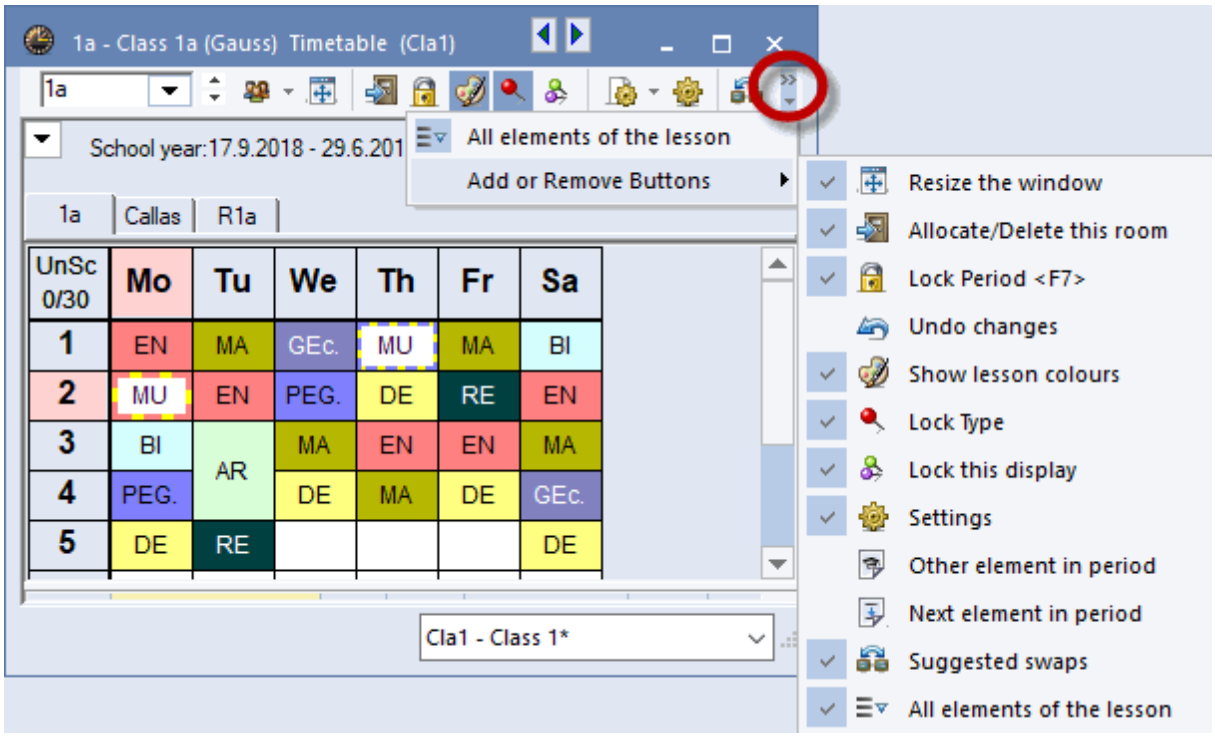
You can open ready-made timetables for classes, teachers, rooms and subjects under 'Timetables' in the main menu. You can also display timetables for individual students when using the Student timetable or Course scheduling modules.

Basically, a timetable window consists of the tool bar and three separate sections: the information window at the top, the actual timetable in the middle and the period details window at the bottom.



Toolbar

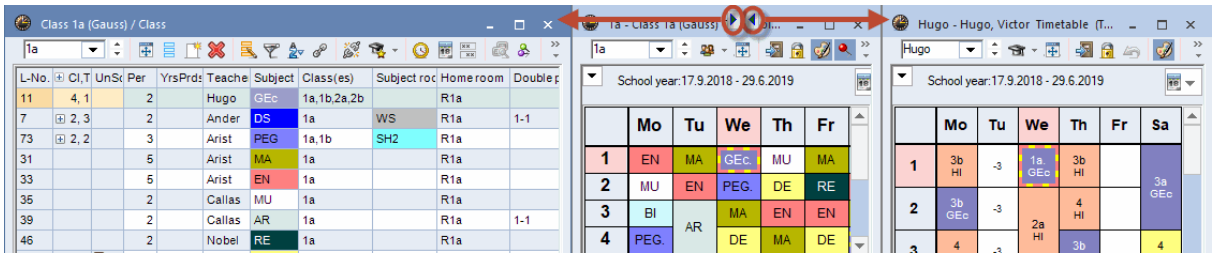
The toolbar is usually located at the top of the window, but can be moved to any window edge – right, left or bottom – and can even be dragged out of the window altogether. You can also remove unwanted buttons from the toolbar ('Add or remove buttons' option).



Pop-up windows

Let us assume that have opened a class timetable and perhaps now wish to view the associated teacher timetable or wish to make a small change in the relevant a lesson window. You can use the two arrows at the top of the screen to quickly open and close these windows.

For example, from a class timetable you can click on the right arrow to open a teacher timetable and the left arrow to open a lesson timetable for classes.



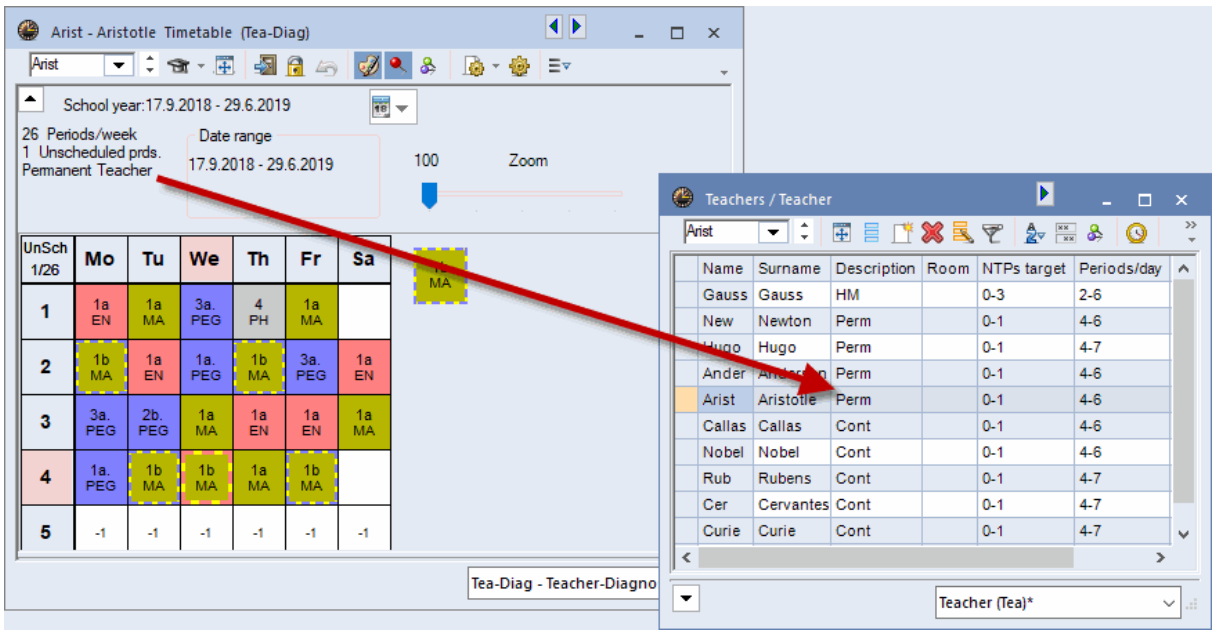
5.2.1 Information window

The information window in the upper section of the timetable shows useful information for timetable planning and the date range of the time table.

Information

For the respective element the number of weekly periods according to lessons and the number of (weekly) periods which are not scheduled at the moment are displayed.

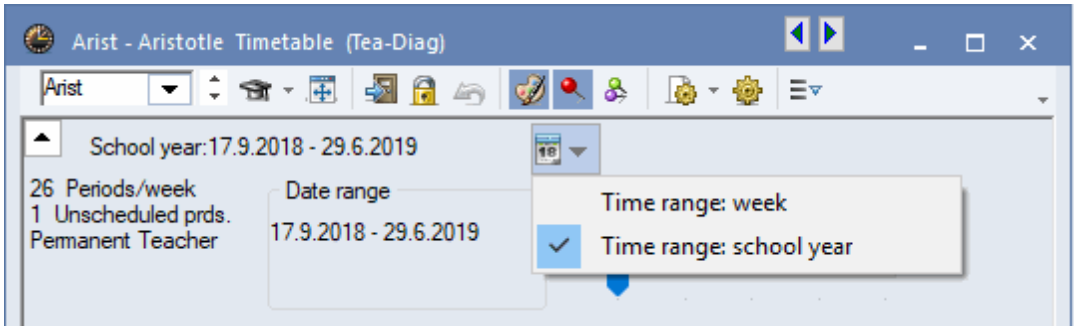
Text and description of the master data are reflected in the timetable. In the class timetables also the class teacher (form teacher) of the respective class is displayed.



Time range

The time range of a timetable can be found on a respective week, the selected term or on the total school year. By clicking on the calendar icon you can select the time range.

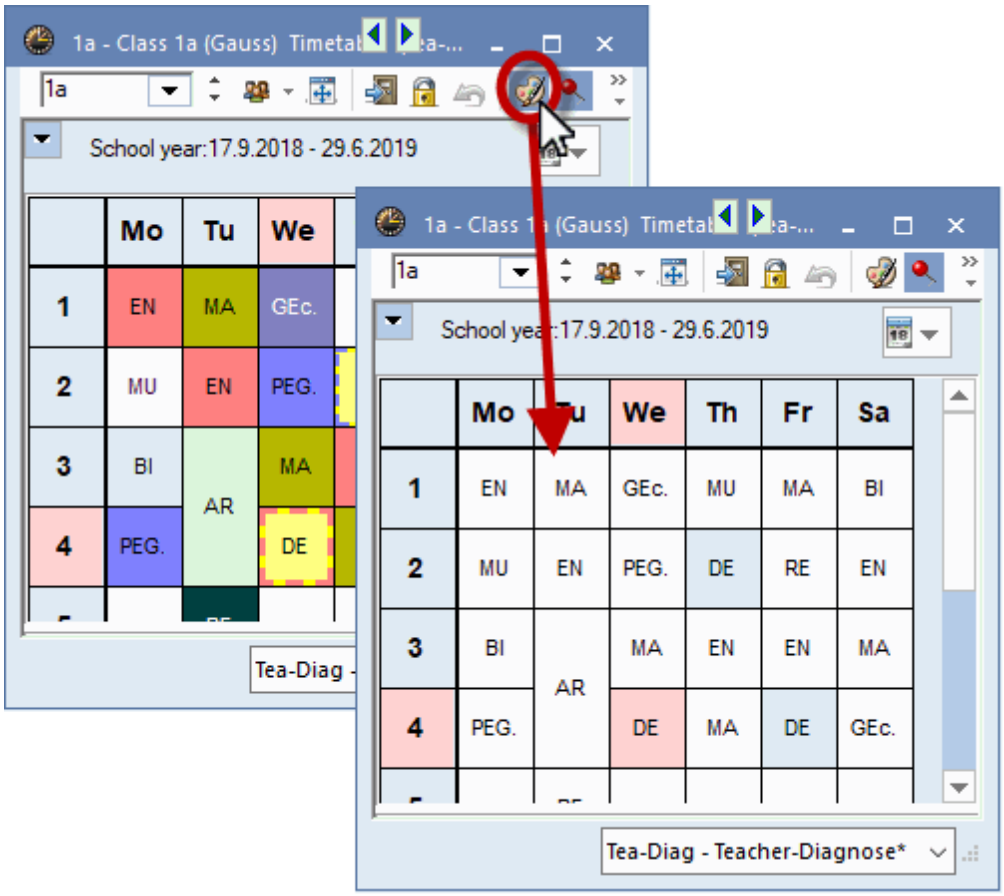
Tip: time range term
If you are working with terms it is recommended to set the time range of the timetables to 'Term'. It will always display the time range of the currently selected term and no misunderstandings will occur, e.g. if the term shows the second term and the timetable is set to a week in November.



Tip: Change of time range
The time range can also be changed by using the key combination <Ctrl+D>.

5.2.2 Timetable window

The middle part of the timetable window shows the actual timetable for the active element The display offers a variety of different settings and options that allow you to customise it to suit your individual requirements. Please refer to chapter 'User-defined views' for a detailed description of these settings.



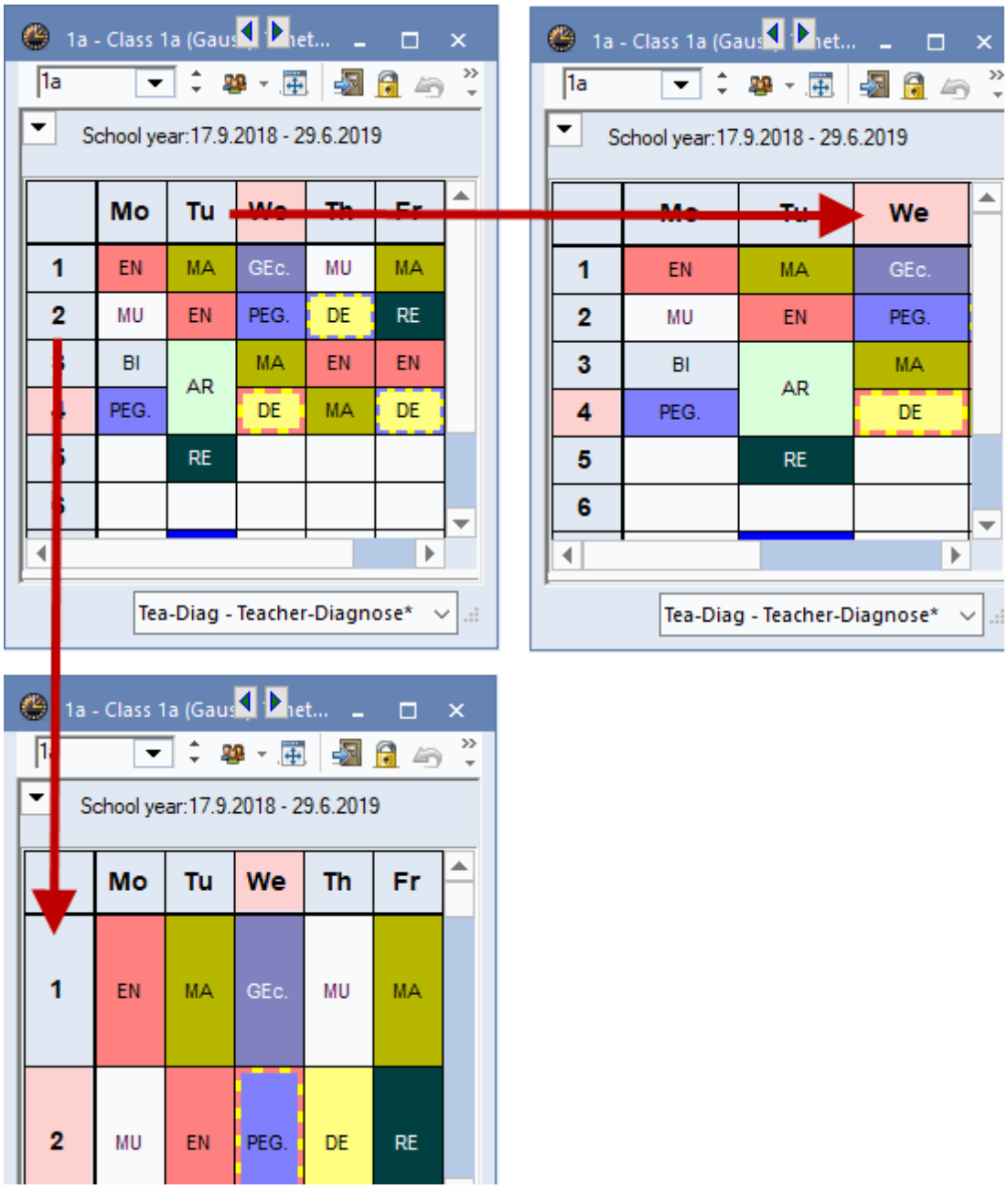
Clicking on a (scheduled) period on the timetable activates the period and causes the cell to be outlined in red-yellow. All other periods associated with the active lesson are highlighted in blue-yellow. If the display of colours in the timetable has been deactivated (colour palette icon), the active period will be displayed in pink and the other periods associated with it in light blue. This shows you at a single glance how the periods of this lesson are distributed throughout the week.

Resize the window
This function adjusts the window frame to the size of the displayed timetable window.

Note:
The buttons <Lock period>, <Undo>, <Allocate/Delete room> and <Suggested swaps> are intended for performing manual changes to the timetable and are therefore described in chapter “Manual timetabling'.

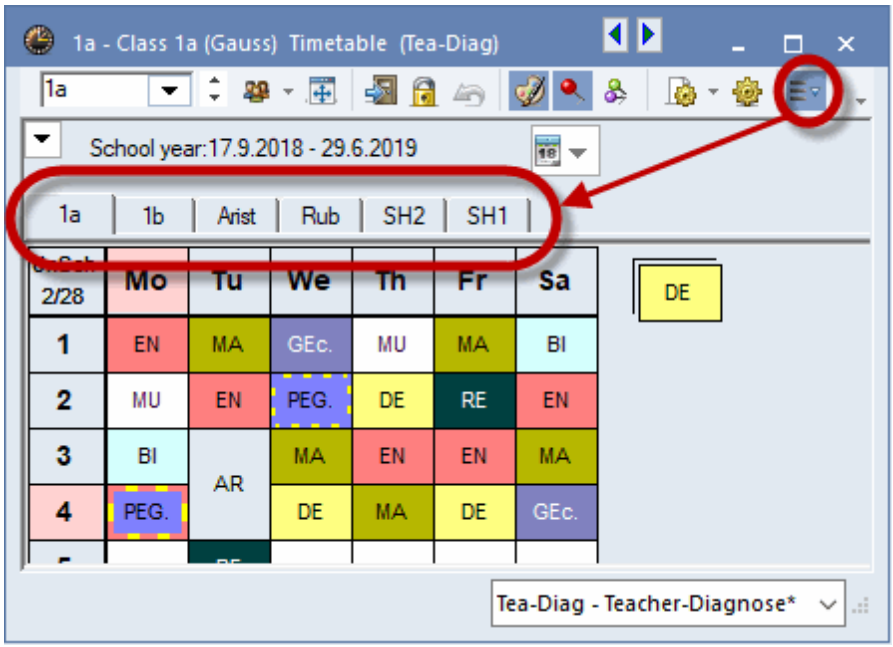
Change size

You can easily change the size of timetables in the timetable window. Drag the dividing lines between the columns to the right to make the column wider or to the left to make the column narrower or drag the dividing line between the rows in order to adjust the height by dragging the boundary to the height that you want.



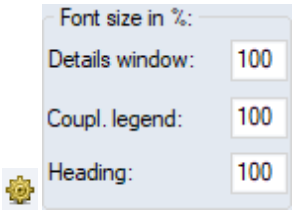
Tab

By clicking the button <All elements of the lesson> in an individual timetable, tabs will be displayed which show all classes, teachers and rooms involved in a lesson. Click on a tab and the respective timetable of the element will be shown.

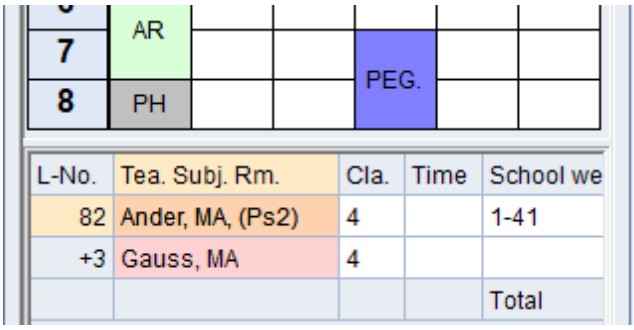


5.2.3 Period details window

Since there is often not enough space in the individual cells of the timetable to display all the relevant data for the active period, Untis provides a third window for the display of such information – the period details window. The font size used in the period details window can be changed via <Settings>. The period details window provides details on the currently active lesson.



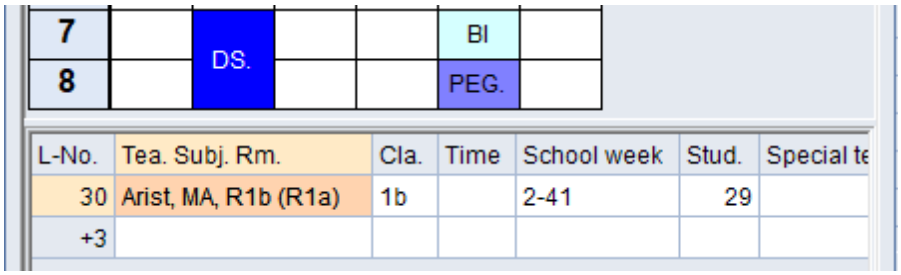
L-No.
In the example the 'L-No.' column shows lesson number 82. Below the lesson number, you will see the time request entered for the active period under 'Classes | Master Data' ('+3').



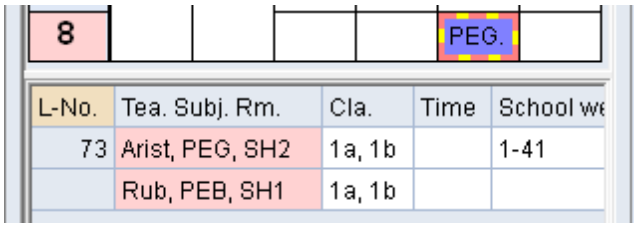
Tea. Subj. Rm.

The second column shows all the teachers, subjects and rooms involved in the lesson. The period details window displays one row for each coupling.

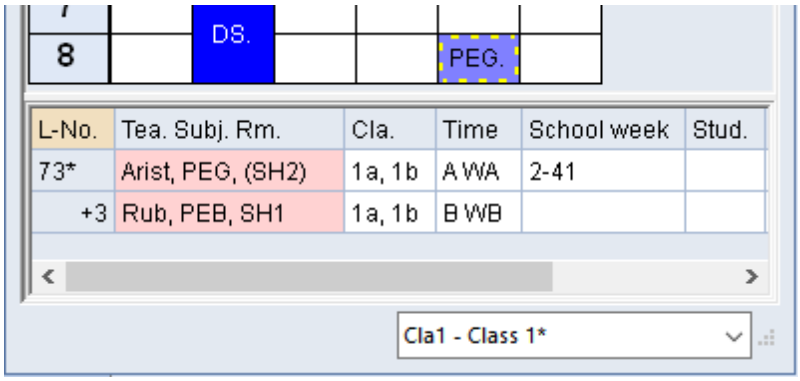
If the optimisation tool has allocated a different (alternative) room instead of the home room entered for the lesson, the name of the home room is shown in parentheses. The example shows that room Ps1 is the room entered for the lesson, but the actual scheduled room is the alternative room R1a.



Cla.
This column displays the class(es) involved in the active lesson (classes 1a and 1b in the example).

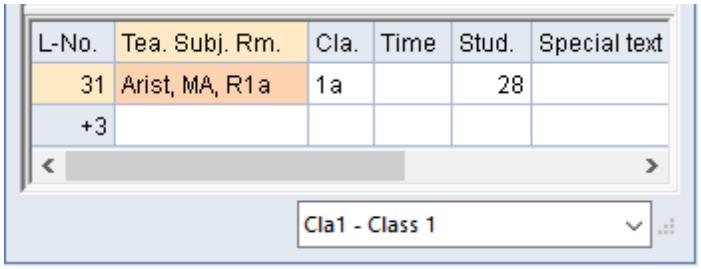


Time
The 'Time' column displays time restrictions and/or periodicities – a particularly important function for use with the Multi-week timetable module For instance, the GA lesson in the example takes place on a fortnightly basis in weeks of type A.



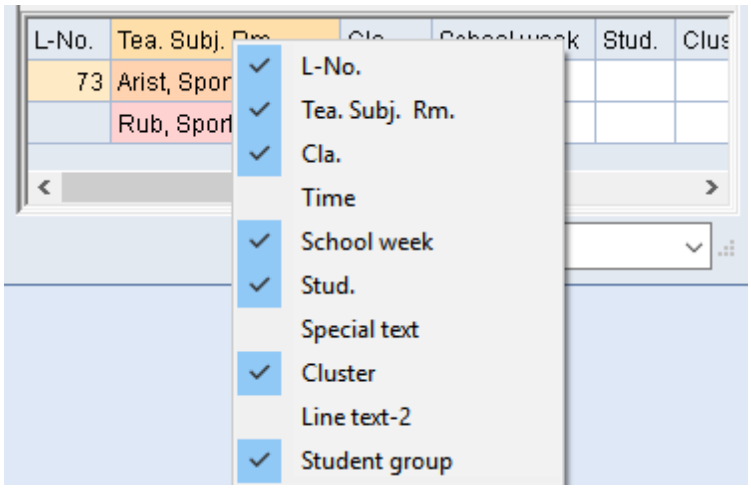
Students
Shows the number of students entered for the lesson or elective subject (for use with the Course

scheduling module) Lesson 6 in the file demo.gpn, for instance, contains the student numbers for the individual special classes.



Special text
The column 'Special text' contains the text or the description entered for the lesson, and the line text entered in the lesson details window. Lesson 6 in the file demo.gpn, for instance, contains the description 'Special Lesson'.
Line text-2
In addition to the line text, the 'Line text 2' field in the form view of the lessons window can be used to define a second, independent line of text. In the example, a line text has been defined ('Beginners' and 'Advanced') for each of the coupling lines with the subject EN (English).

Hide and show columns
Individual columns can be hidden or shown in the period details window. Right-click on the heading row in the period details window and deactivate the desired column.

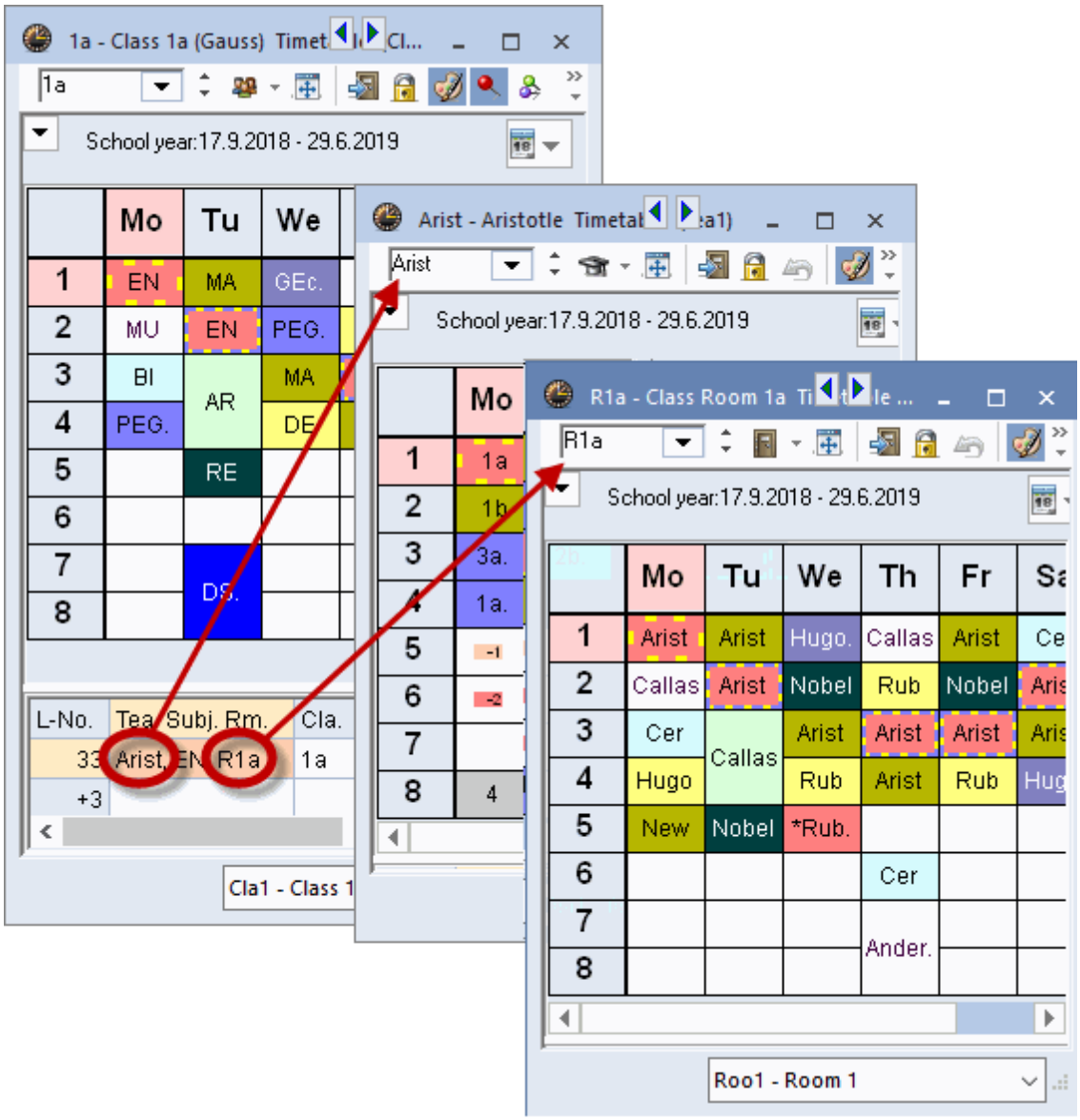


Tip
Columns displayed in a timetable period details window are printed in the legend when the timetable is printed. If the legend takes up too much space in the printout, you can simply hide columns them in the corresponding timetable view.

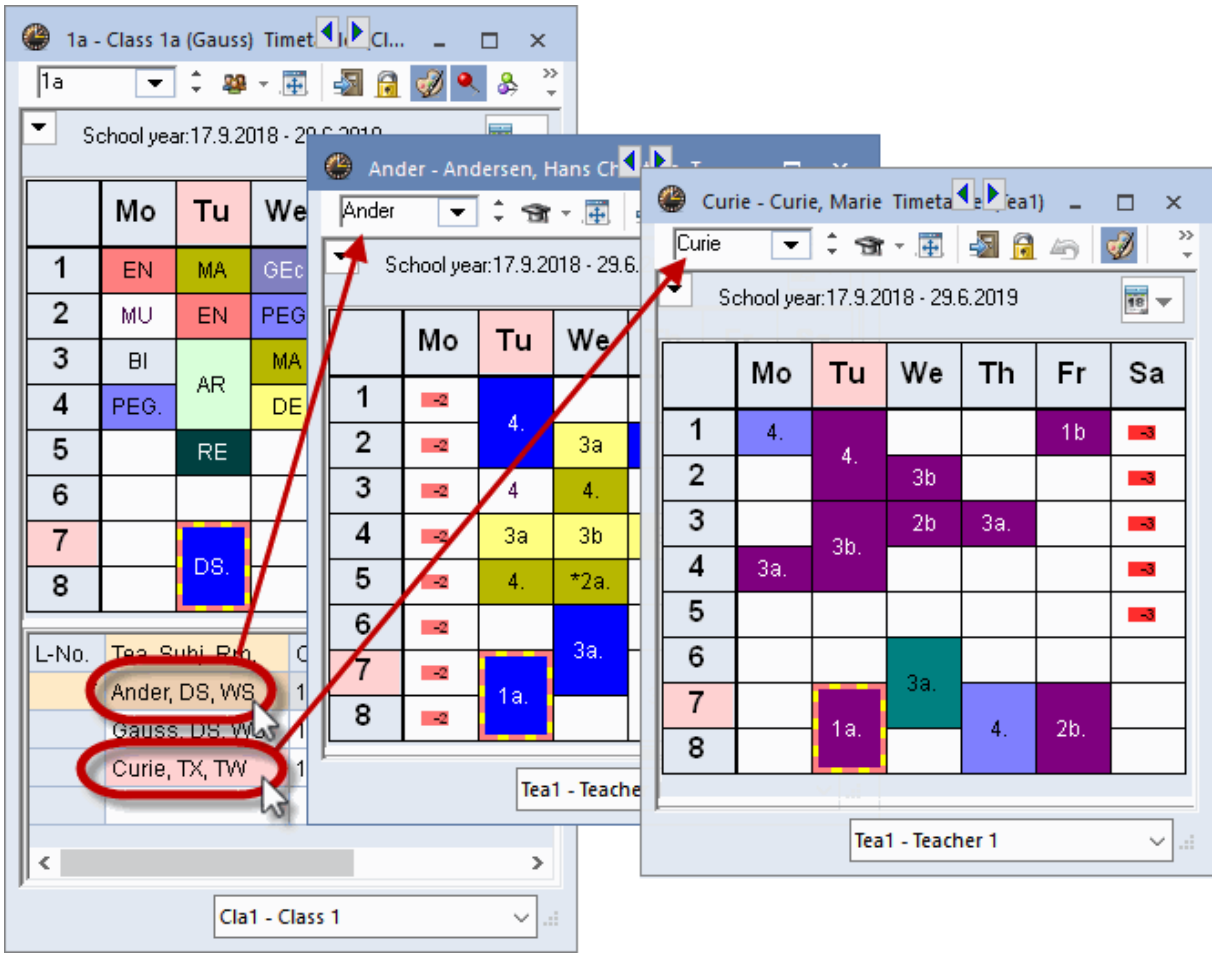
5.3 Timetable interaction

Timetables can be called up manually or set to open automatically (if desired) when an element is selected in a different window The automated function means that you will always have up-to-date information on the screen without having to search for it.

Communication between timetables
Open the file demo.gpn and call up a timetable for classes, teachers and rooms, and arrange the timetables next to each other. Click on Monday, period 1 ('E') in the timetable of class 1a. As you can see, the teacher timetable automatically switches to the timetable of the teacher involved in the lesson (i.e. Aristotle, 'Arist') and the room timetable switches to the room allocated to this lesson ('R1a').

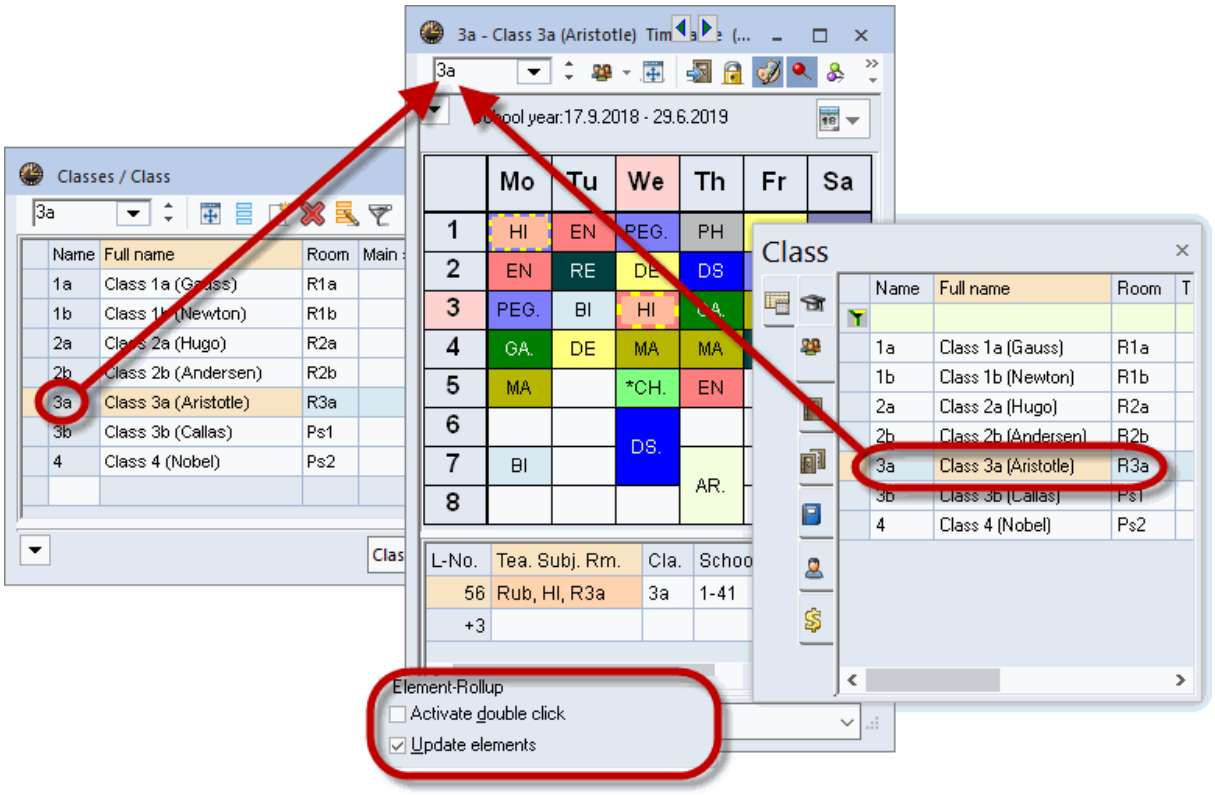


Clicking on the coupling row in the period details window also synchronises all other open timetables.



Communication with other windows
Open a class timetable and the master data window for classes. Click on a class in the master data window and you will see that the timetable automatically switches to the timetable of that class.

The same occurs when you switch elements in a lesson window or in the element-rollup ('Customise' under 'Settings | Miscellaneous').



Locking timetable types

In the previous examples, the type of timetable was always locked. Open the file demo.gpn, a teacher timetable and call up the window 'Teachers | Master Data'. In the master data view, click on one teacher after another. The timetable window always shows the timetable of the currently selected teacher. Clicking on a class name in the window 'Classes | Master Data', however, has no effect on the timetable view, i.e. the type of timetable – here the 'teacher' timetable – remains unchanged.

Unlocked timetables

Deactivate the type locking function by clicking on <Lock Type>. Switch between teachers, classes and rooms in the master data views. You will see that the timetable always displays the active element, irrespective of the type of element (classes, teachers, rooms or subjects). The displayed element changes, as does the type of displayed element.

Tip
Unlocked timetables are particularly practical when used together with the diagnosis tool, since this allows the user to switch rapidly between teacher and class schedules without having to open a second timetable window. You can read more about diagnosis in chapter 'Diagnosis'.

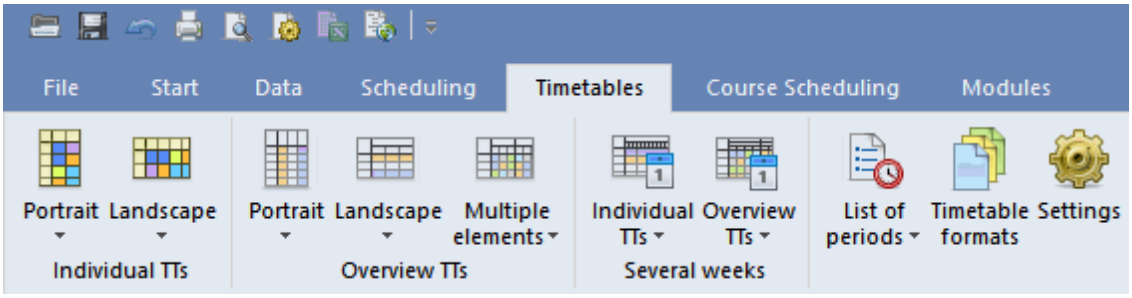
Locking elements

Lock the timetable of a selected element – for instance a specific teacher – on the screen by 'pinning' it to the screen using the <Lock this display> button When a timetable is locked with two pins, the

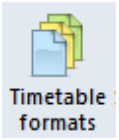
displayed element does not change.

5.4 Timetable formats

Untis offers over 50 different predefined timetable layouts. The layouts are accessible via the tab 'Timetable'. You can choose between 'individual timetables', 'Overview timetables' and timetables for 'several weeks'.



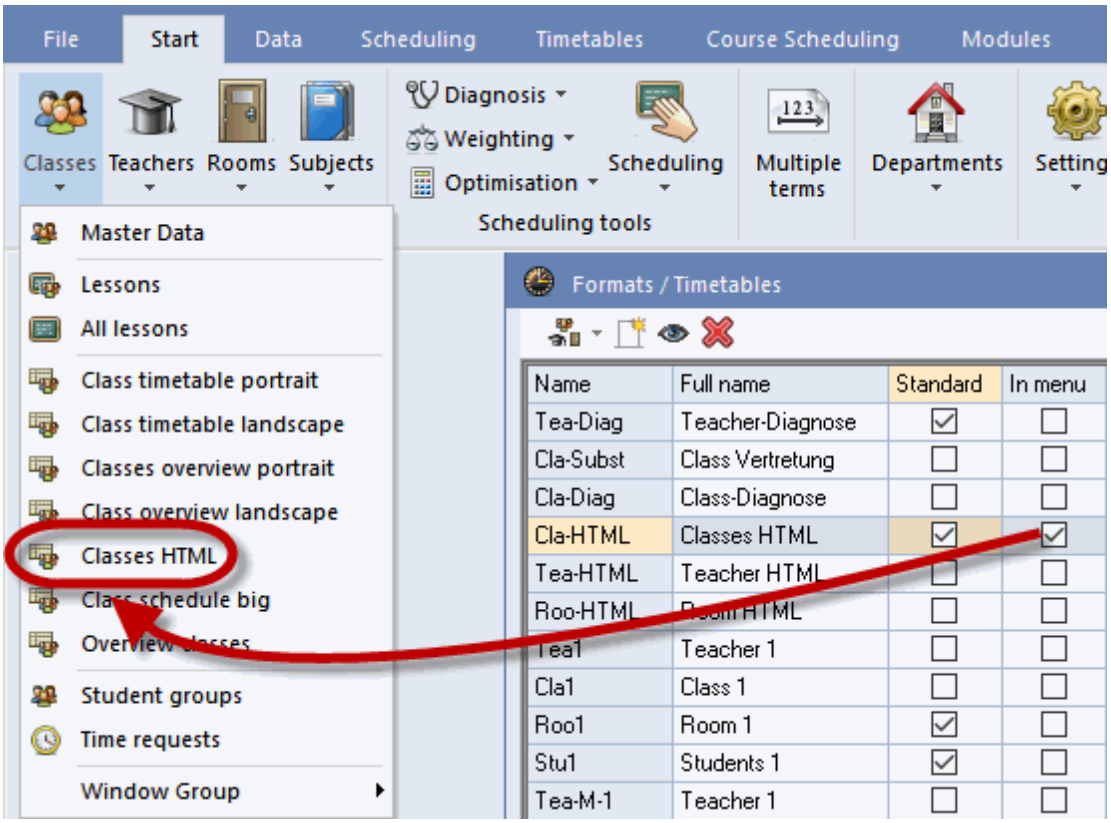
By clicking on the button 'Timetable formats' all formats are listed.



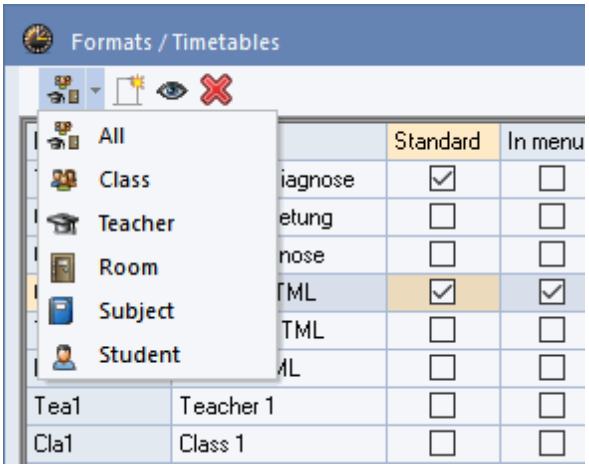
Each timetable layout has a unique short and long name. Click on <Show the TT > or double click on the full name of a format to open the timetable.

Standard format
The timetable format which is set as standard is the format which will open with some of the predefined window groups - e.g. by clicking on <classes> of the 'Start' tab.

Timetables in the menu
In addition, you can specify which timetables you wish to include in the menu, i.e. which timetables you wish to be able to access quickly.

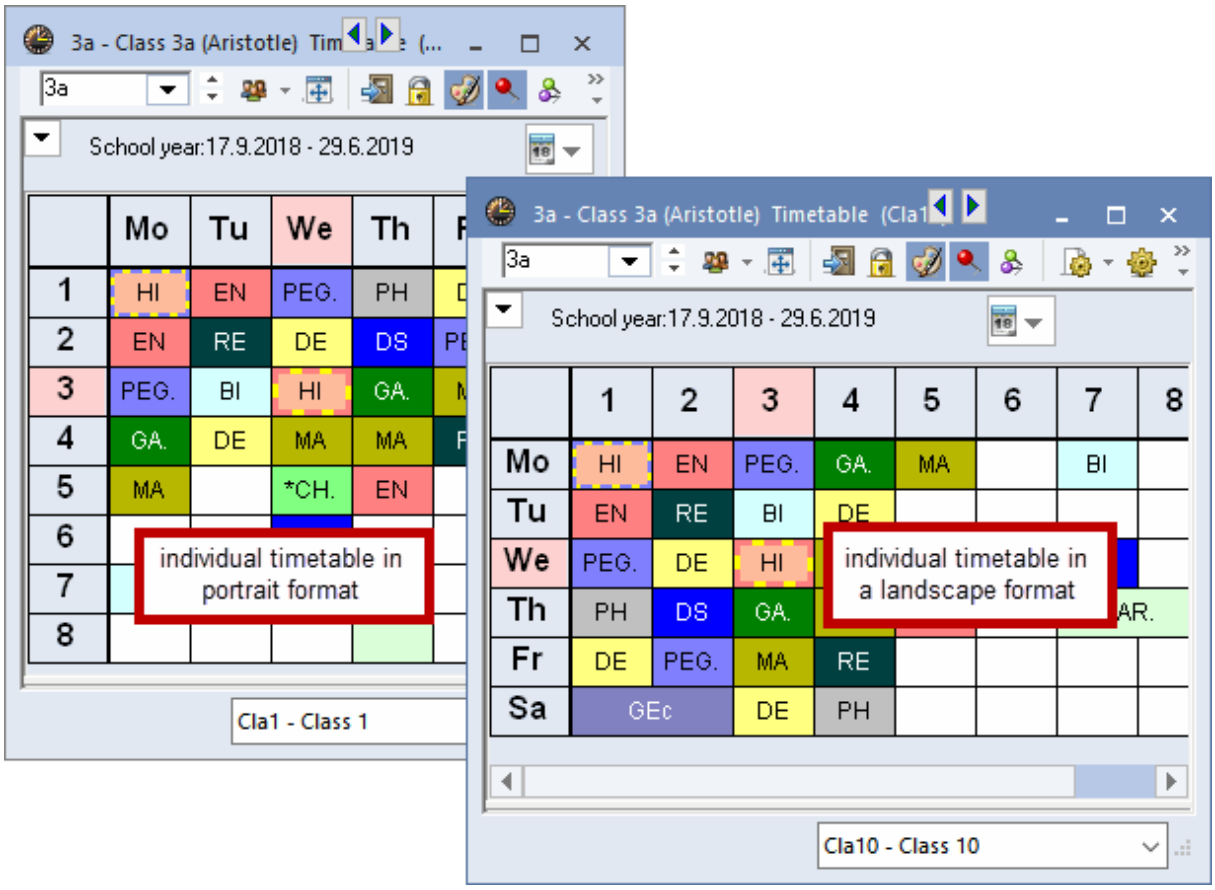


As a standard the predefined formats are displayed for all types of timetables. However, you can also view only one single element (class, teacher, etc.).

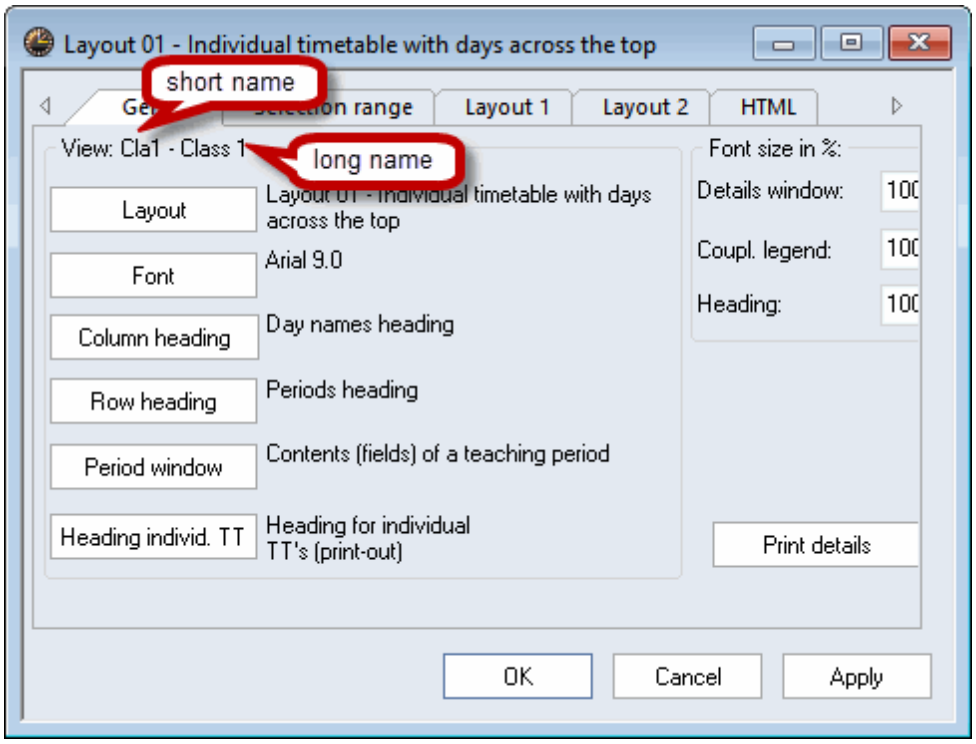


5.4.1 Individual timetables

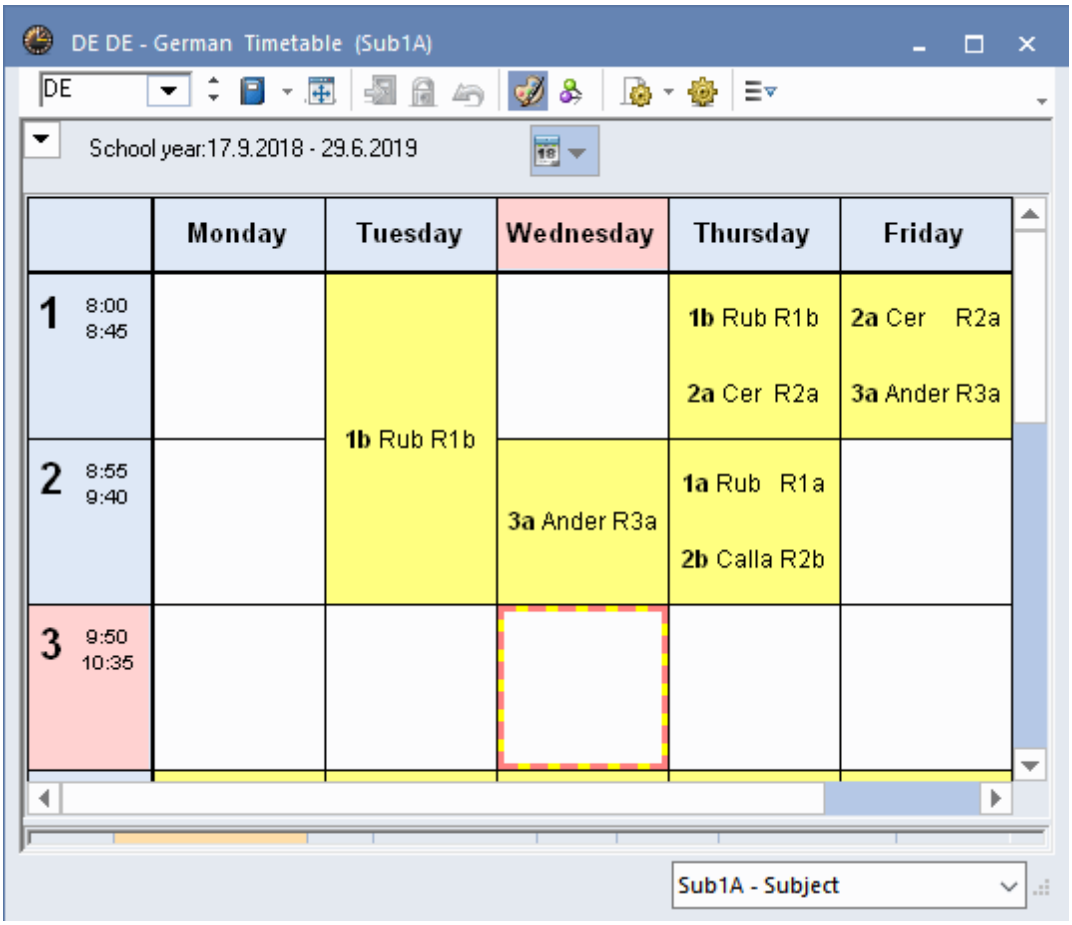
Individual timetables always show the timetable of one single element (class, teacher, room, subject, studen). You can choose between portrait (weekdays at the top) or landscape (weekdays in the rows) format.



Individual timetables in portrait format always have the number 1 in their name- e.g. Cla1 or Cla1A, individual timetables in landscape format always have the number 10 in their name- e.g. Tea10 or Tea10A. The short name of the formate is displayed in the title bar of the timetable or you go to <Timetable-Settings>, tab 'General'.



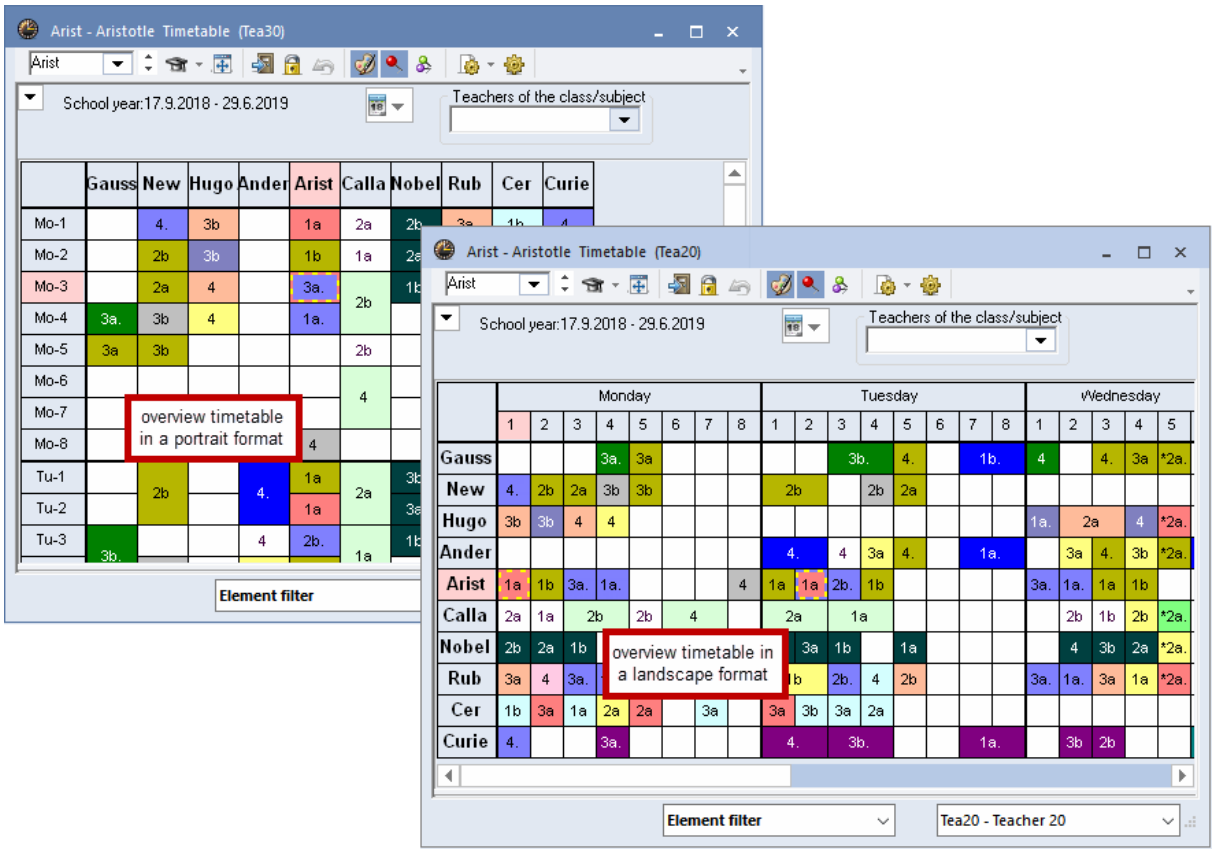
A special type of individual timetable is the subject timetable. All periods of the school of this subject are displayed. Subject timetables are available in the formats 01, 10 and 11. The example below shows a subject timetable of the subject 'German'.



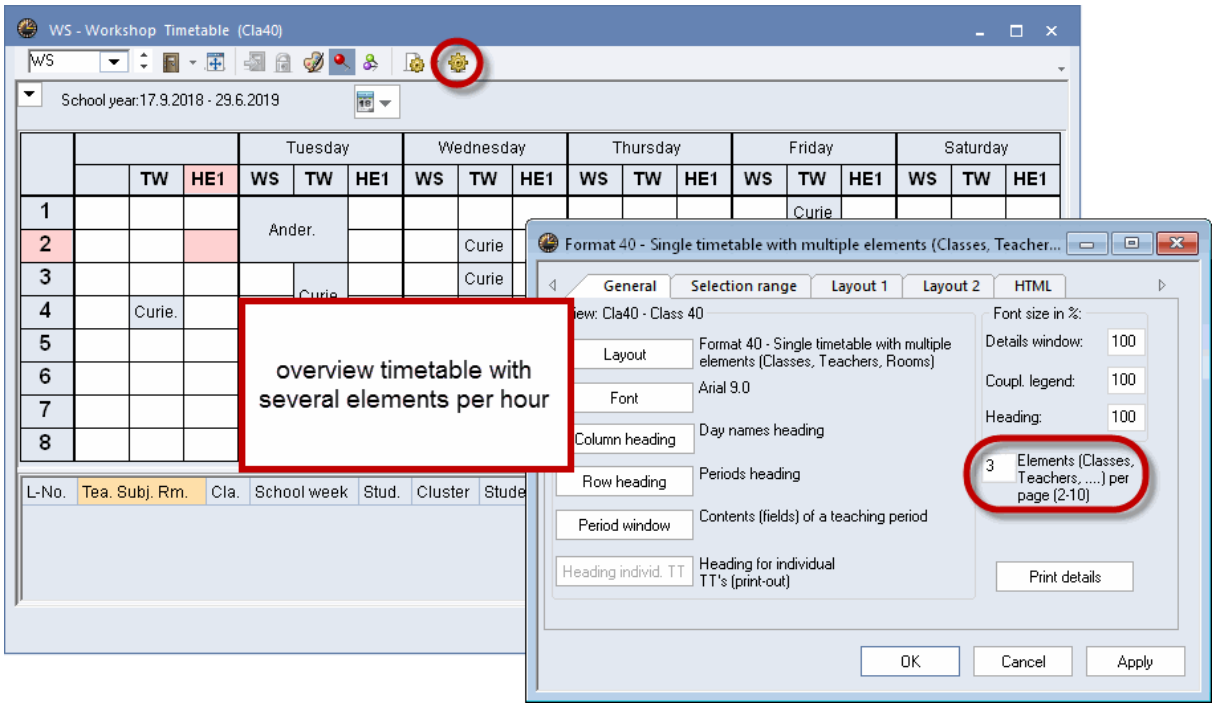
5.4.2 Overview timetable

Overview timetables always show several elements and are therefore best suited for scheduling activities which require a visual overview of the scheduling situation (e.g. room allocation overview). They are also best suited for printing.

Overview timetables in portrait format always have the number 30 in their name - e.g. Cla30 or Cla30A, overview timetables in landscape format have the number 20 in their name - e.g. Roo20 or Roo20A.

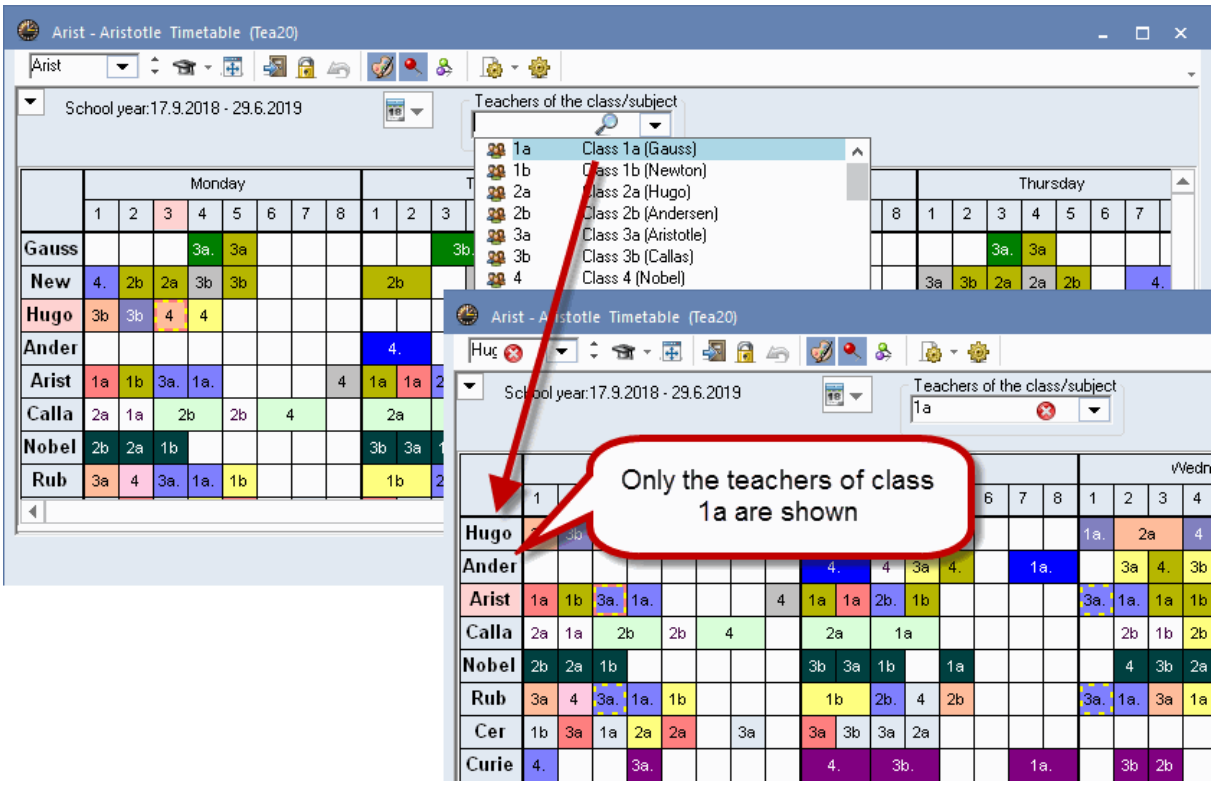


A timetable overview in format 40 enables you to display the week as an individual timetable but with multiple elements shown below the days. It is therefore very easy to display the timetables of the functional rooms in one timetable. Via <Settings> you define how many elements are to be displayed per page.



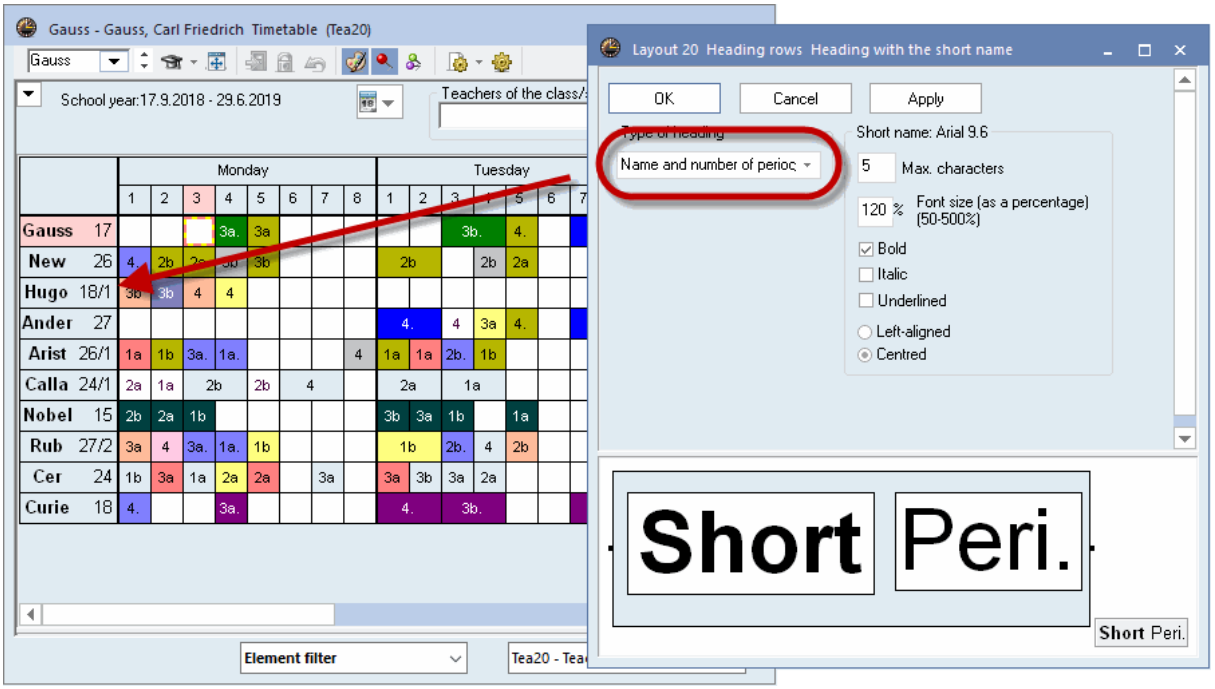
5.4.2.1 Overview TT teachers: filter teachers

If you have (very) many teachers working at your school, then it is especially difficult to stay on top of all the different timetables of all colleagues. Untis supports you by providing you with a filter function for the overview timetables of teachers. You filter the teacher of a certain class or the teacher of a certain subject.



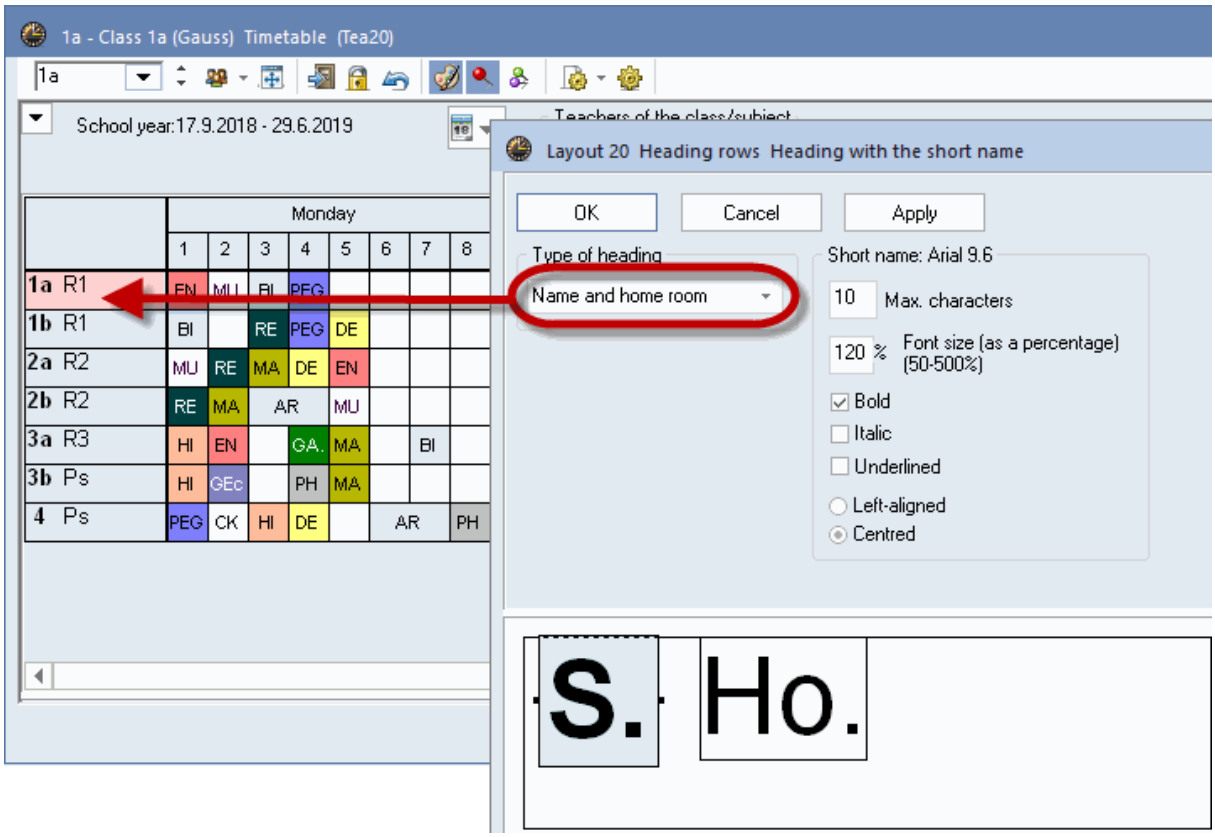
5.4.2.2 OverviewTT teachers: weekly periods

The overview timetables of teachers have the option to show how many weekly periods the respective colleague has scheduled. You additionally see – divided by '/' – how many periods still need to be scheduled for the respective teacher.



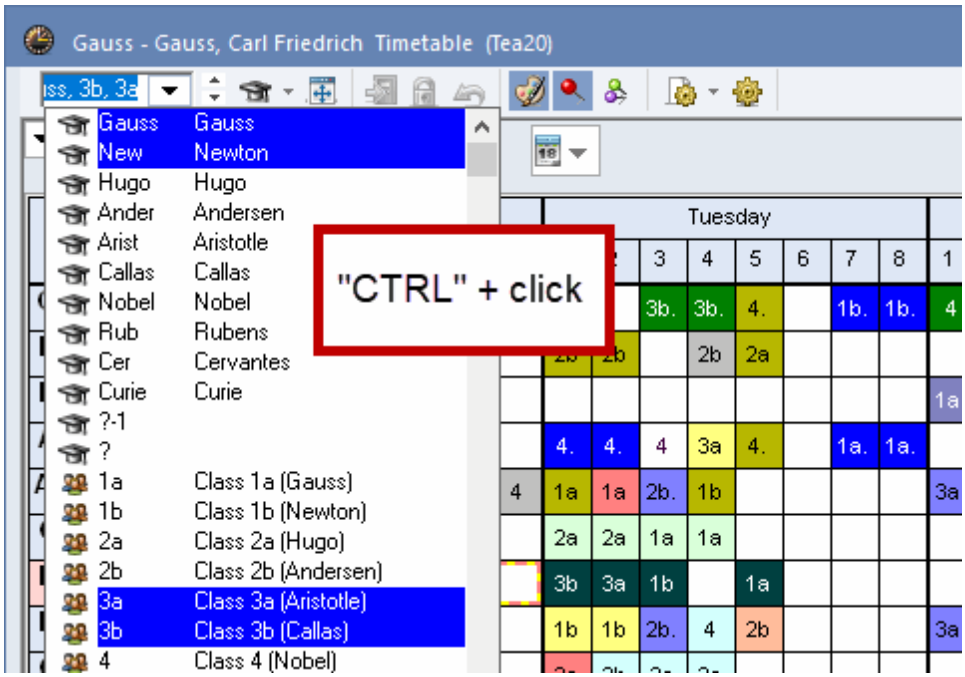
5.4.2.3 Overview TT classes: home room

The classes timetables also can show the home room of the class.

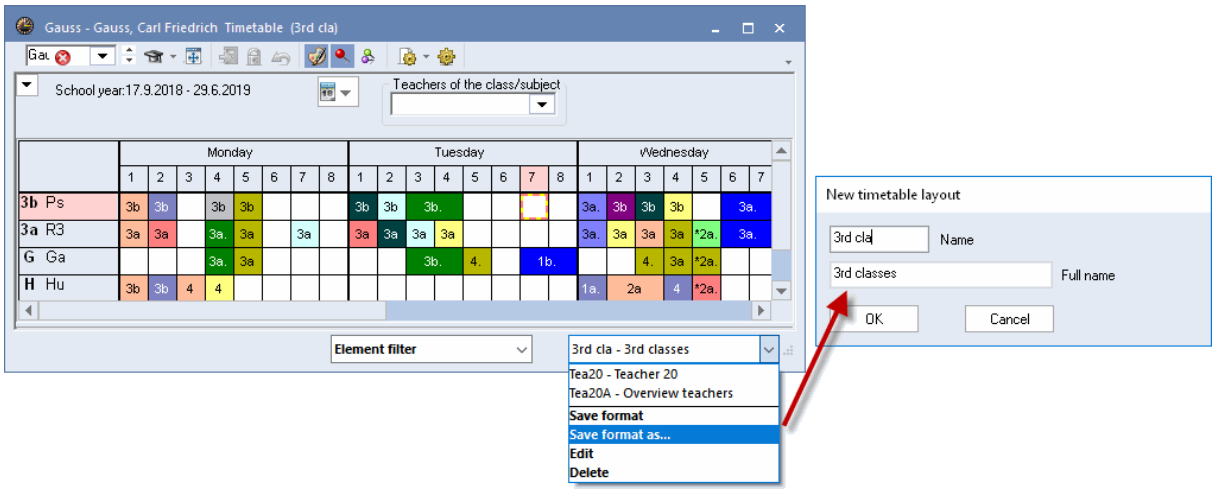


5.4.2.4 Overview TT: savable filters

Via the selection list you can filter single elements.



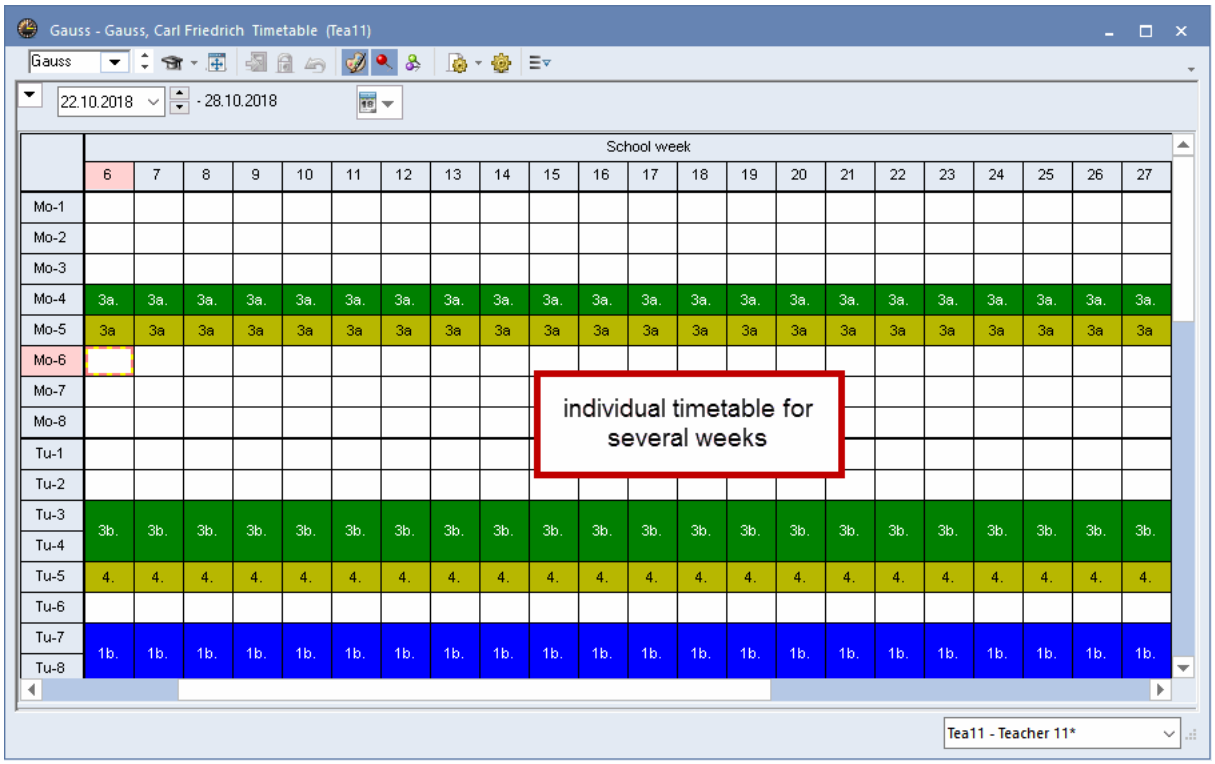
Diese können Sie als eigenes Format abspeichern



5.4.3 Several weeks

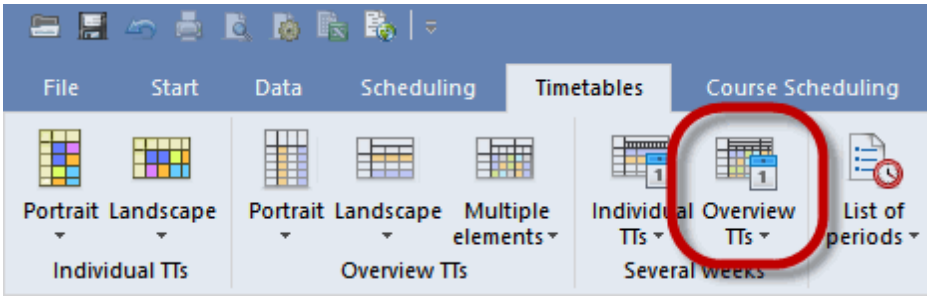
This format is important to you, if you use the module 'Multi-week Timetable'. It shows the individual school weeks in columns next to each other and the periods of every week in rows one below the other. Periods which are alternating on a weekly basis and interruptions can be seen at one sight.

The example shows the timetable of Class 10aBT from school weeks 16 to 35 for Monday and Tuesday.

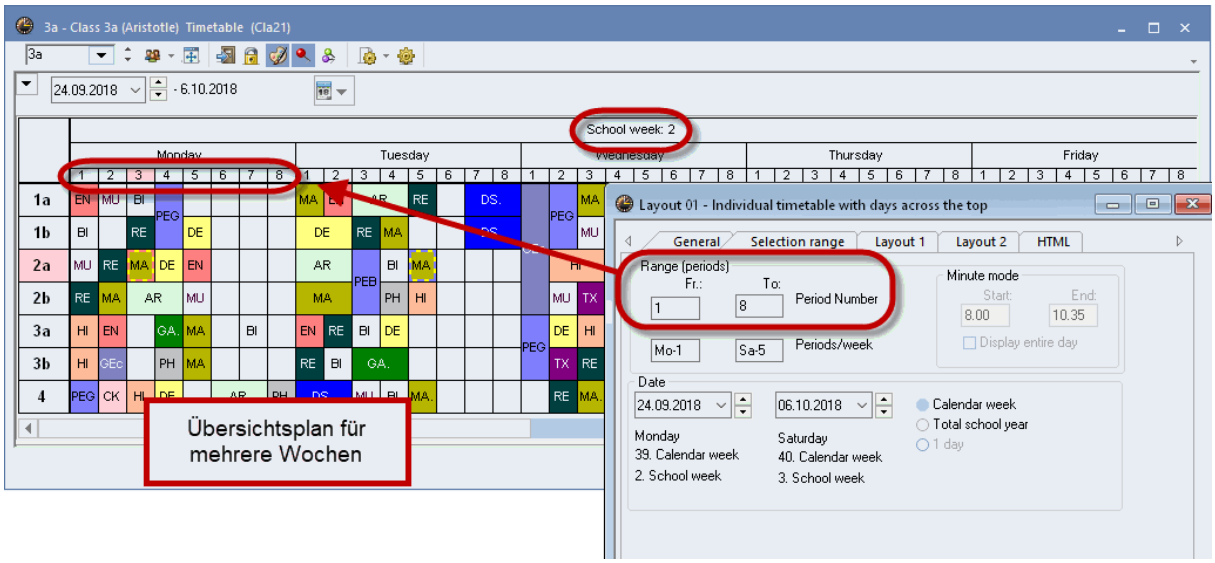


Note
In Format 11 you may also display the terms instead of the weeks in columns. Check the selection box 'One column per term' in <Timetable-Settings> on the tab 'Layout 2“ .

Displaying several weeks is also possible for overview timetables. Format 21 shows an overview of all school weeks and of all elements.



In the timetable settings on the 'Selection range' tab you can define how many periods per day are to be displayed.



5.4.4 List of periods

Lists of periods show the timetable - like in a university calendar - not in a matrix but in a list. The list can be sorted by classes or by teachers. The adjustment of the layout of the list of periods is done according to master data or lessons windows or also according to cover lists.

Test school DEMO Timetable 2018/2019 **Untis 2018**
For demo and test only Valid from: 10 October 6.7.2017 13:41

List of periods

1a Class 1a (Gauss)

Date	Day	Periods	Weekly period	Start	End	Teacher(s)	Subject	Class(es)	Rooms	Less.-nr.
19.9.	We	1	We-1	08:00	08:45	Hugo	GEc	1a,1b,2a,2b	R1a	11
19.9.	We	2	We-2	08:55	09:40	Arist	PEG	1a,1b	SH2	73
19.9.	We	2	We-2	08:55	09:40	Rub	PEB	1a,1b	SH1	73
19.9.	We	3	We-3	09:50	10:35	Arist	MA	1a	R1a	31
19.9.	We	4	We-4	10:45	11:30	Rub	DE	1a	R1a	53
20.9.	Th	1	Th-1	08:00	08:45	Callas	MU	1a	R1a	35
20.9.	Th	2	Th-2	08:55	09:40	Rub	DE	1a	R1a	53
20.9.	Th	3	Th-3	09:50	10:35	Arist	EN	1a	R1a	33
20.9.	Th	4	Th-4	10:45	11:30	Arist	MA	1a	R1a	31
21.9.	Fr	1	Fr-1	08:00	08:45	Arist	MA	1a	R1a	31
21.9.	Fr	2	Fr-2	08:55	09:40	Nobel	RE	1a	R1a	46
21.9.	Fr	3	Fr-3	09:50	10:35	Arist	EN	1a	R1a	33
21.9.	Fr	4	Fr-4	10:45	11:30	Rub	DE	1a	R1a	53
21.9.	Fr	8	Fr-8	14:25	15:10	Arist	PEG	1a,1b	SH2	73
21.9.	Fr	8	Fr-8	14:25	15:10	Rub	PEB	1a,1b	SH1	73

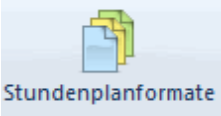
5.5 User-defined views

Timetable views in Untis can be customised quickly and easily to meet the individual requirements of your school. This chapter describes how to customise the timetable display to reflect your personal preferences.

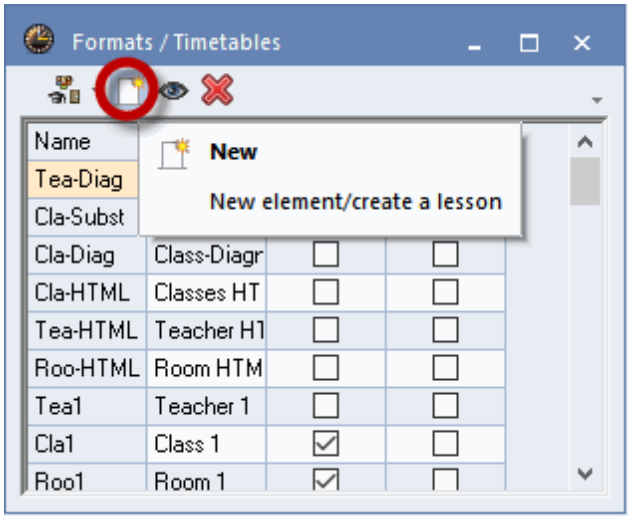
You wish to create a customised screen display based on the standard timetable for classes in the demo.gpn file.

5.5.1 New timetable format

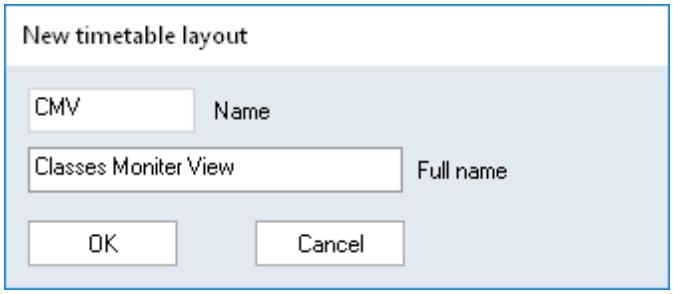
1. Open the file demo.gpn and call up the list of timetable format s on the tab 'Timetables'.



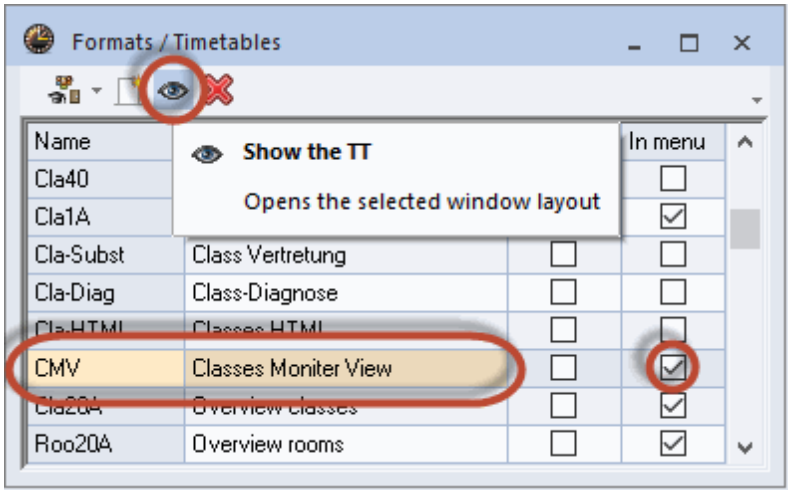
2. Click on the first timetable format class 1 and click on <New> to create a copy of this timetable view.



3. Assign a new short name and a descriptive full name to the view (e.g. CSD, Class Screen Display).



4. The new timetable view appears. Access this view by double clicking on the full name of the view or by clicking on <Show the TT>. Check the column 'In menu' to include the view in the menu.



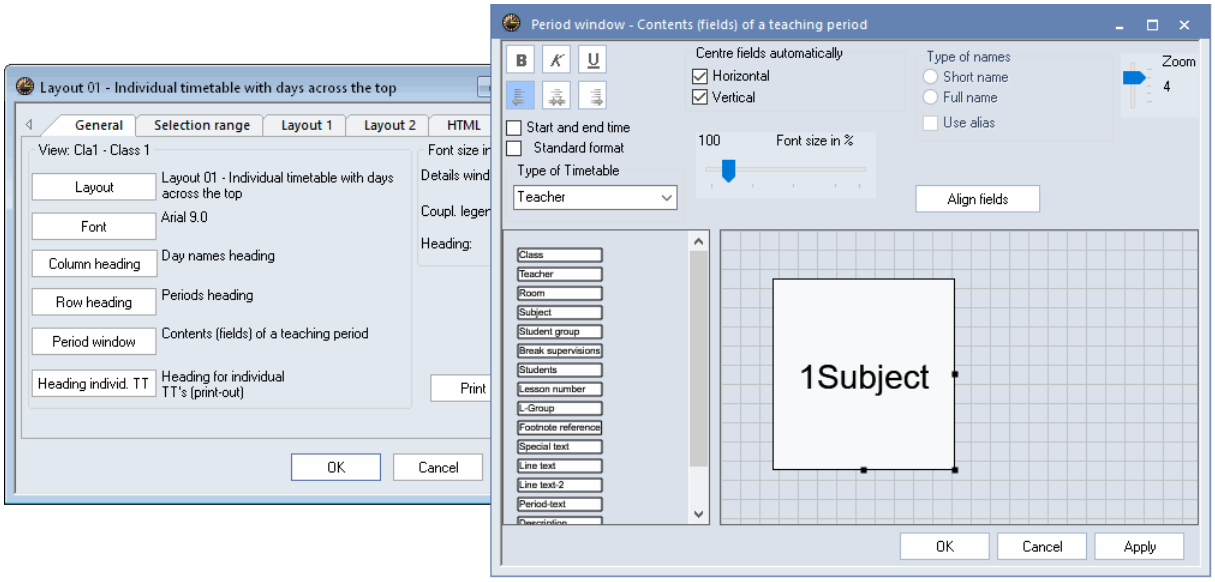
5.5.2 Timetable period window

The next steps describe how to modify the contents of the period window (timetable period).

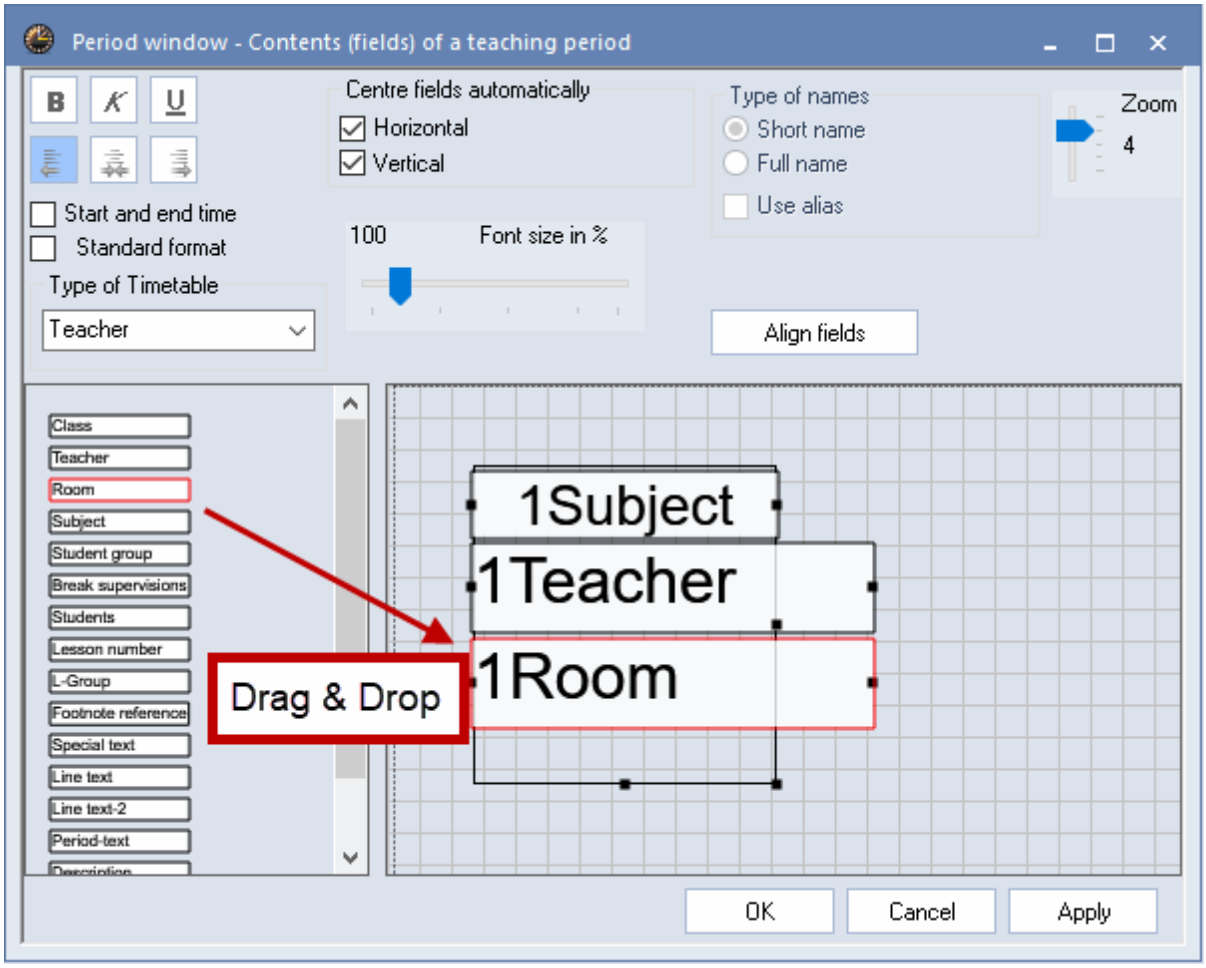
5.5.2.1 Several fields - timetable period window

1. Open the new timetable view (or open the demo.gpn file and open 'Timetable | Portrait | Class Timetable'), click on <Settings> and select 'Period window'. This will open the graphics editor that can be used to modify the contents of the timetable period window. Currently, only the subject is displayed in the period

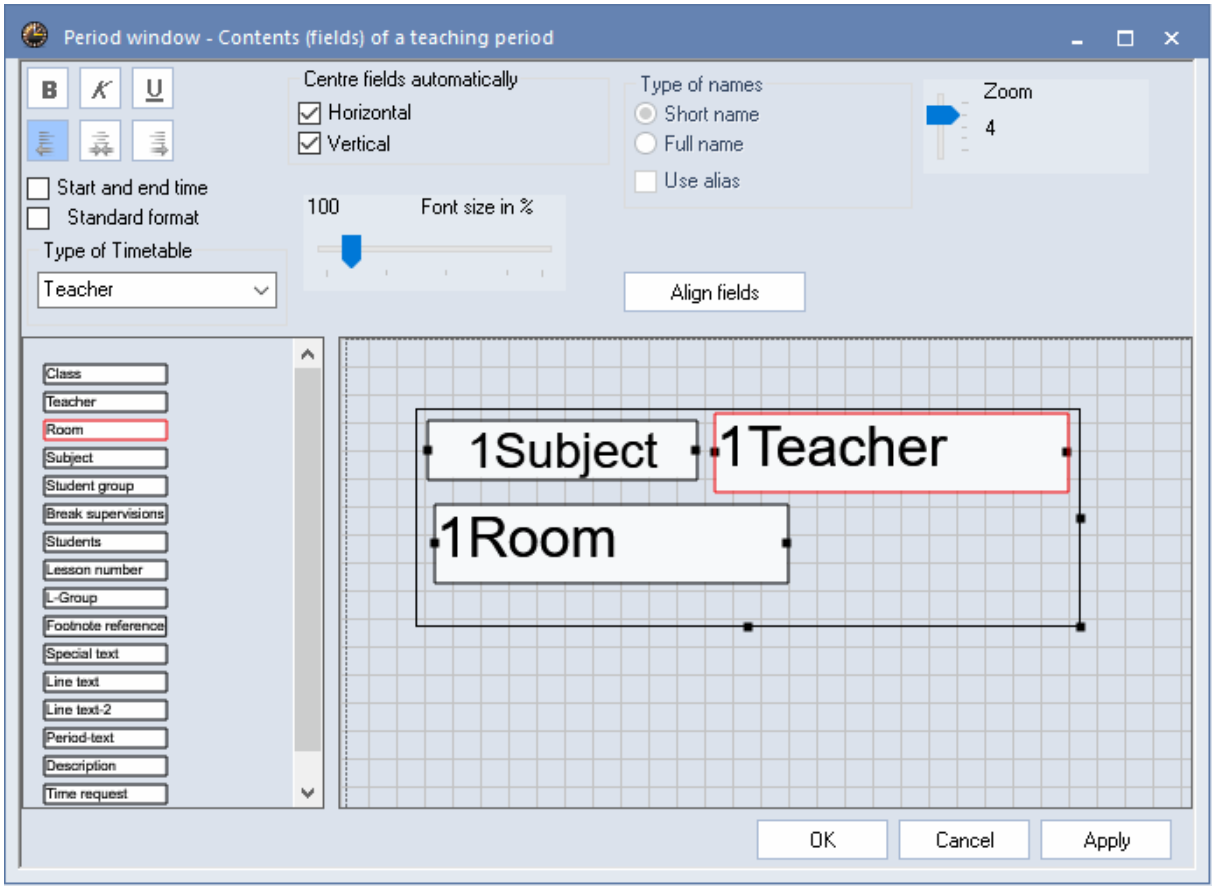
2. In addition to the subject, you now wish to display the teacher and the room of the lesson. Click on <New field>. In the 'Field type' section, select 'Teacher' and click on <OK>. Repeat the same process for the room.



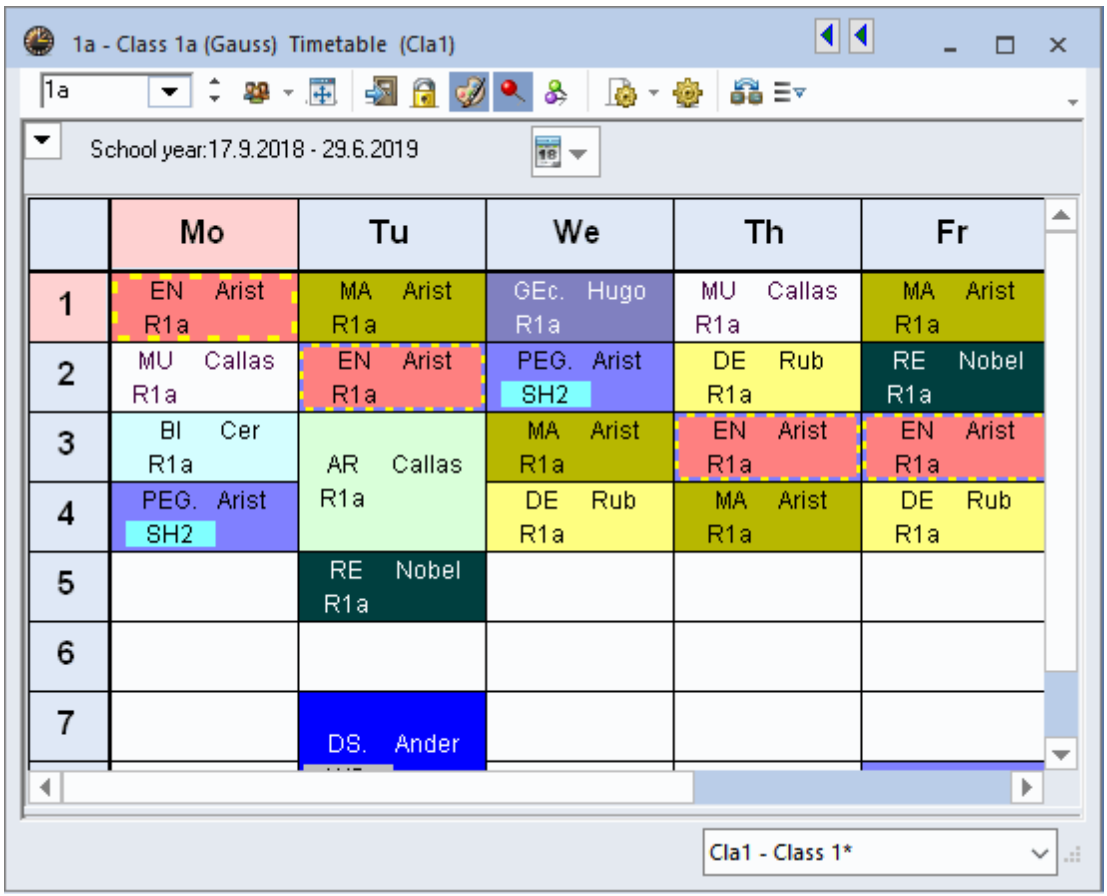
3. The next task is to arrange the three fields for subject, teacher and room next to each other in such a way that they are easy to read. First, enlarge the period window by clicking on it (the background will turn blue) and dragging the edges until it has the desired size.



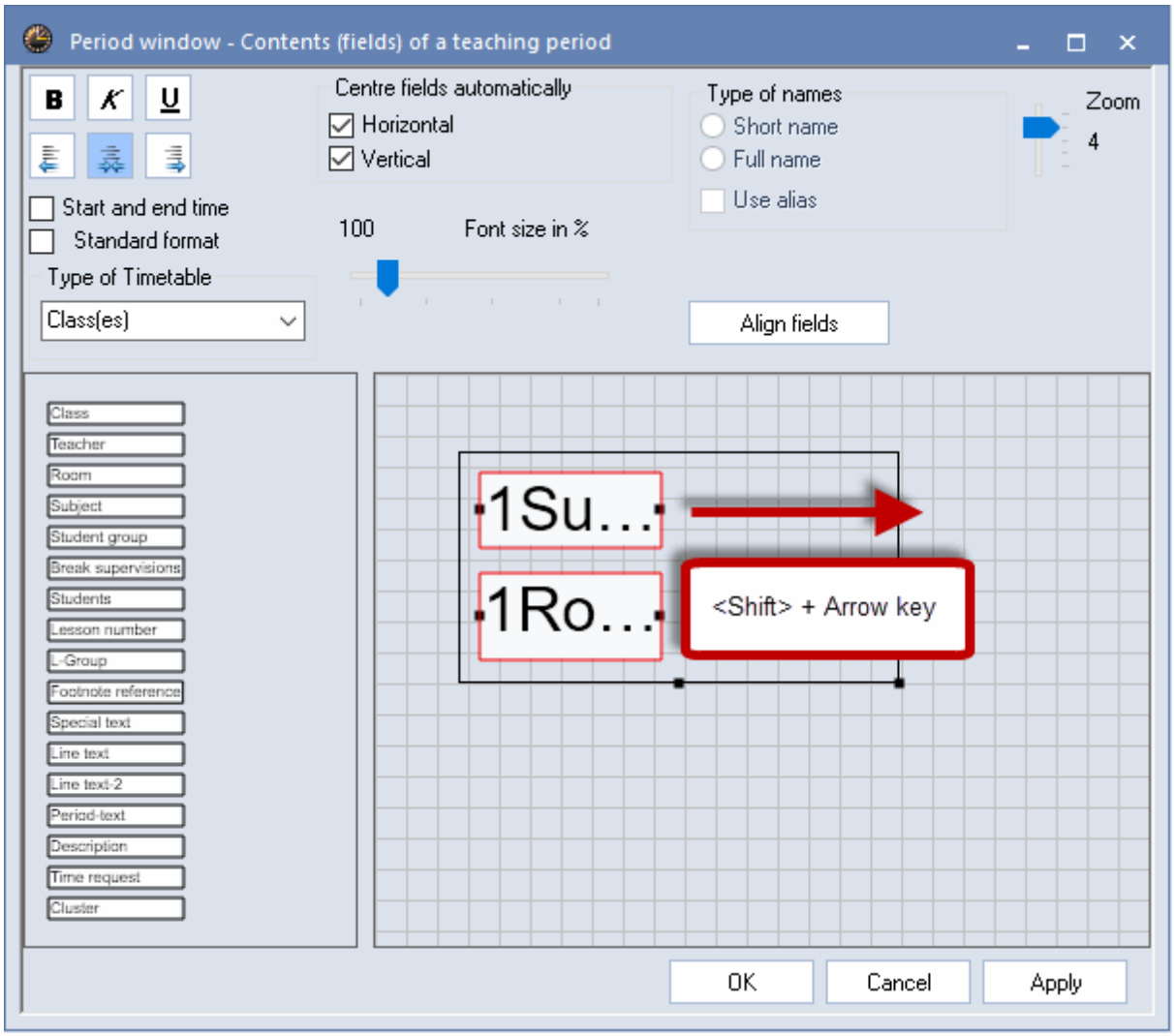
4. Arrange the three fields as shown in the example. Click on the field you wish to move. While the field is blue, the cursor will change to a cross, allowing you to move the field with the cursor. When all three fields have been arranged to your satisfaction, confirm with <OK>



5. The timetable now displays the subject, teacher and room for each period:



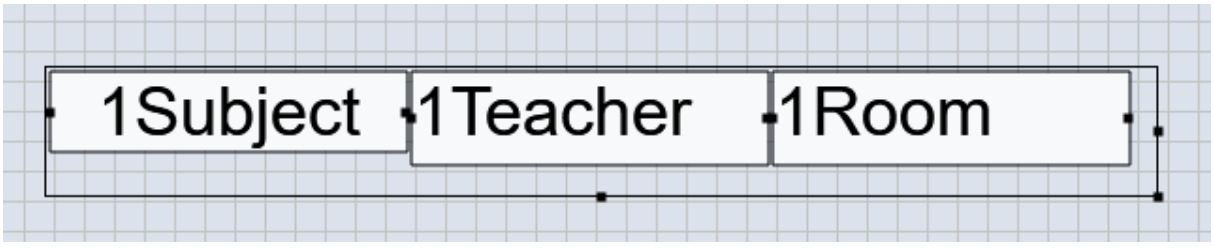
Tip
Holding the <Ctrl> key pressed allows several fields to be marked in the graphics editor and to be moved all together using the arrow keys. If several fields are marked, you can hold the <SHIFT> key pressed and shrink or enlarge all fields using the arrow keys.



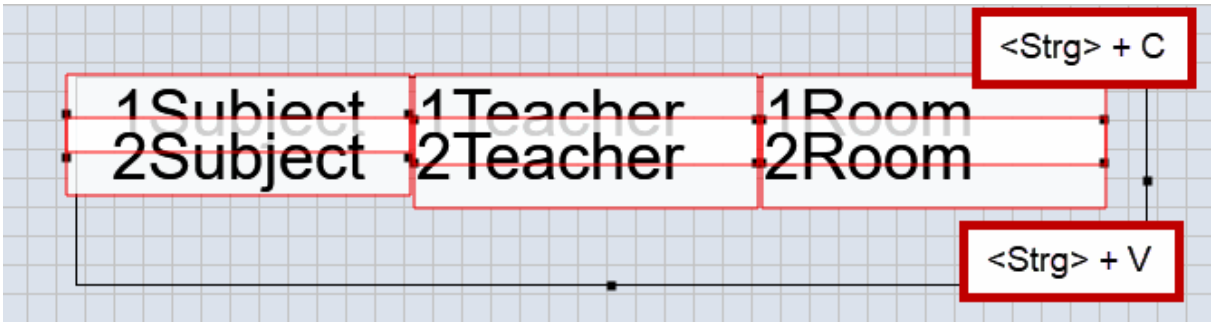
5.5.2.2 Coupled lessons

If you also wish to display the details of lesson couplings in the timetable, proceed as follows:

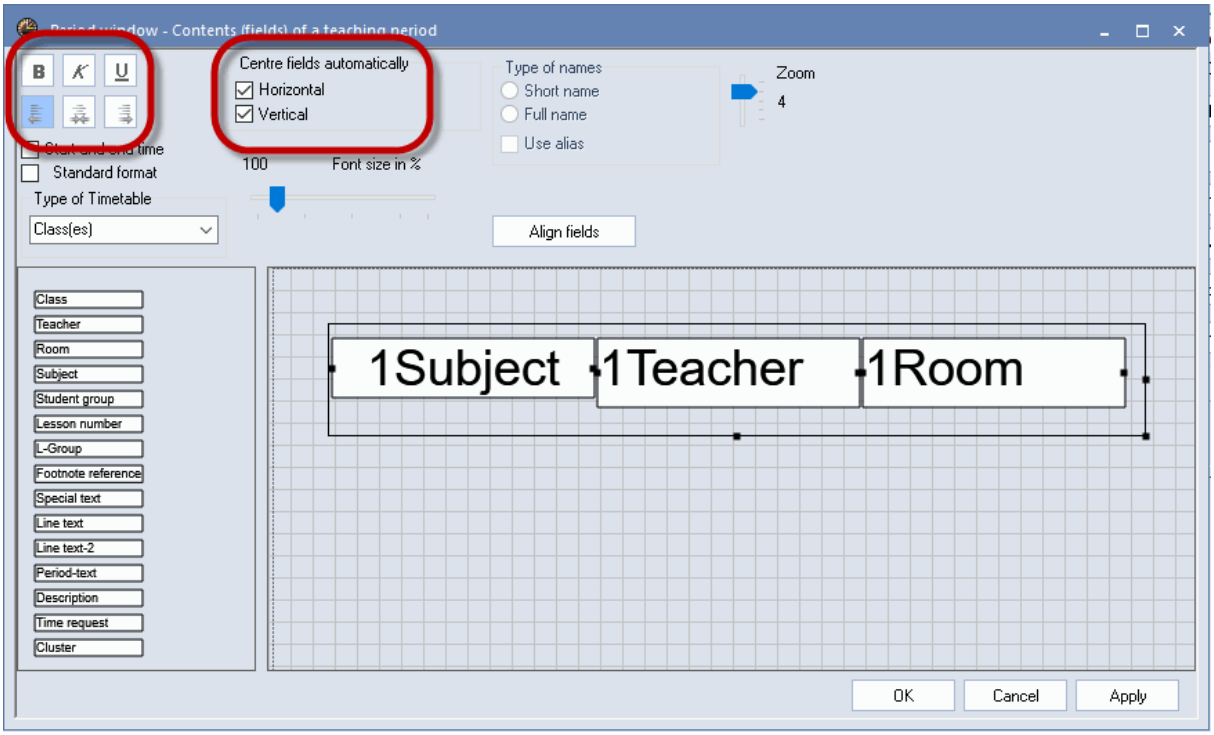
1. First, enlarge the period window by clicking on it (the background will turn blue) and dragging the edges until it is the desired size. Details on subjects, teachers and rooms are to be displayed side by side.



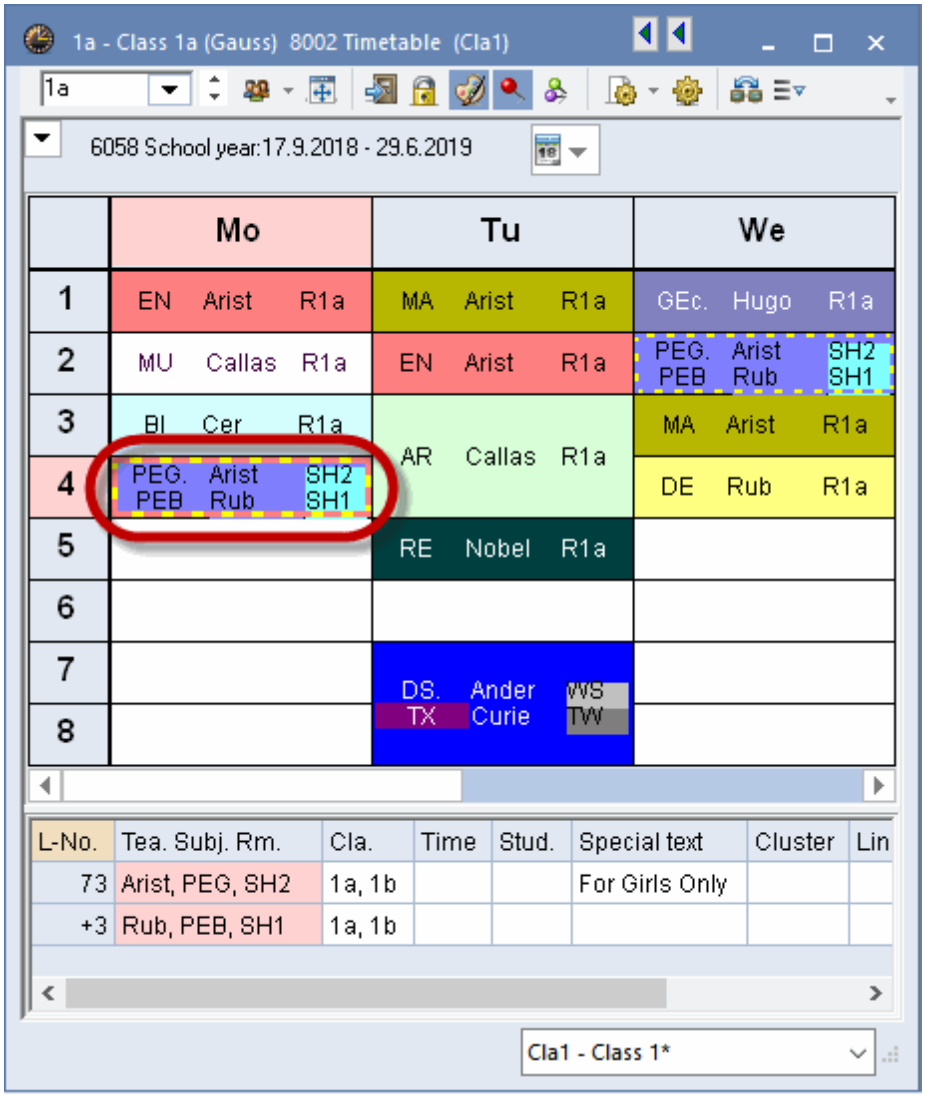
2. Highlight the fields for subject, teacher and room using <Ctrl>+click and insert them using <Ctrl>+C and <Ctrl>+V. Use the mouse to move them to the desired position.



3. You can centre the field by checking the respective box, either horizontal or vertical. You also can write elements in bold, in italics or you can underline them, or you can left-align, centre or right-align them.

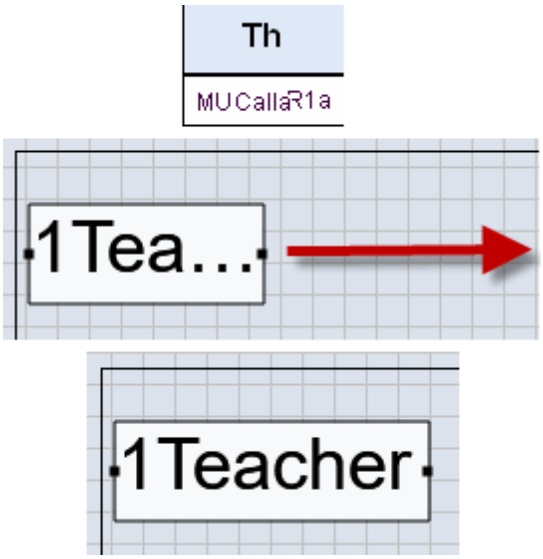


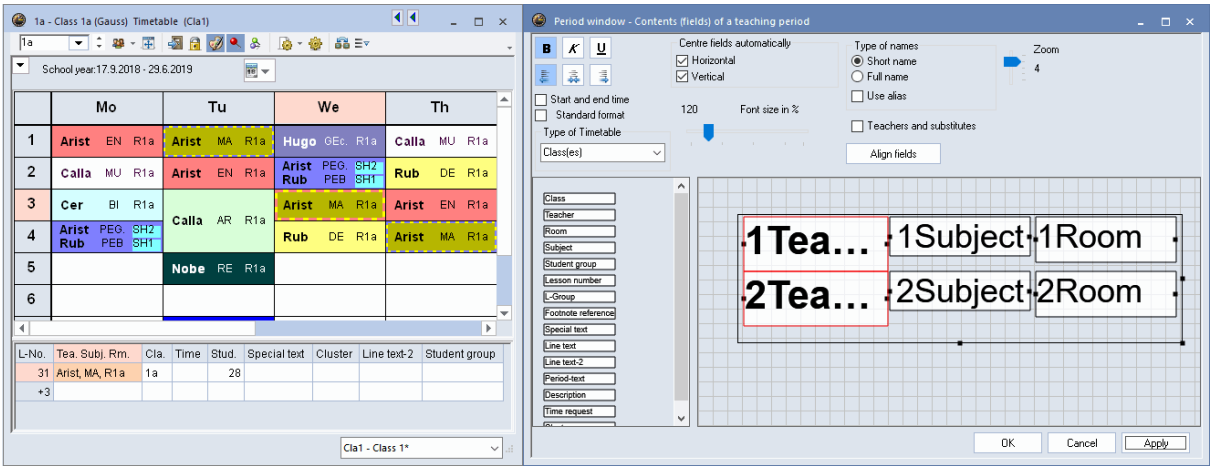
4. The timetable now displays the details of the first and second coupling row in the timetable period



5.5.2.3 Layout field

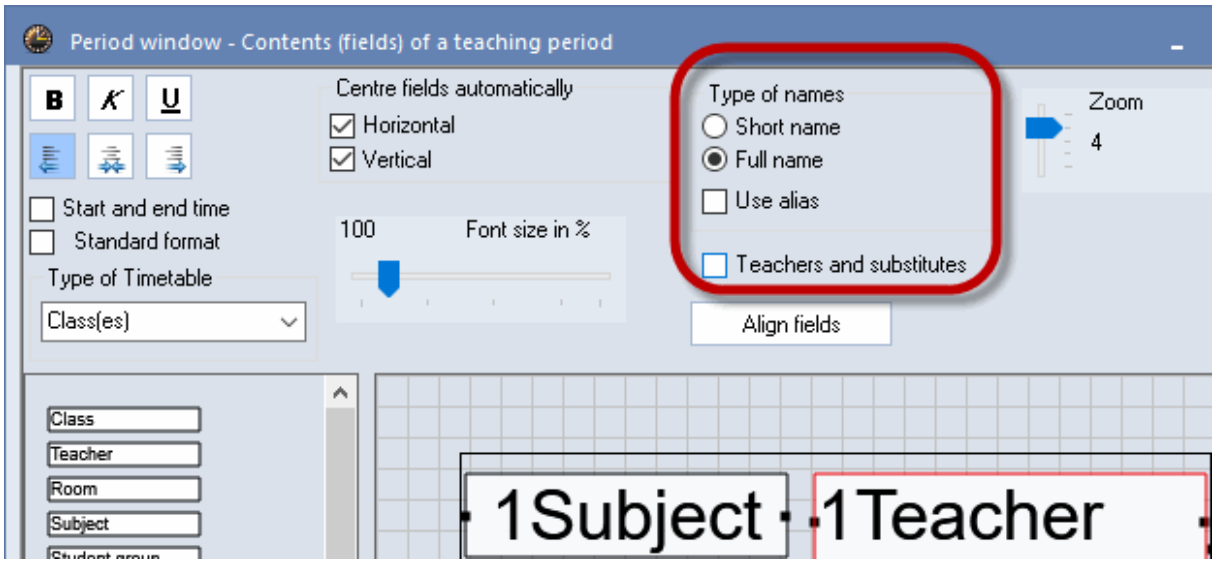
A field that is too short to display the entire name (e.g. Callas Thursday, period 1) can be easily modified. You can resize any field in the timetable period by clicking on a button on the edge of the field and dragging it to the desired size. You can also change the font size for each separate field. The example shows how to change the font type of the subject to bold and the font size to 120% of the preset value (Arial 9).

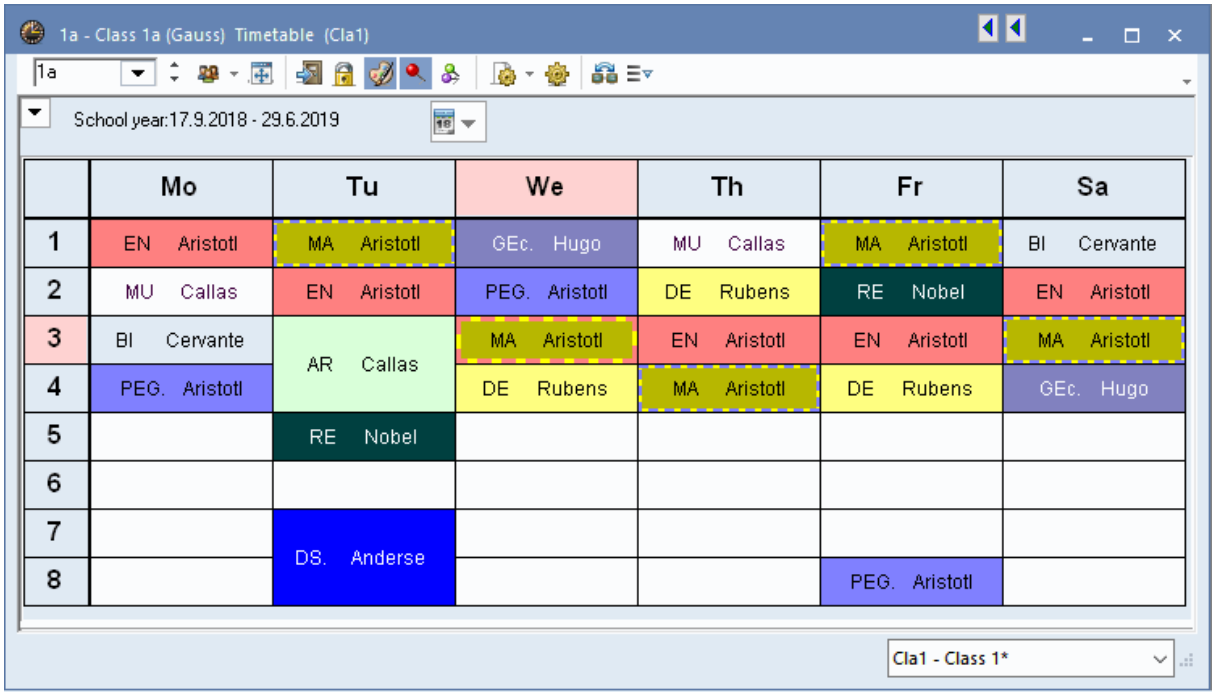




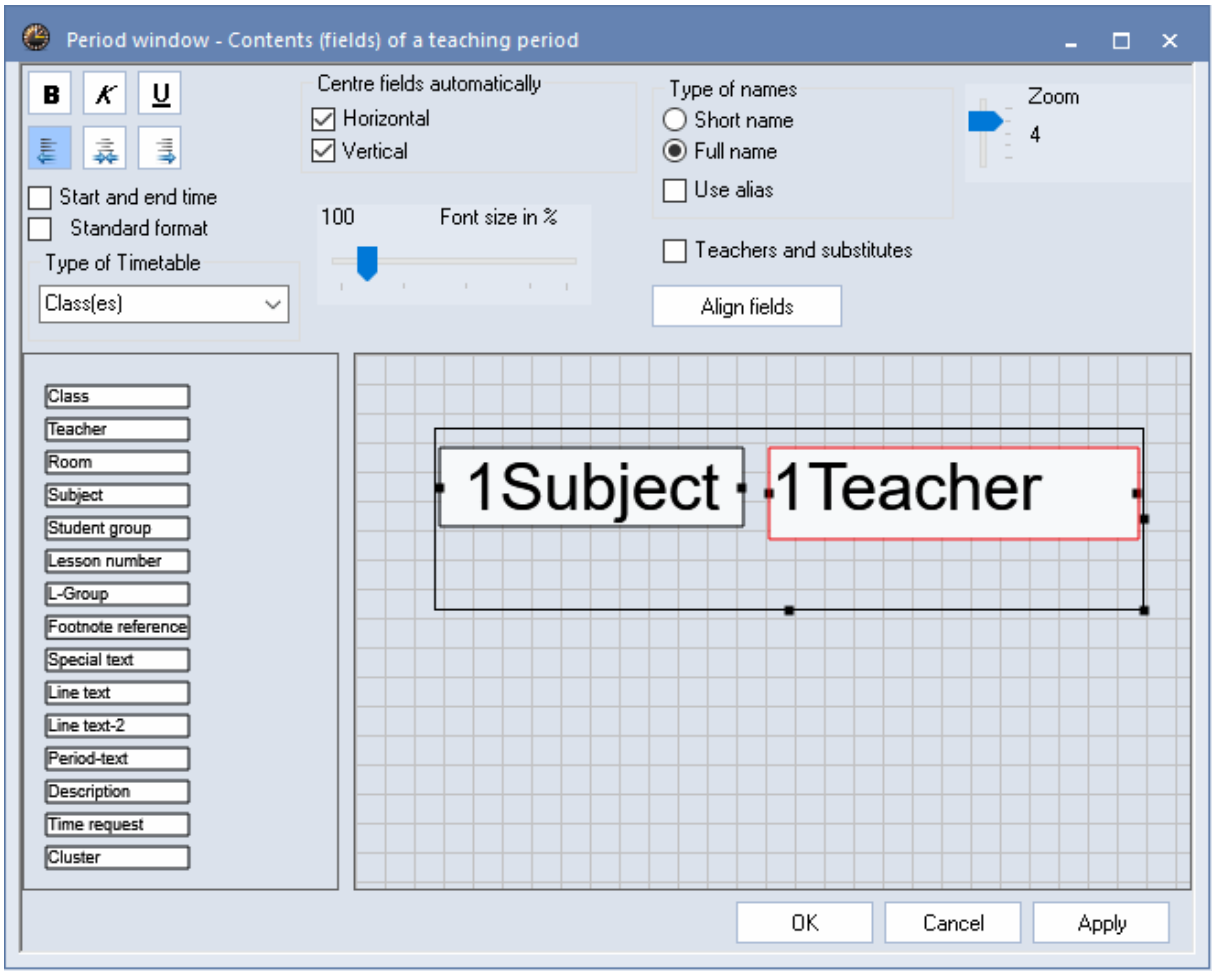
5.5.2.4 Full name

Alternatively, you can display the full name or the alias name defined under master data. The example shows how the full name of the teacher (12 character max.) can be displayed in the timetable.





In addition to the class, teacher, room, subject and footnote reference fields, the following additional information can be displayed in the period window of a timetable.

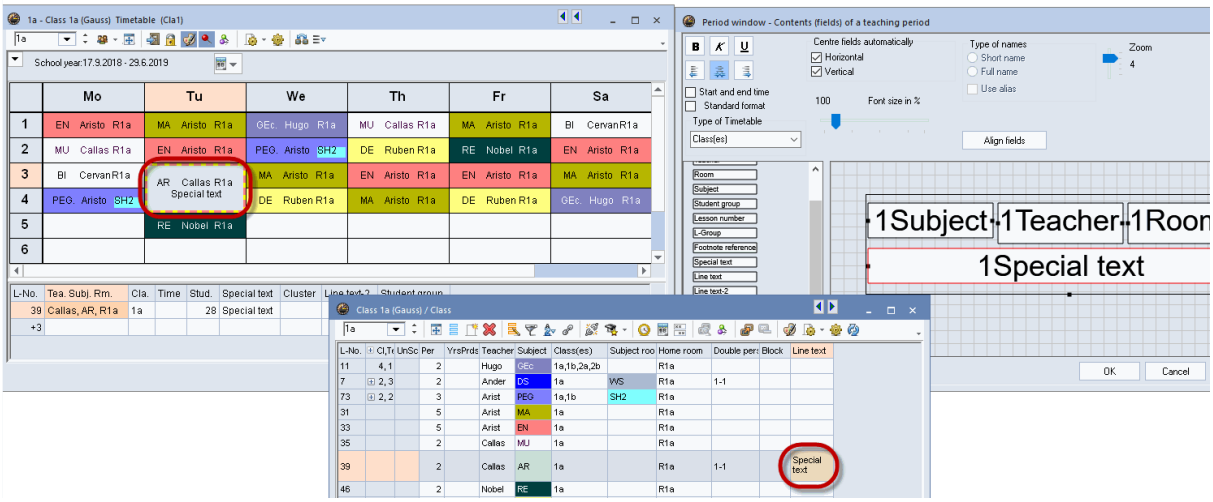


5.5.2.5 Lesson number

The unique lesson number used to designate the lesson can also be displayed as an additional item of information in the timetable..

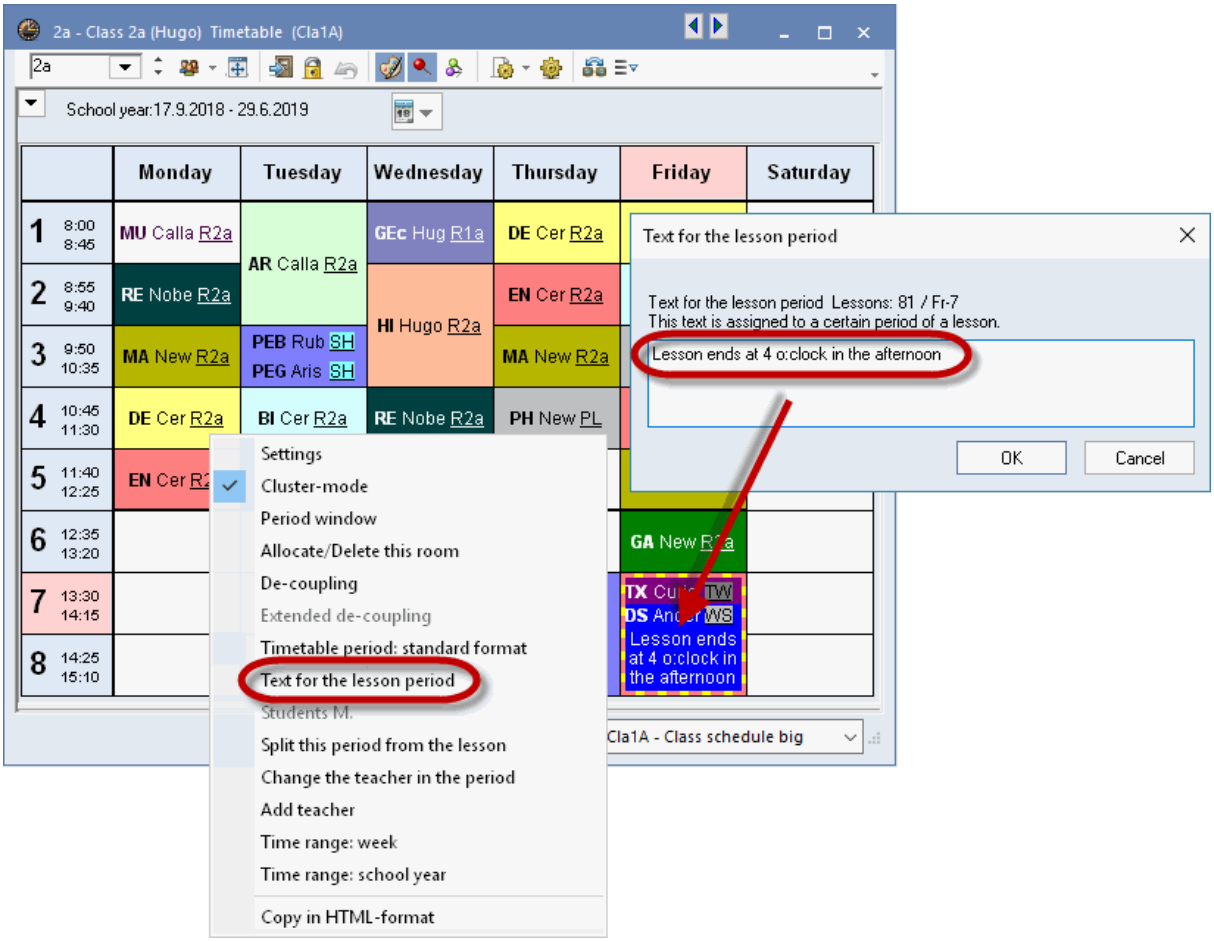
5.5.2.6 Special text

The special text field contains the text or the description entered for the lesson.



5.5.2.7 Text for the lesson period

Displaying this field in the timetable allows text relating to each period to be entered direct in the timetable. Right-click on the period concerned and select the option 'Text for the lesson period'. The text entered here will only be displayed in this period of the lesson even if several periods of the lesson are scheduled.

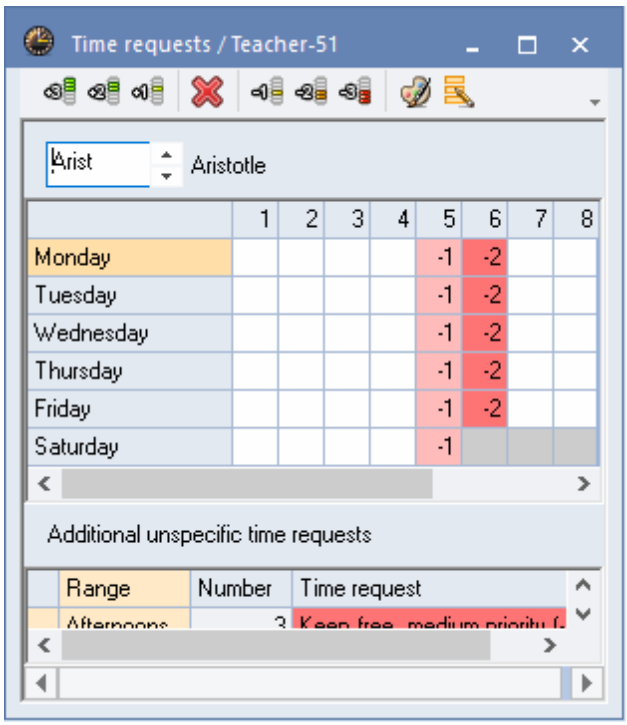


5.5.2.8 Description

Besides the text, the description entered for the lesson is also displayed.

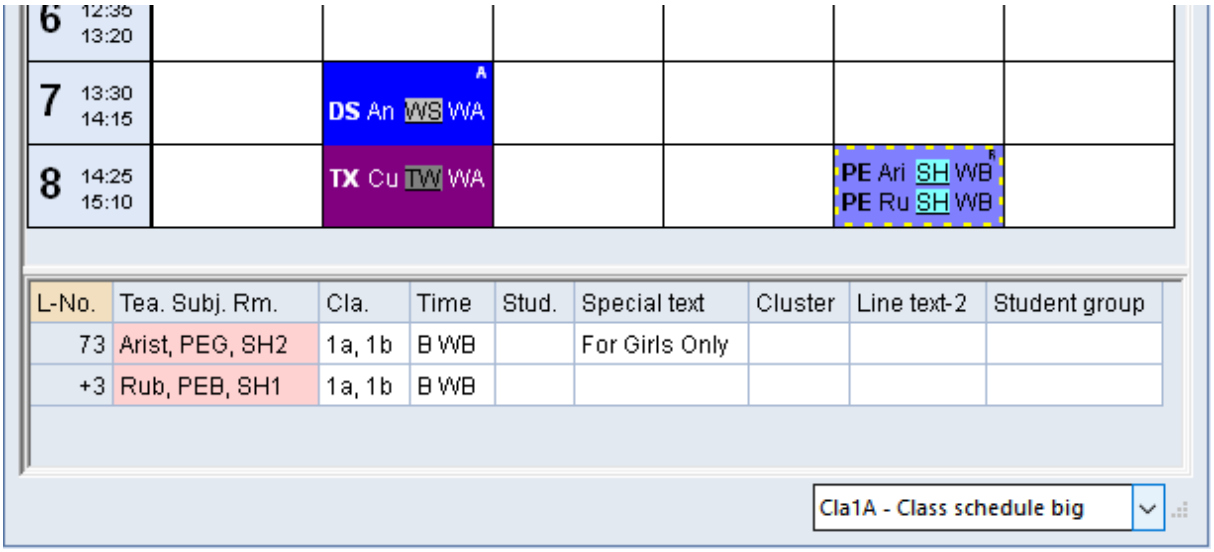
5.5.2.9 Time requests

The time requests entered in the master data for the element in question can be displayed in the timetable either in colour or in black/white.



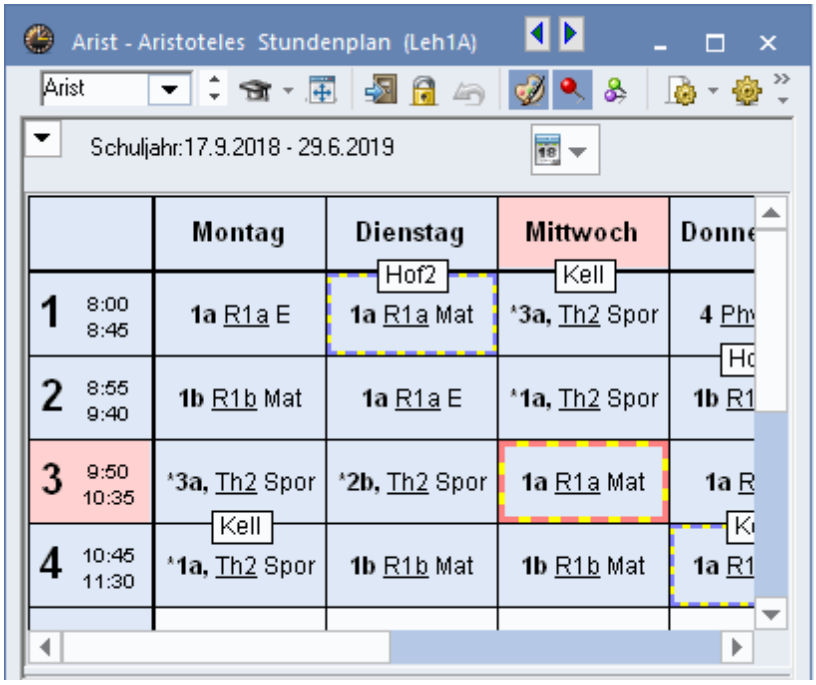
5.5.2.10 Lesson group

Displays the lesson group assigned to the lesson (for use with the Multi-week timetable module). The example shows the DS lesson in weeks of type A and the PE lesson in weeks of type B.



5.5.2.11 Break supervision

Break supervisions can be displayed in teacher timetables. This function is only available with the 'Break supervision' module.



5.5.2.12 Number of students

The number of students registered for the lesson or the number of students who have selected the course can be displayed in teacher timetables (for use with the Course scheduling module).

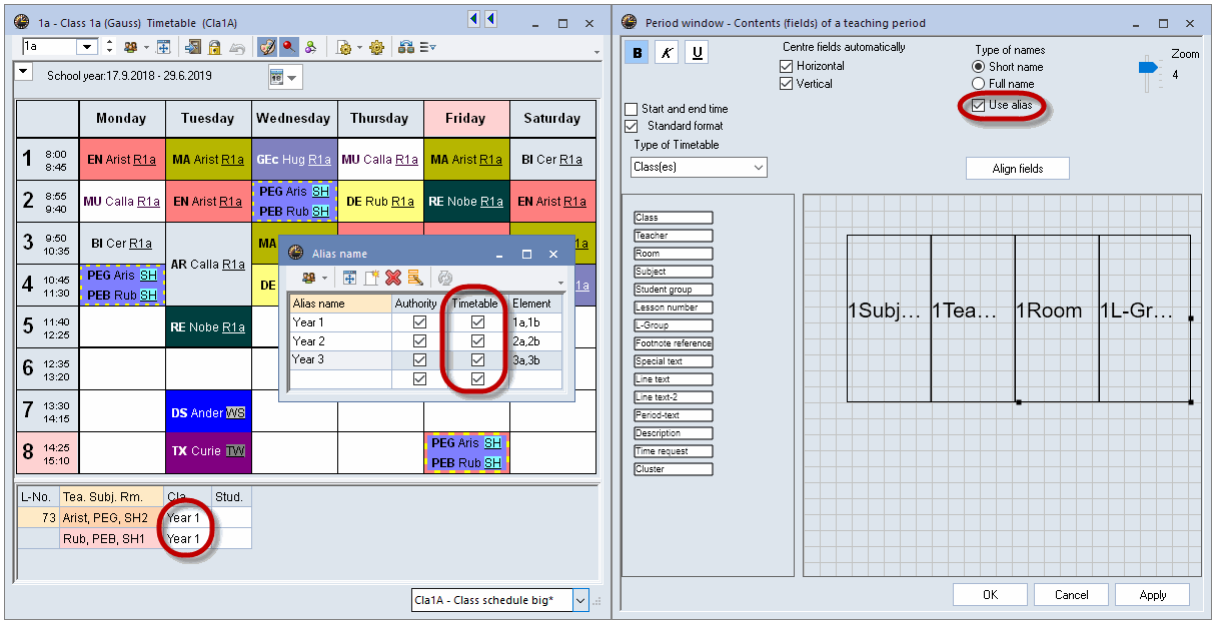
5.5.2.13 Cluster (simultaneous lessons)

The Course scheduling module allows the names of clusters (groups of simultaneous lessons) to be displayed in the timetable.

5.5.2.14 Alias (alternative names)

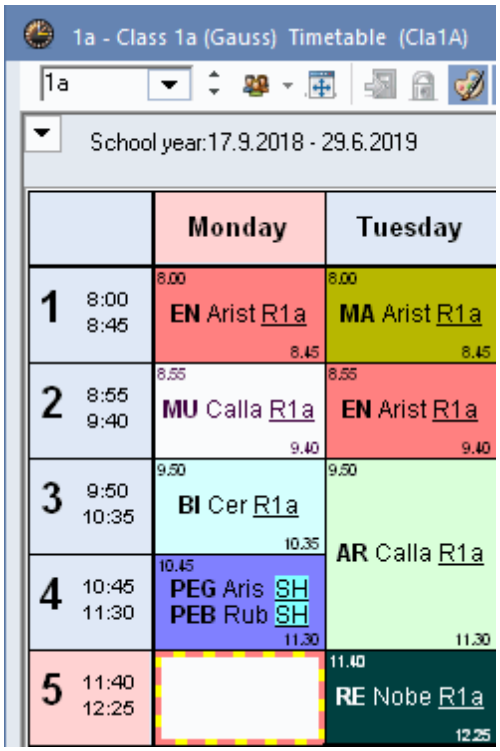
If you wish to display a name on the timetable and the printout other than the usual name, define an alias name for subjects, classes or teachers by clicking on the tab 'Data input', 'Other Data | Alias names'. To display the alias on the timetable, check the box 'Timetable' in the 'Alias' window and the box 'Use alias' in the timetable period.

You can also define one alias name for several classes. For example, if a teacher teaches all third-year classes, classes 3a, 3b etc. can be combined under one name 'Year 3'.



5.5.2.15 Start and end time

Activating this option will display two additional fields in the timetable period that show the times of the start and the end of lessons. The fields can be moved and resized in the usual manner.

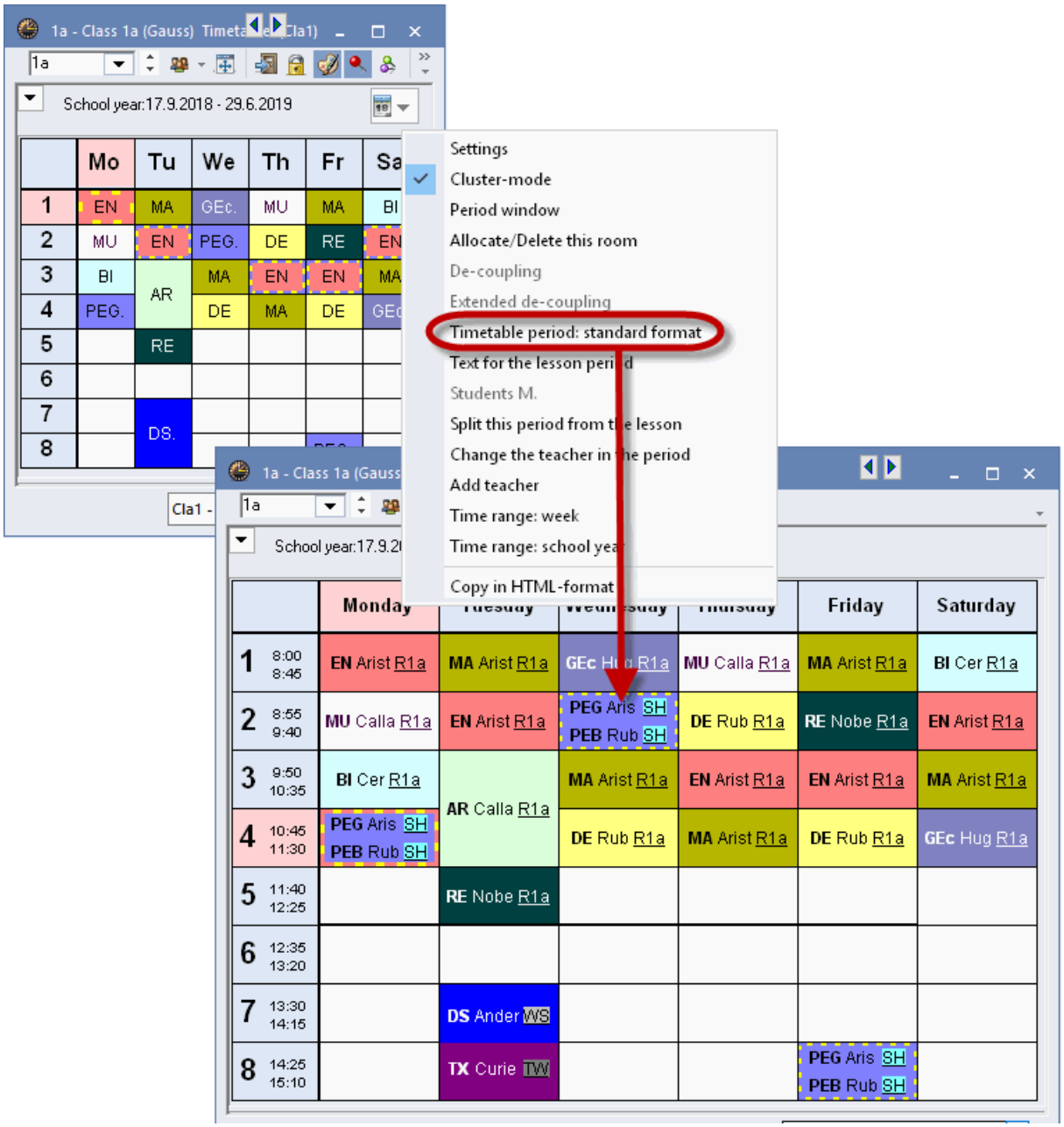


In addition to the editing options in the timetable period, the application also offers a number of additional functions that can be used to customise screen displays and printouts.

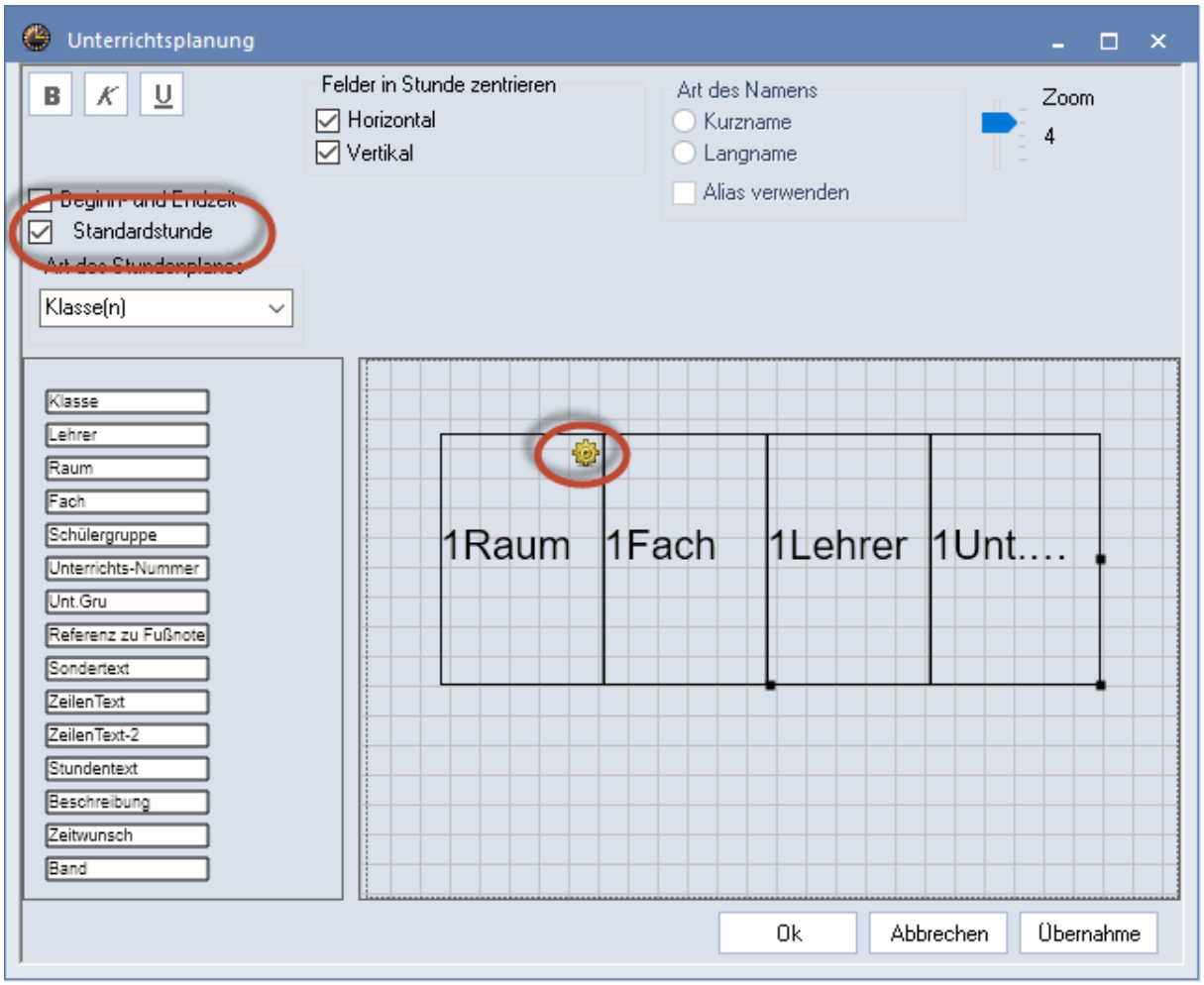
5.5.2.16 Standard format

The functionality of the standard format allows the timetable to display all coupling lines with information on classes, teachers, rooms and subjects. Optimal use is made of the space available within the timetable cell, and the size of the type face for couplings is reduced accordingly where necessary.

The standard format can be activated and deactivated in any timetable by clicking the right mouse button and selecting 'Timetable period: standard format'.

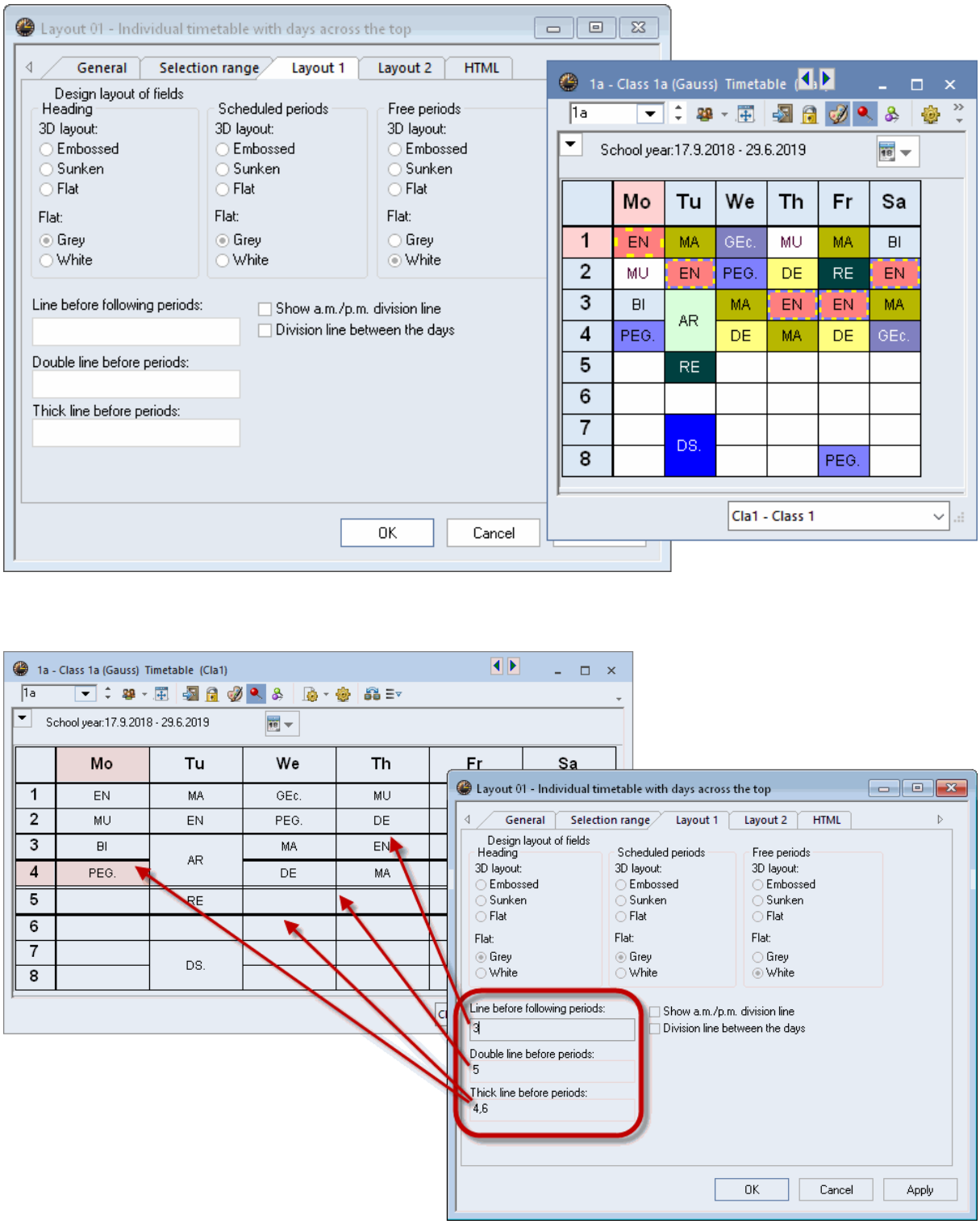


In the timetable settings under <Period window> you can select the standard format for all three fields.

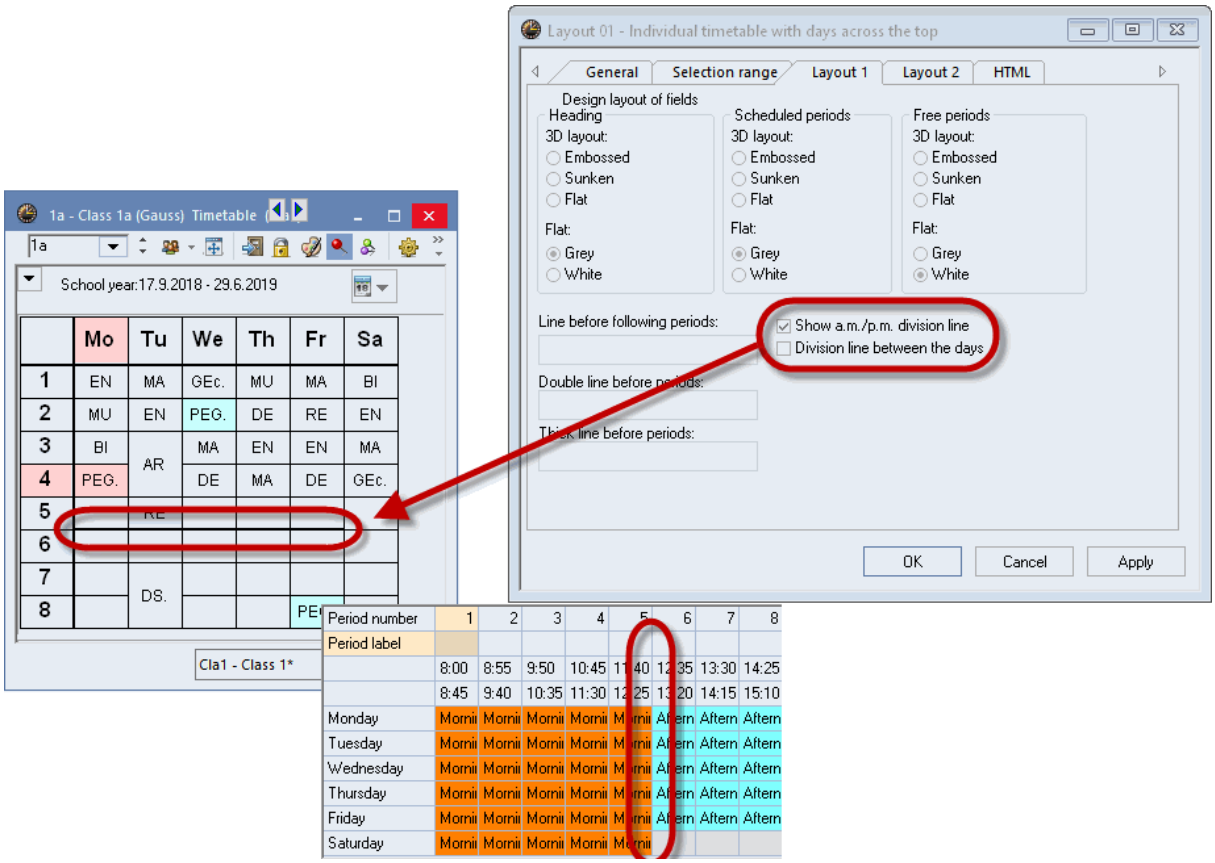


5.5.3 Layout 1

The settings on the 'Layout 1' tab under <Settings> can be used to change the timetable display on the screen and the printout. The settings offer options for customising the layout of headings (e.g. weekday, period number), scheduled periods and free periods.



The 'Layout 1' tab also provides the possibility of displaying lines in the display and on the printout in order, for example, to indicate the different lengths of breaks

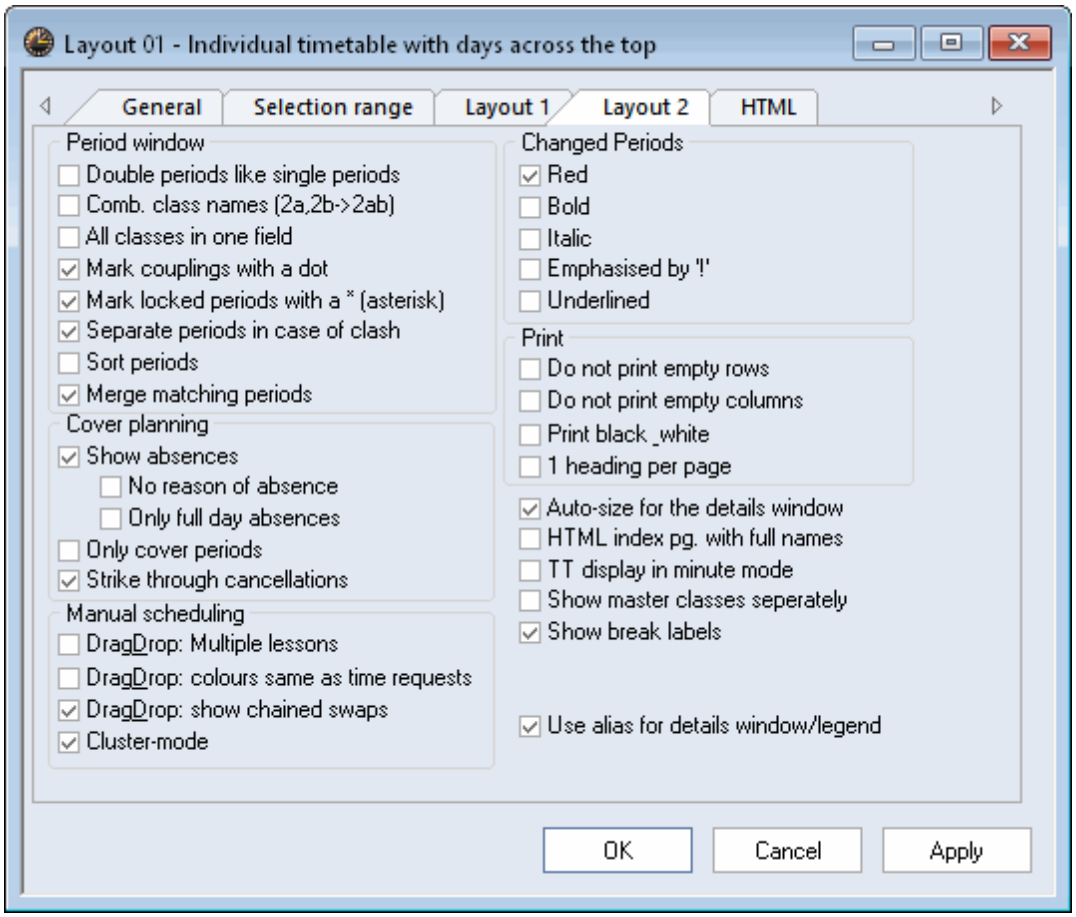


The 'Show a.m./p.m. division line' check box allows the division line to separate morning lessons from afternoon lessons in the time grid.

Check the 'Show division line between the days' box to display a thicker division line between days than between the periods in order to improve clarity.

5.5.4 Layout 2

The settings on the 'Layout 2' tab partly affect both the screen and the print layout, partly only the print layout or the HTML output.



5.5.4.1 Double periods like single periods

Double periods like single periods

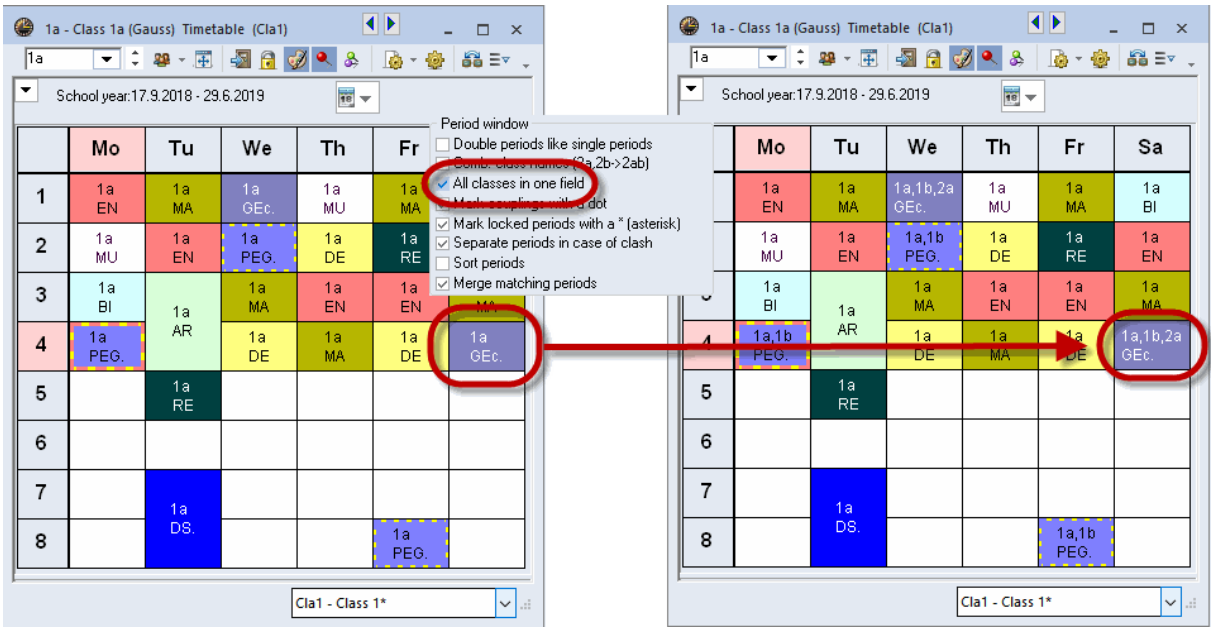
Double periods are displayed like single periods.

5.5.4.2 Comb. class names (2a,2b -> 2ab)

With teacher timetables, it is often desirable to be able to see all the classes the teacher teaches. Combined class names were created as a way of showing all classes in a single cell and thereby saving space. The names of all classes being displayed are combined.

5.5.4.3 All classes in one field

If a teacher takes students from more than one class for a lesson, all classes involved will be displayed in the relevant timetable field in the period window

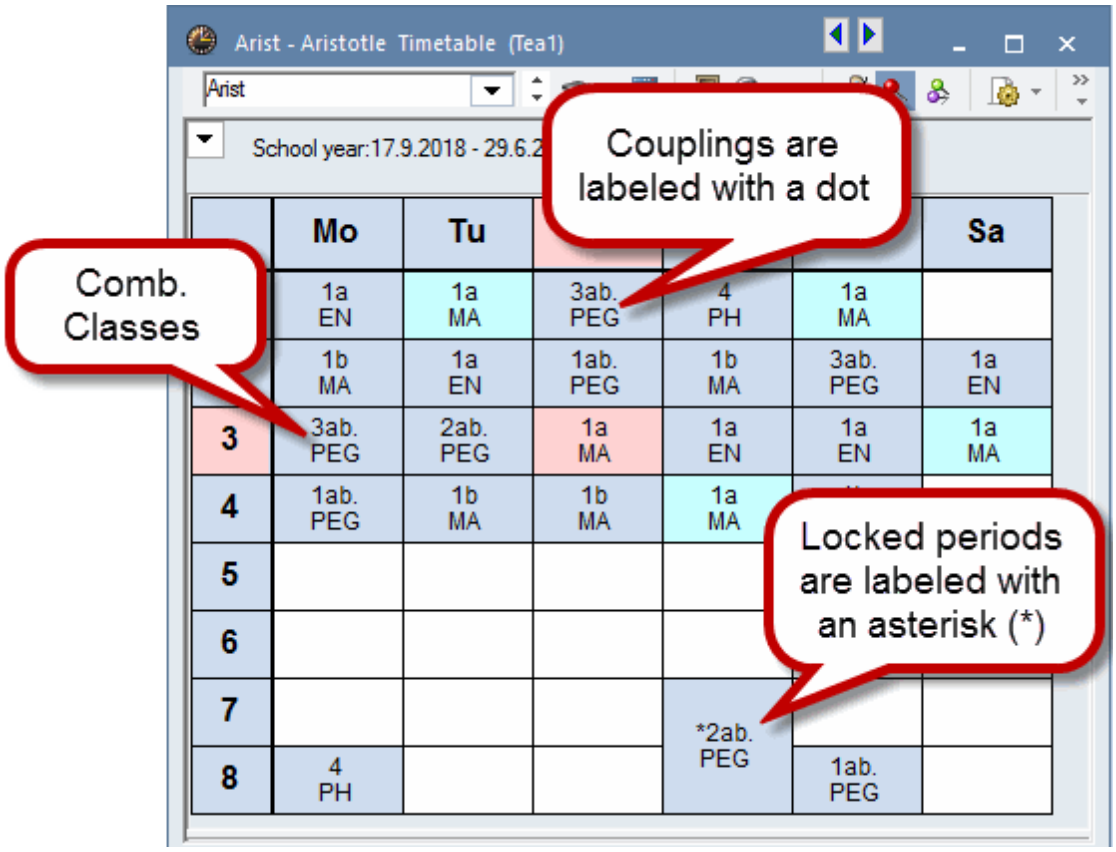


5.5.4.4 Label couplings with a dot

Coupled lessons are marked with a dot in the period window.

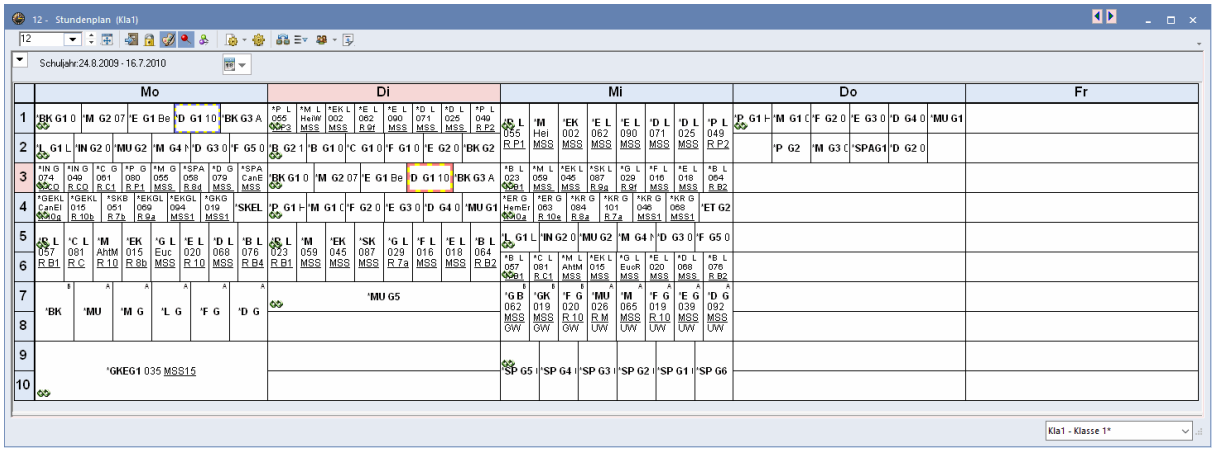
5.5.4.5 Label locked periods with a * mark

Manually locked periods are marked with an asterisk (*) in the timetable .



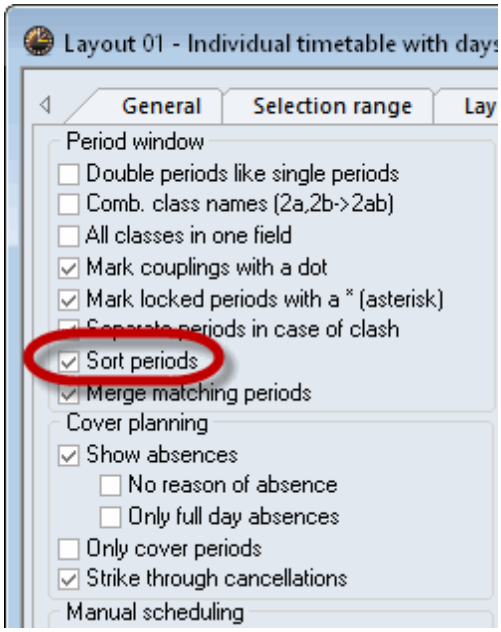
5.5.4.6 Separate periods in case of clash

Use this option to display conflicting periods (see chapter 'Manual scheduling') in separate cells on the screen, the printout and the HTML output. The example shows year 2. The courses (clusters) taking place in parallel are output as a clash. Up to 6 clashes can be displayed next to each other per period. For 7 or more clashes, additional fields are required in the graphics editor (see <Settings> | <Timetable Period>).



5.5.4.7 Sorting periods

When several lessons take place in the same period on the same week day, but in different weeks, you can sort the lessons by start date using this function.



5.5.4.8 Cover planning block

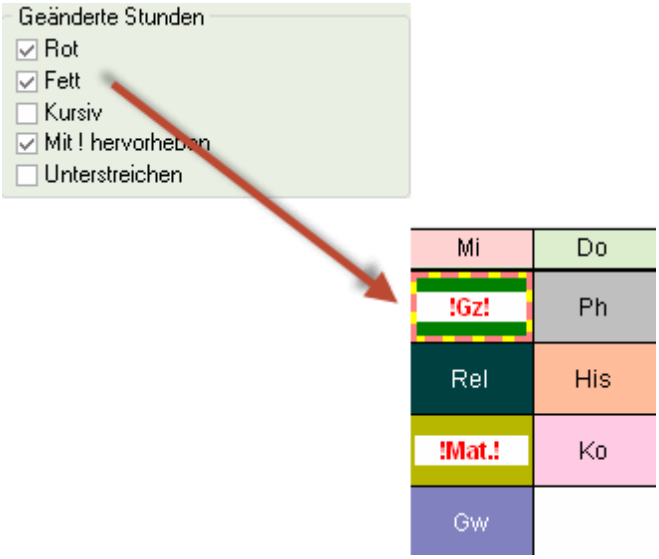
If you use the Cover planning module you can use the options listed here to influence how the changes are displayed.

5.5.4.9 DragDrop

Please refer to chapter 'Manuel Scheduling'

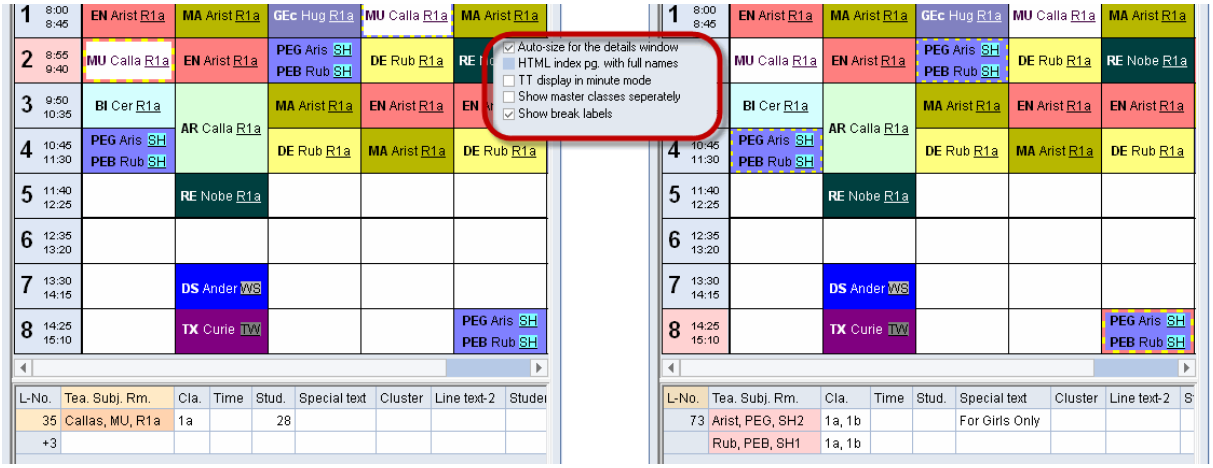
5.5.4.10 Changed periods

When comparing timetables and in the cover planning mode you can determine how changed periods should be highlighted. In the example, modifications from the normal lessons are shown in red, bold and with !.



5.5.4.11 Auto-size for the details window

This option automatically resizes the period details window (lower section of the timetable window) to fit the contents.

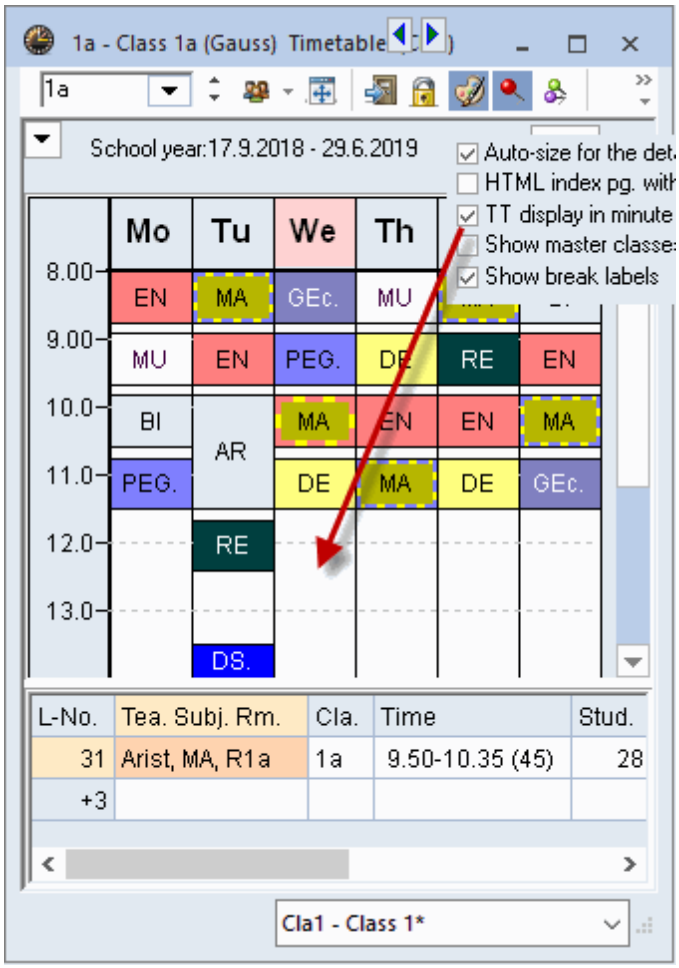


5.5.4.12 HTML index page with full names

Please refer to chapter 'Timetables in HTML format'.

5.5.4.13 TT display in minute mode

If lesson times differ on different days it can make sense to enter the individual periods of the timetable on a scale to the exact minute. Untis provides this option with its timetable display in minute mode.



5.5.4.14 Show master classes separately

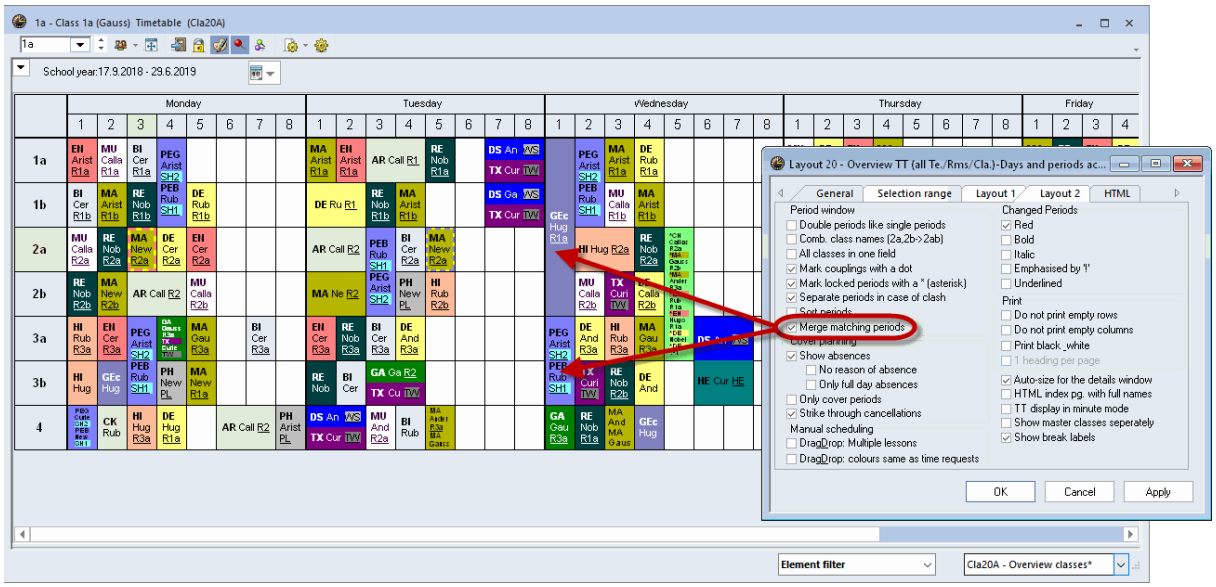
Please refer to chapter 'Type-separated class components'.

5.5.4.15 Use alias for details window/legend

Displays the alias of the different elements in the timetable details window and the legend (e.g. changes your short name 'MA' to the common school name 'Maths'); (please refer to chapter 'Alias names').

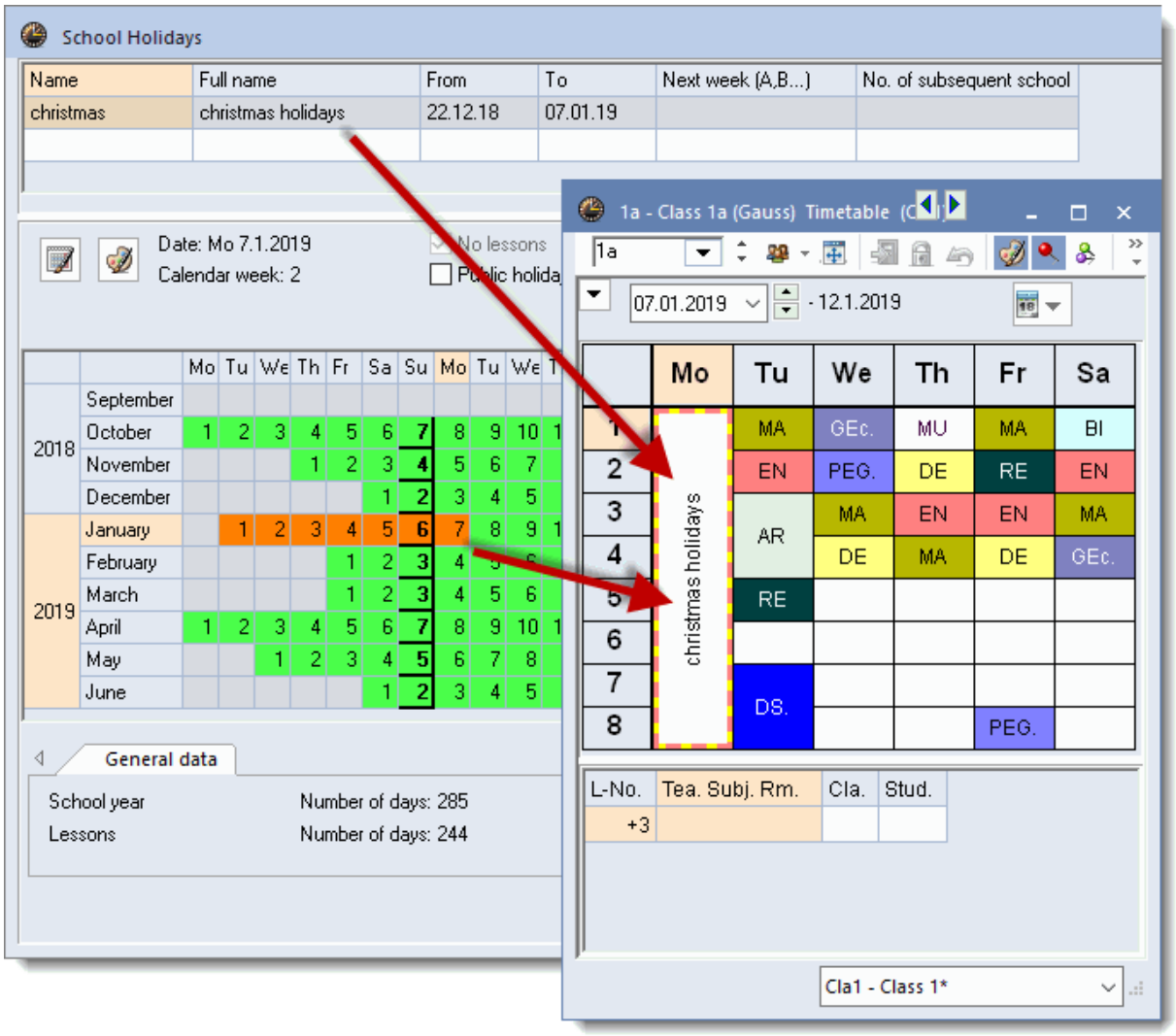
5.5.4.16 Connect periods of different elements

In overview timetables it is possible to connect timetable cells with each other across couplings.



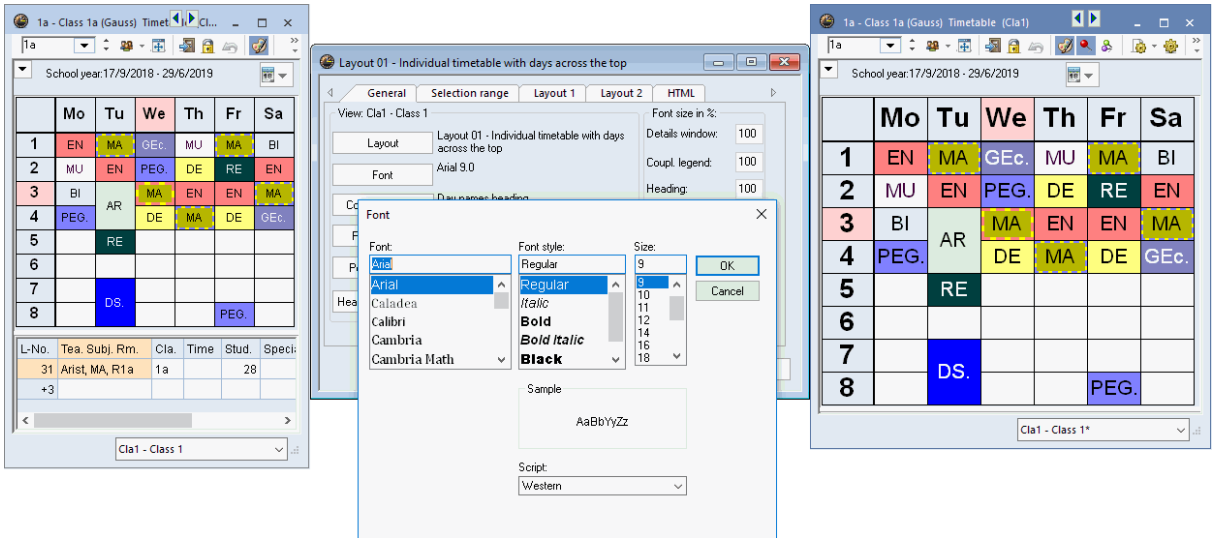
5.5.5 School holidays

The timetables display the free days entered under 'Settings | School holidays'. The prerequisite for this is that the timetable display has been set to weeks (<Settings>, 'Selection range | Calendar week').



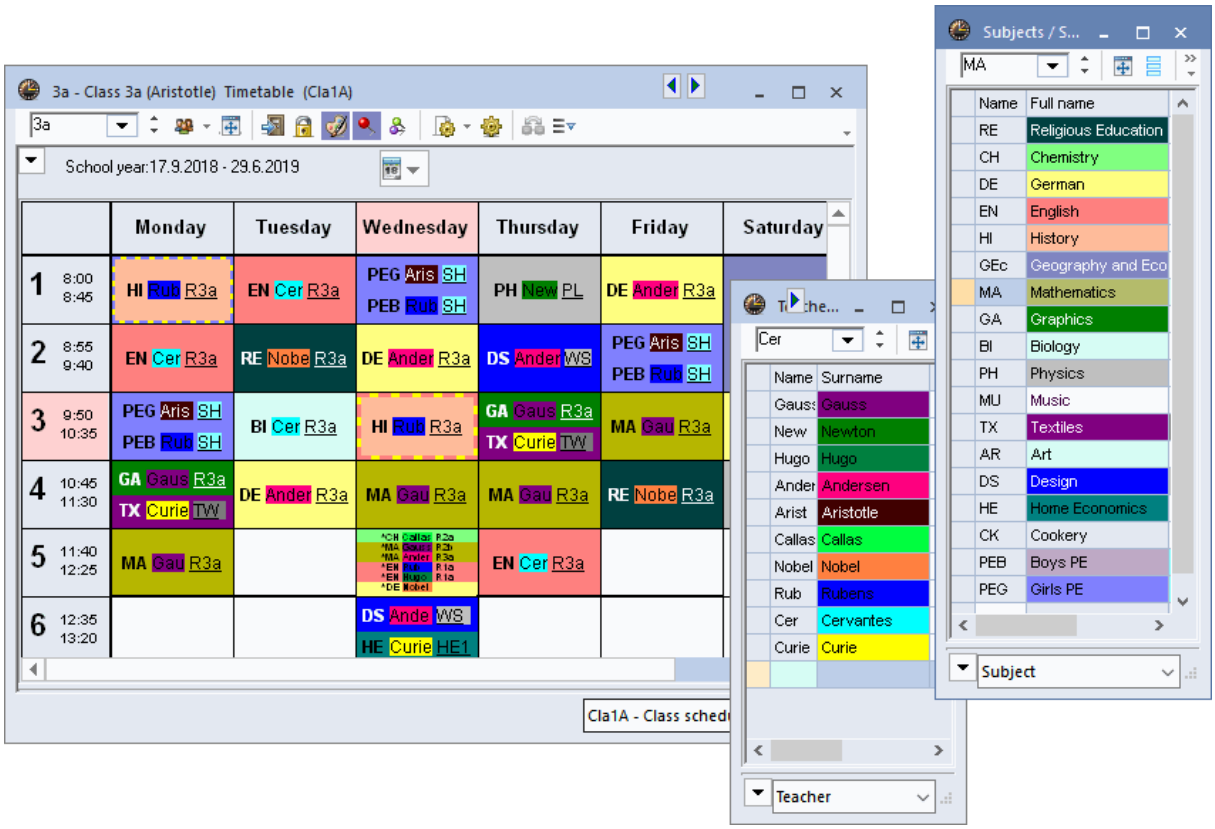
5.5.6 Font

The overall size of the timetable window not only depends on the details displayed in the timetable periods, but also on the selected font. The font size and type can be changed under <Settings>, 'General | Font'.



5.5.7 Colour codes

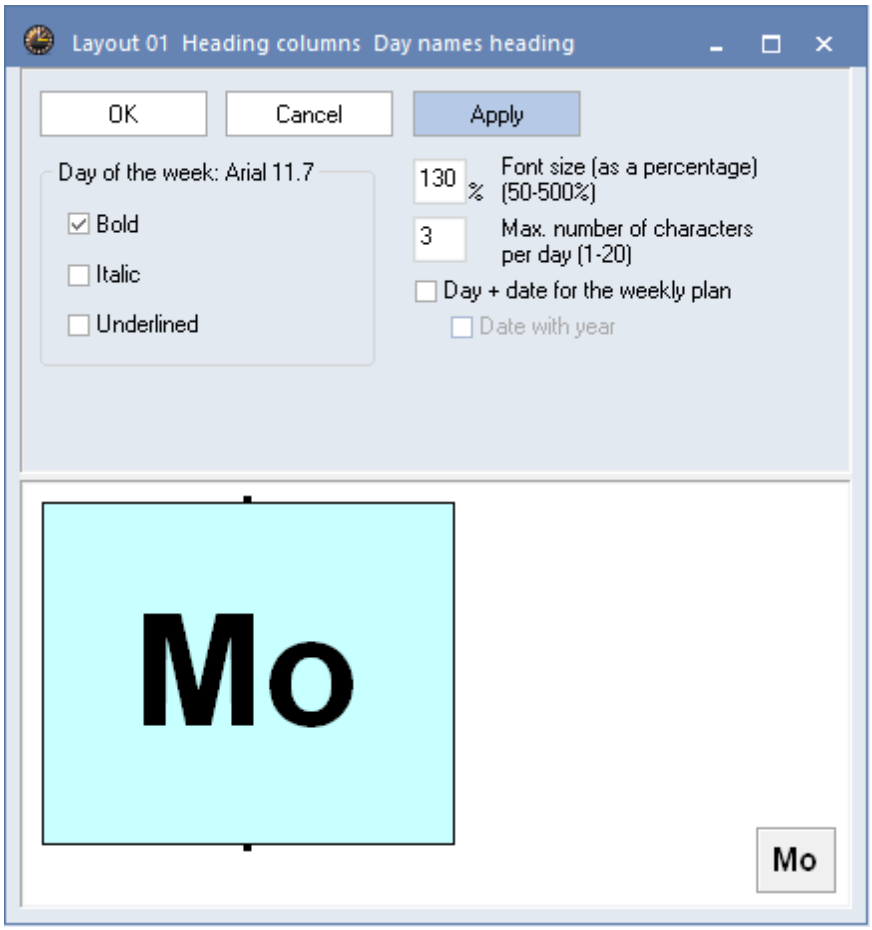
The colour codes specified for elements under master data will be displayed in the timetable



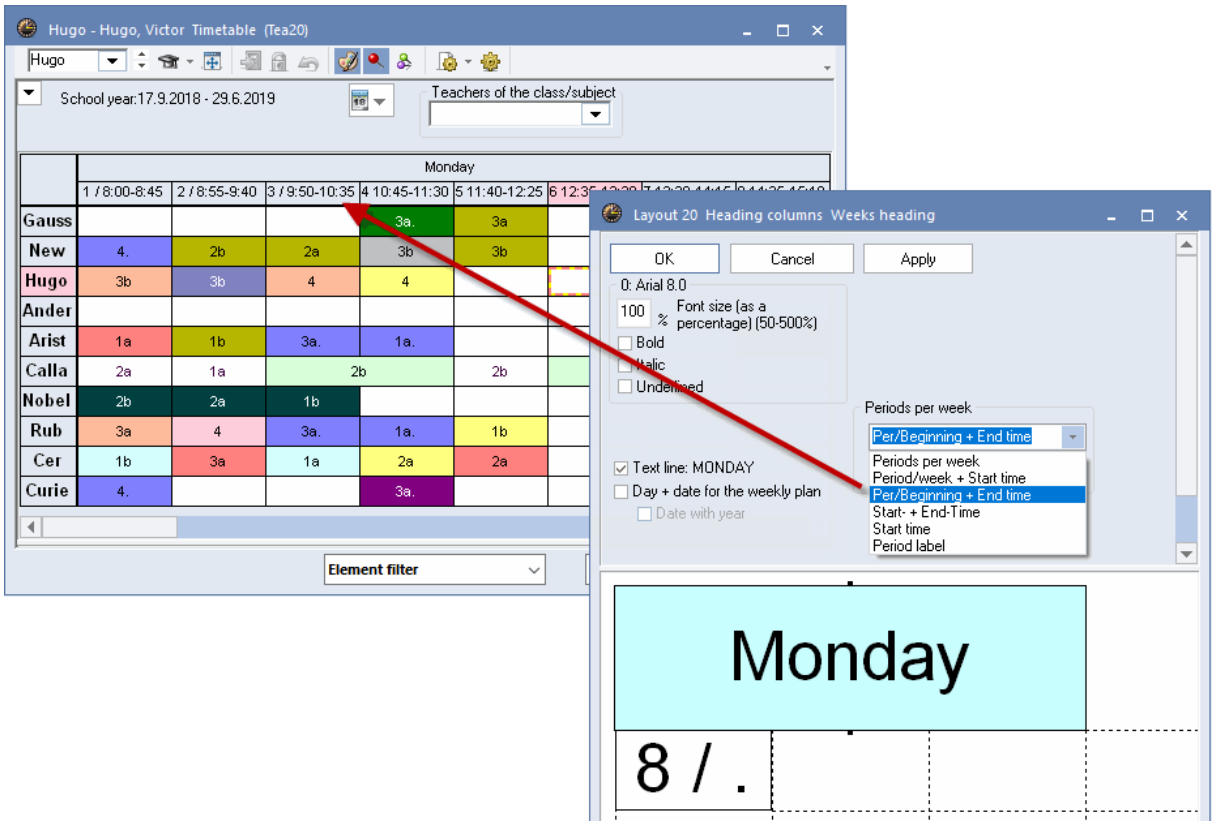
The example shows the colour coding of subjects and teachers, i.e. teacher Cer (red background) teaches a biology lesson (blue background) on Monday.

5.5.8 Column headings

Customise column headings (e.g. days of the week) under option 'Column heading' on the 'General' tab under <Settings>.



The overview timetables with format 20 provide options for the display of additional information such as dates or start and end times.

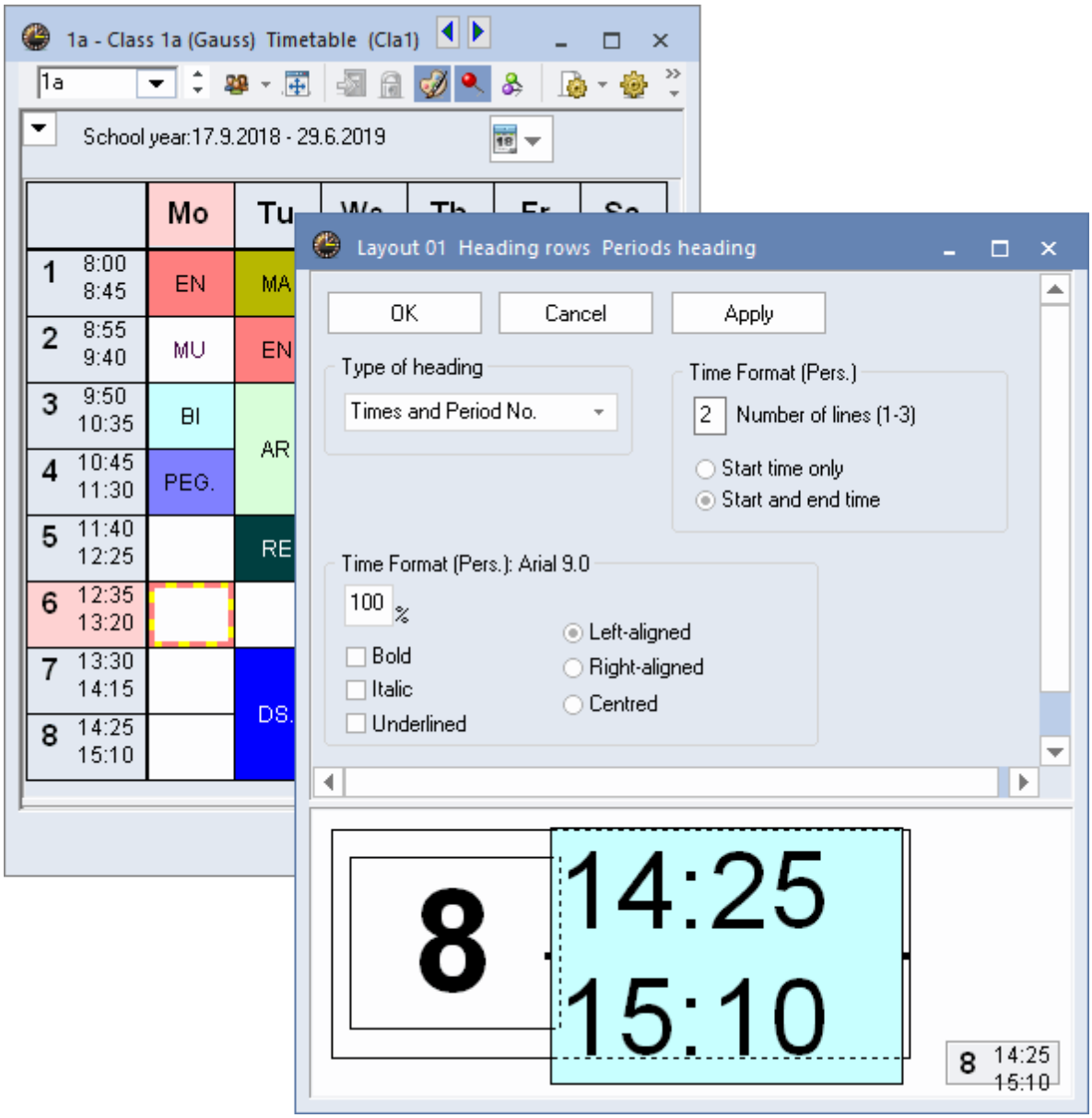


Note:
The name of the period specified in the grid view can be printed instead of the period number.

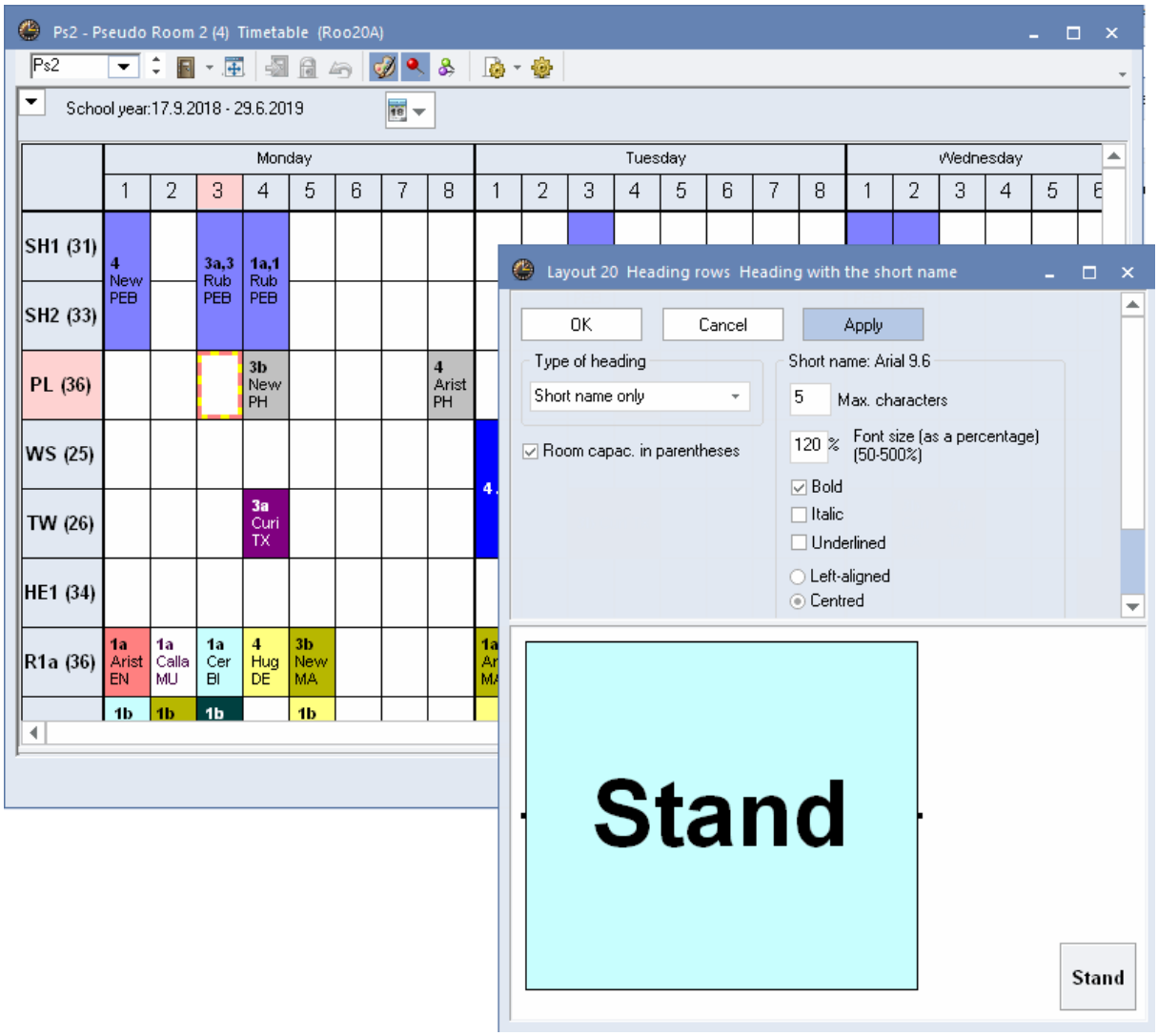
5.5.9 Row headings

The row headings (e.g. start times) can be customised under option 'Row heading' on the 'General' tab under <Settings>.

You can display the period number and/or the period times. In addition, you can choose between single and multiple row display and specify the font type and size. As always, you will see an example of your settings in the bottom right hand corner of the preview pane.



In room overview timetables the capacity of rooms recorded in the master data can be displayed in the row heading.



5.6 Printing

You can print a timetable via <Print> or via<Print Preview>. Alternatively, you can use the shortcut <Ctrl>+P. Clicking on either option first displays the print selection window, where you can choose additional settings. Click on <OK> to open the print dialogue or the page preview.

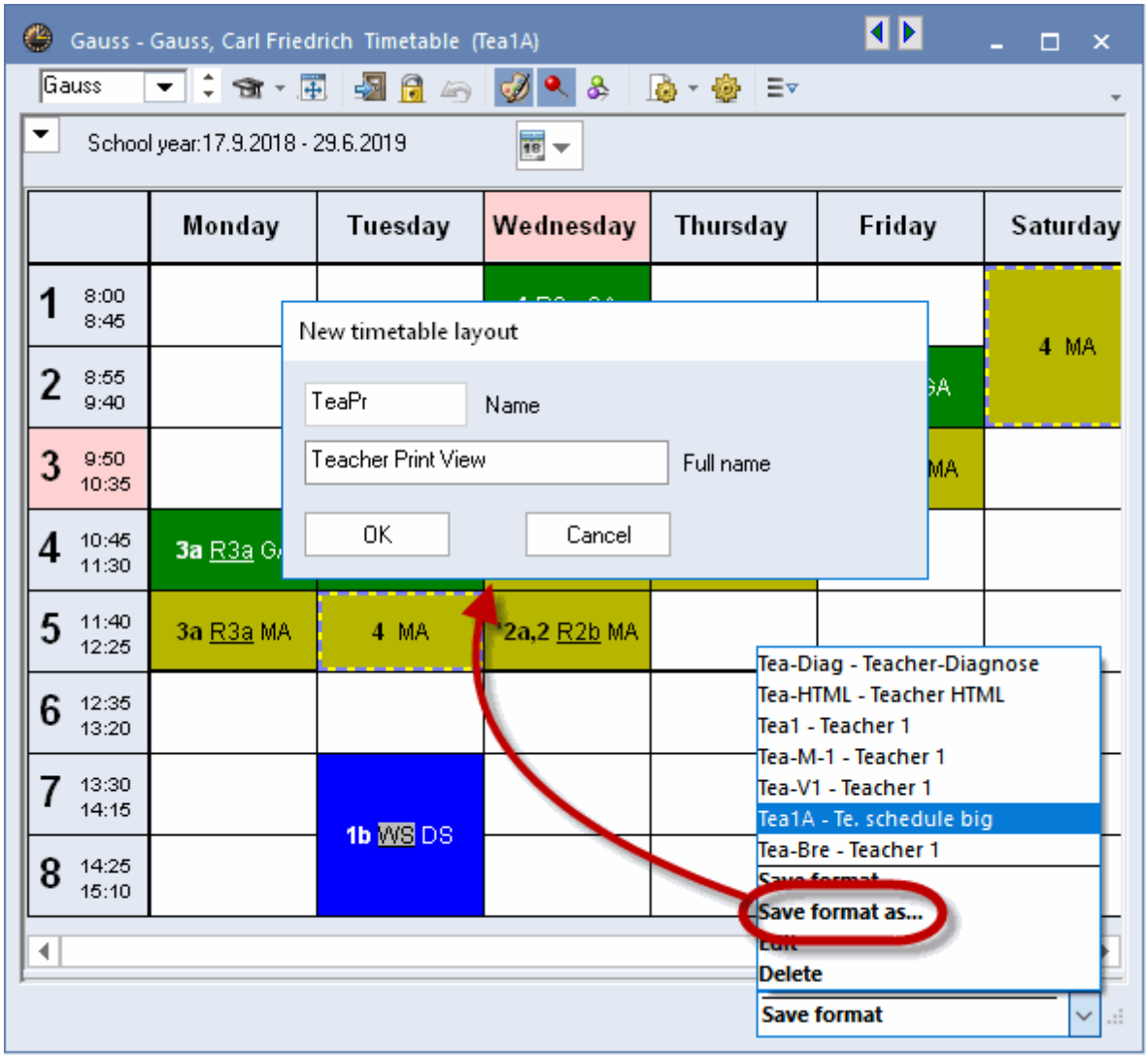
Create customised print views if you wish the printed versions of your timetables to differ from the screen display.

5.6.1 New print view

Create a new timetable view (see description under ' New timetable view ') based on the timetable that most resembles the print version you wish to create. Assign a new descriptive name to the new timetable format (e.g. TeacherTimetablePrint).

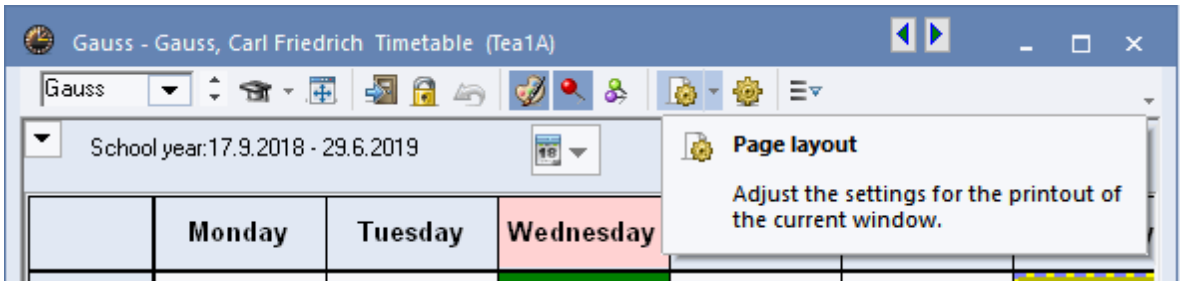
Customise the period display in the period window and in the row and column headings as described in the previous chapters

As a general rule, the print version will be identical to the screen display unless you customise the print versions or add additional information.



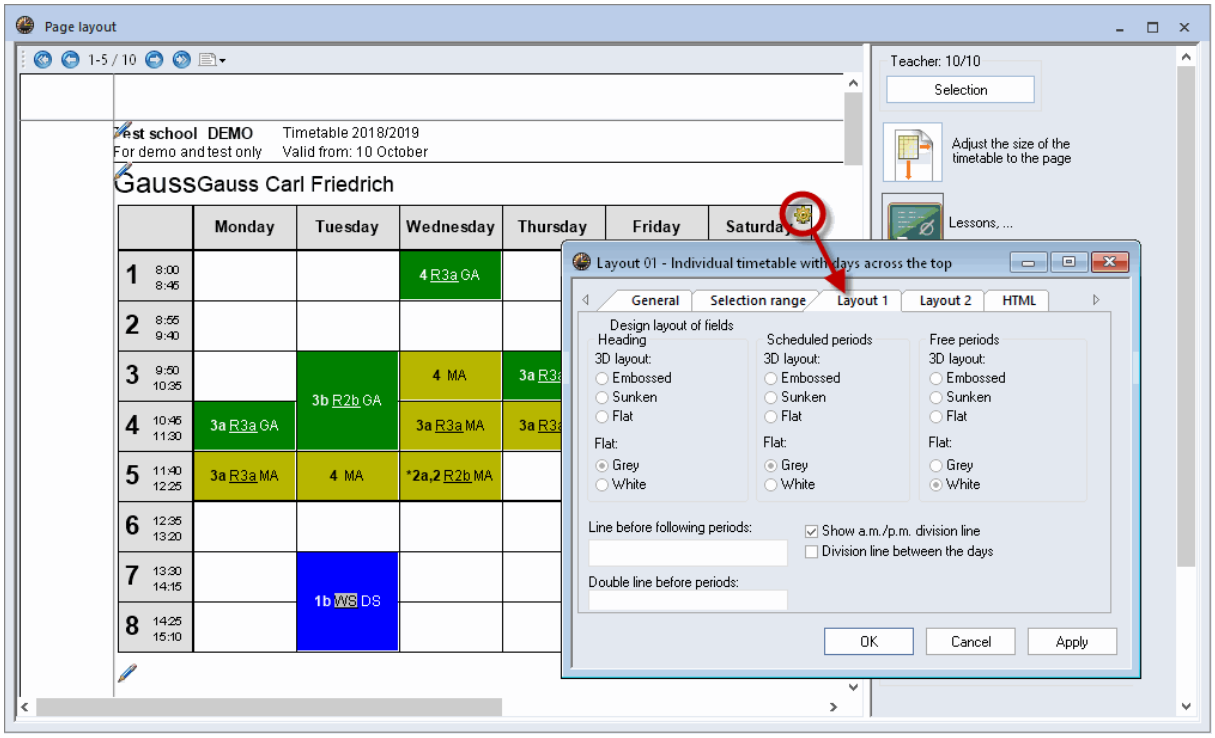
5.6.2 Page layout

Many settings for printing the timetable can be done directly in the page layout. Click on the 'Page layout' button in the toolbar of the respective timetable or go to the quick launch bar.



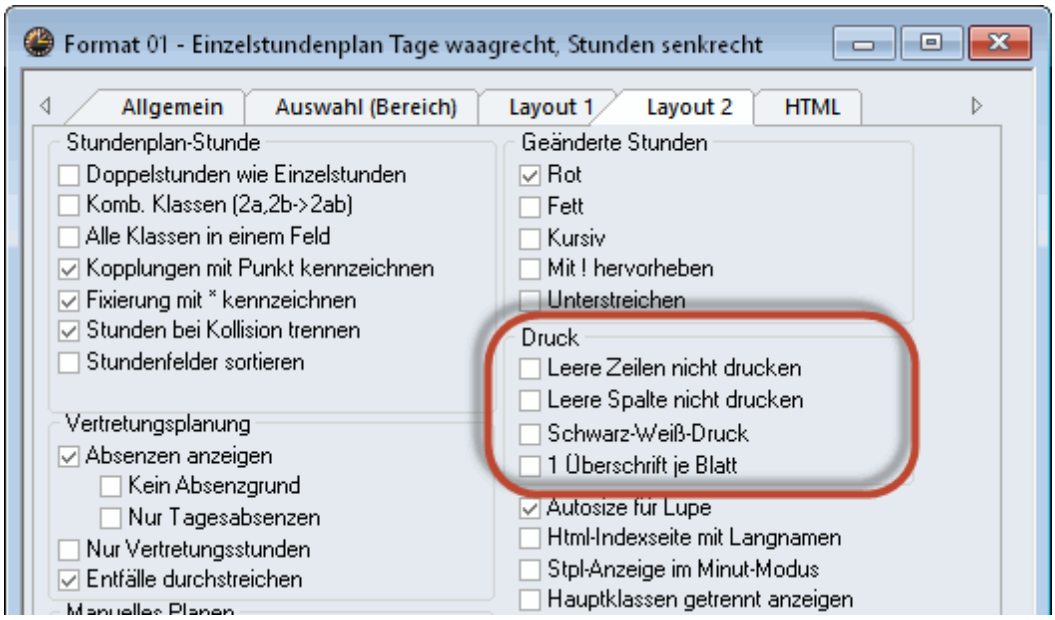
5.6.2.1 Layout

Modify the print layout on the 'Layout 1' and 'Layout 2' tabs under <Settings> .



On the tab Layout 1 you can select the 3D layout option for Headings, Scheduled periods and Free periods under '3D layout'.

Under Layout 2 you can select different settings for printing.



Do not print empty rows / columns
Empty rows or columns will not be printed. This option allows for considerable savings in paper and space (especially for summaries and timetables in HTML format).

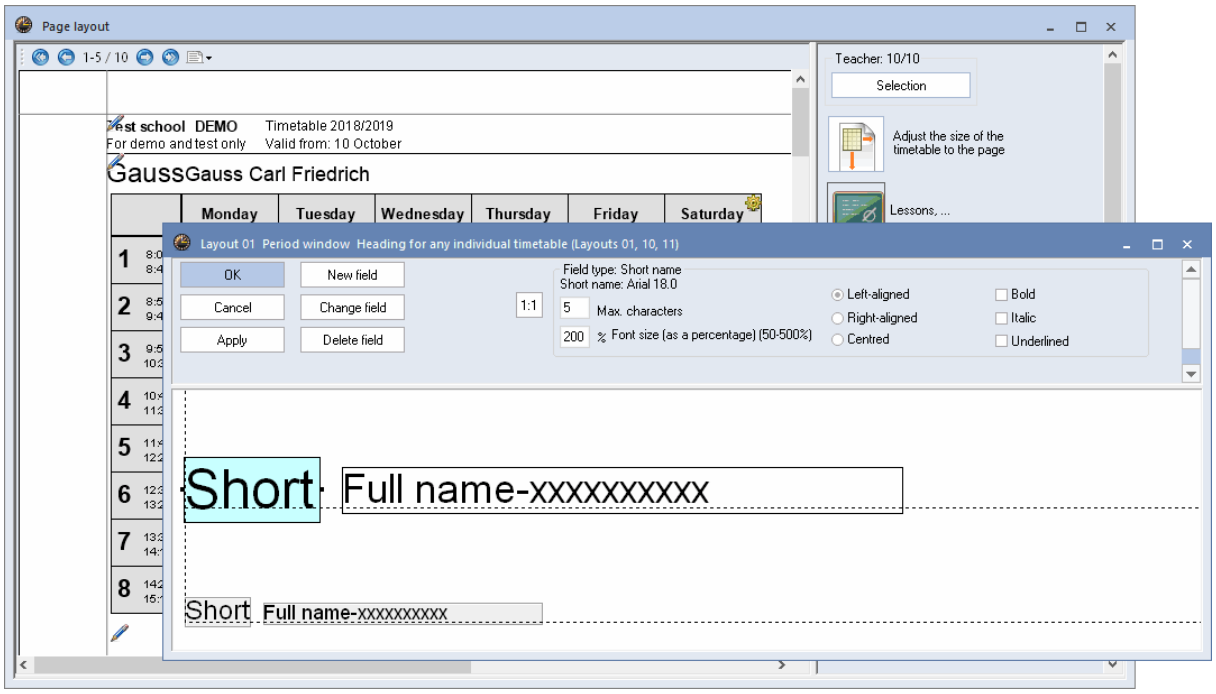
Print black & white
Select this option if the timetables on your screen are colour-coded, but you wish the timetables to be printed in black & white (for instance, because your printer does not support colour printing).

1 heading per page
You can print any number of timetables on one page and by default the heading (school name, date, file name etc.) appears above each timetable. You can deactivate this functionality by checking '1 heading per page' and so print just one heading on a page.

5.6.2.2 Headings

Headings in individual timetables (formats 1, 10 and 11) can be customise for printing. Click on Page layout on the pen symbol.

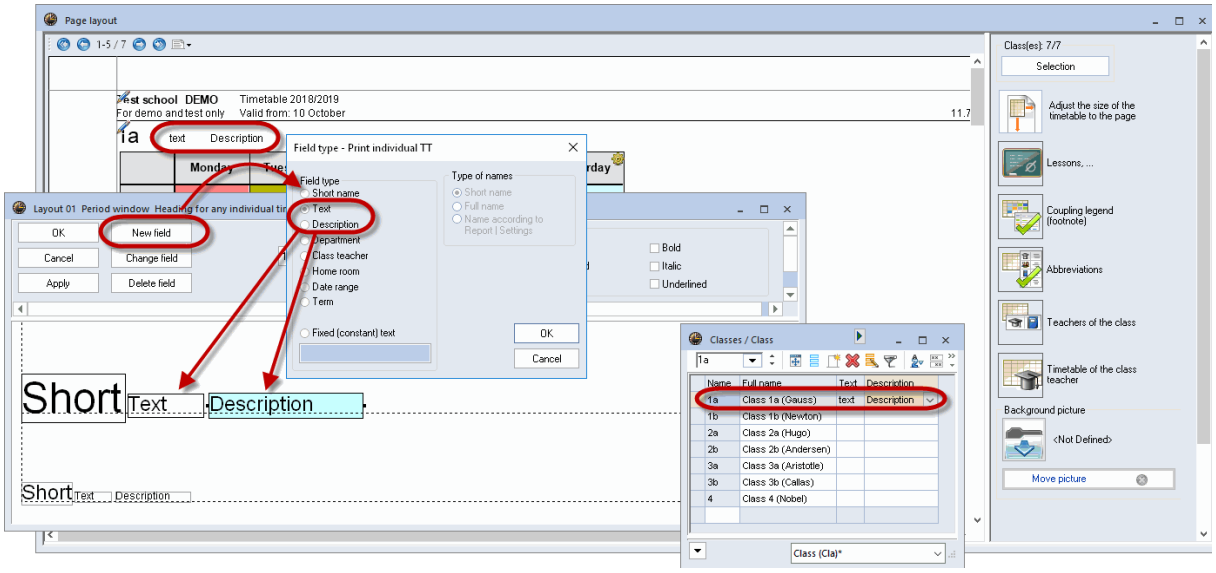
By default, the full and the short names of the element will be displayed. Layout and format (font size, alignment, font style etc.) of individual headings can be changed in the upper right-hand section of the window



Click on <New field> to insert the following additional headings into your timetable (see example below):

Text, Description
You can assign a text and a description of your choice to each master data element (via 'Master Data | Descriptions') and instruct the software to include these details in the headings of printouts.

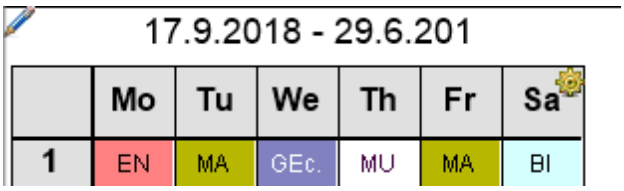
The example shows a heading containing the text and description entered under the master data for class 1a. The two fields are arranged side by side. The maximum number of characters has been extended to 15 and the font style set to bold



Department
Allows you to include the name of a department in the heading of printed timetables (useful when working with department timetables).

Class teacher
Allows you to include the name of the class teacher (entered under the master data of a class) in the heading on printed class timetables.

Time range
Select the time range you want to display in the heading. You can choose between calendar week, term, a customised date range or the total school year - depending on the date range entered under 'Selection range' under <Settings>.

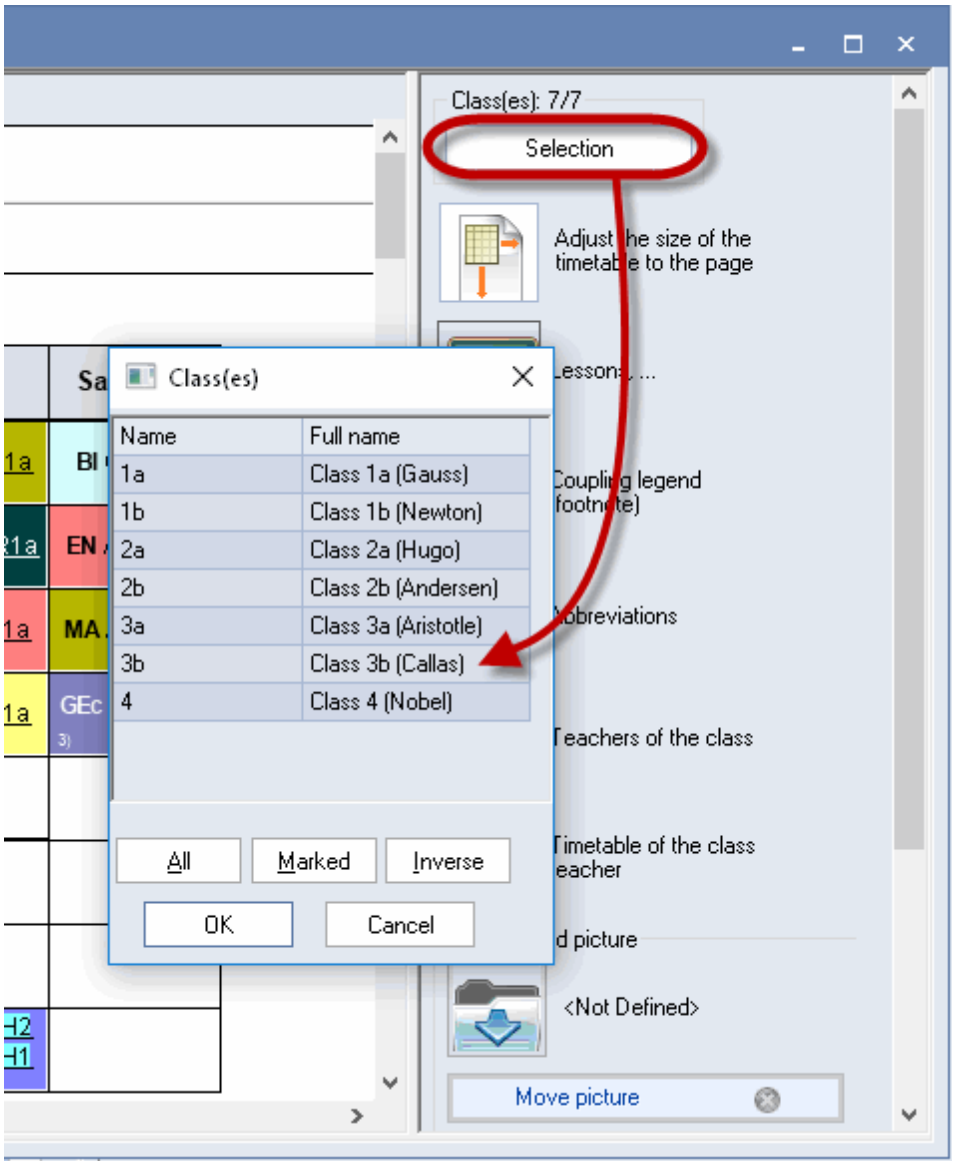


Term
Allows you to include the full or short name of a term in the heading of printed timetables (when working with terms).

Fixed (constant) text
Text entered here (e.g. elective subject timetable) is displayed on all timetables of this format.

5.6.2.3 Selecting timetables

By default, the timetable displayed on screen will be printed. You can use the <Selection> option to specify that several timetables of the same format should be printed simultaneously.



Using the mouse You can select the timetables for the desired elements by holding the left mouse button and moving the cursor or with <CTRL> + left click (see figure).

All
This option allows you to select all the elements.

Marked
Allows you to select all the elements marked with the specific code 'marked' under master data.

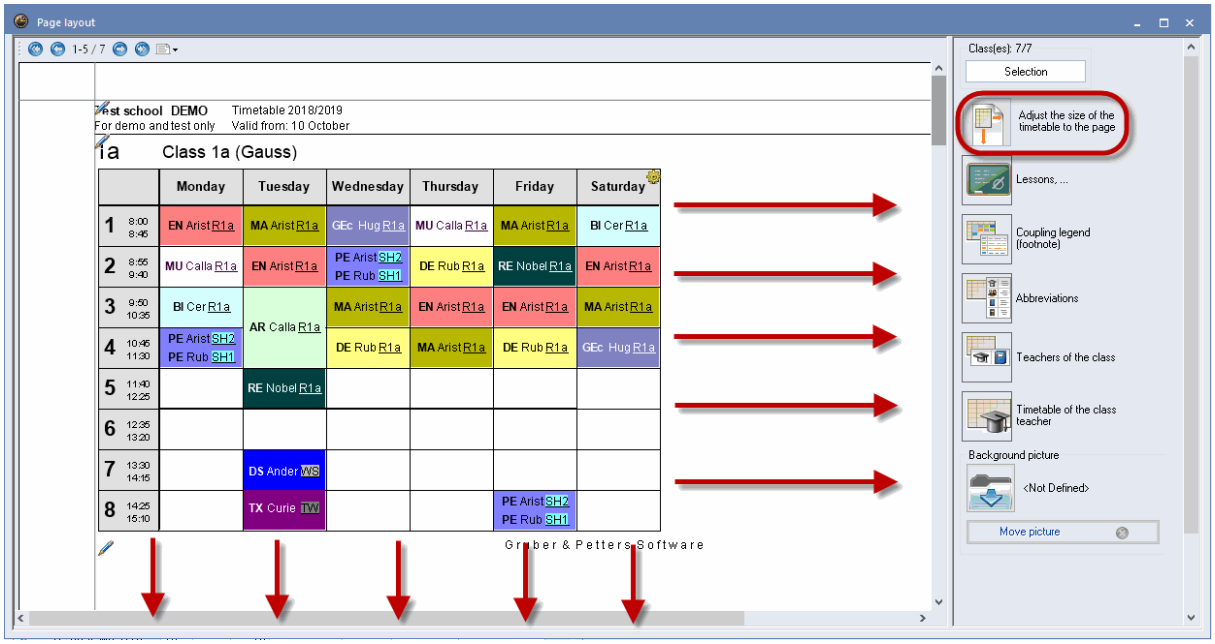
Inverse
Selects all the elements not previously selected (useful for print selection involving two different groups of elements, such as part-time and full-time teachers)

Department

Teacher timetable printing can also be restricted to the staff of a particular department.

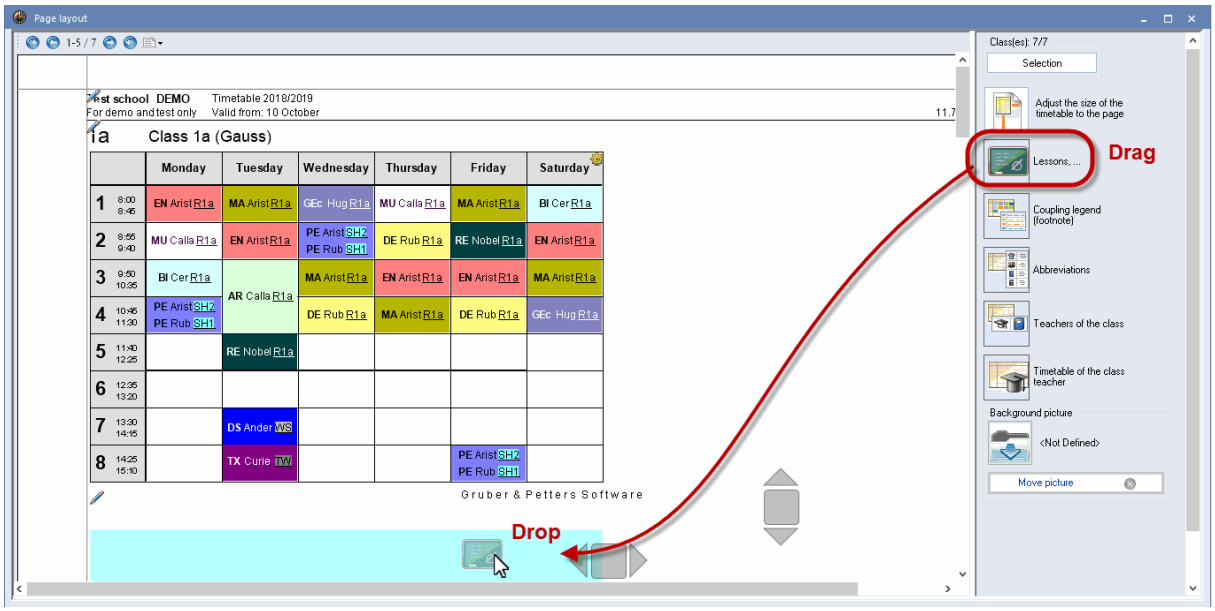
5.6.2.4 Adjust to page size

The size of the timetable you want to print can automatically be adjusted to the size page.

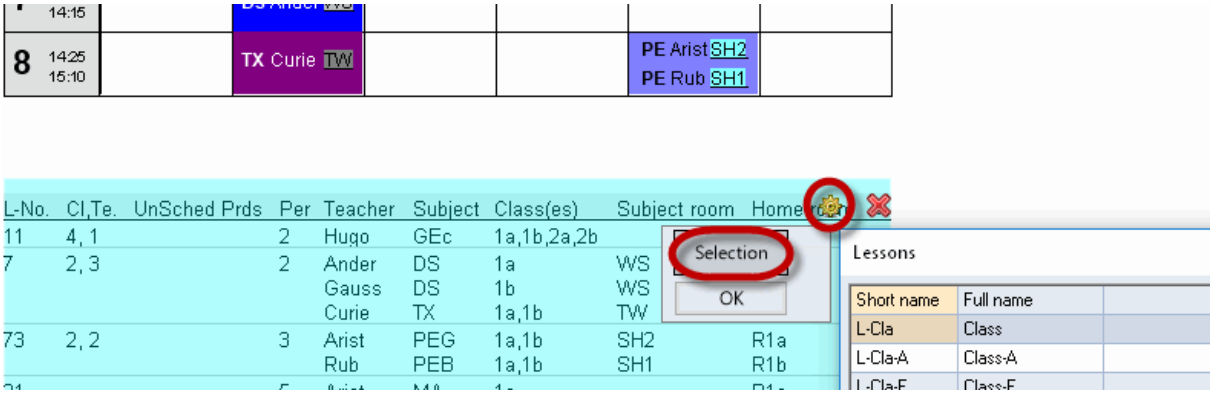


5.6.2.5 Printing lessons and timetable

When printing timetables for classes and teachers, you can also print the lessons view. Drag the lessons pane to the part of the sheet you want to have it placed (e.g. below the timetable).

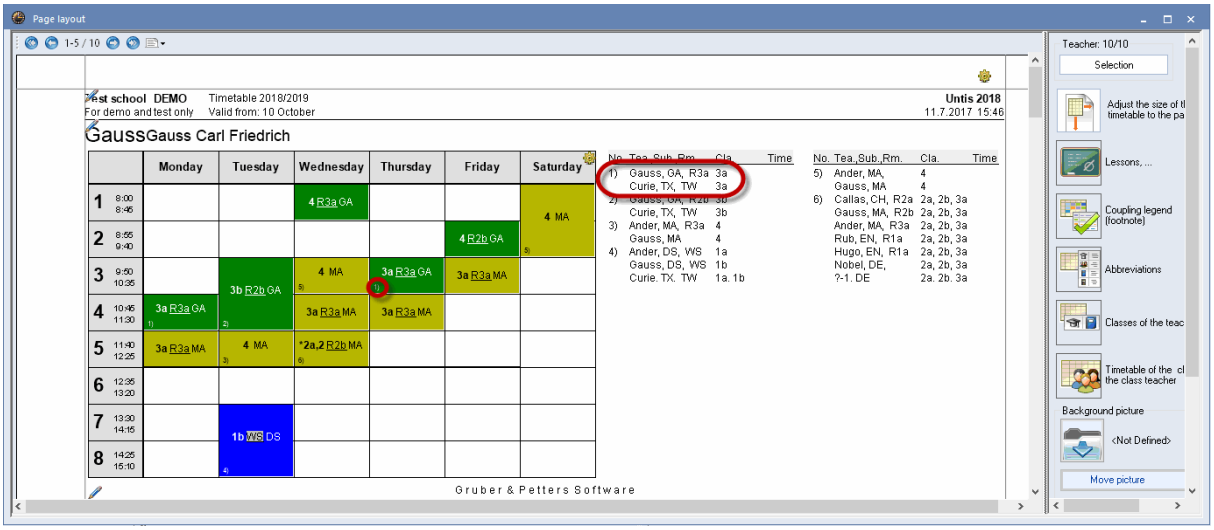


Via <Settings> you can select the required lessons view. The print settings which are set for the lessons view are used.

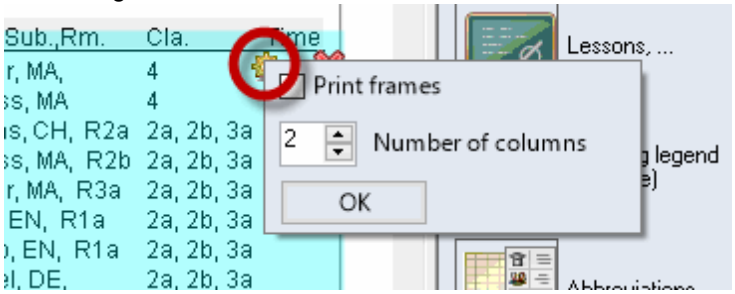


5.6.2.6 Coupling legend

A legend will be printed whenever there is insufficient space in the period window to display all the relevant details of a lesson. For lesson information (in a class timetable), such details include rooms, subjects, teachers and any time restrictions.



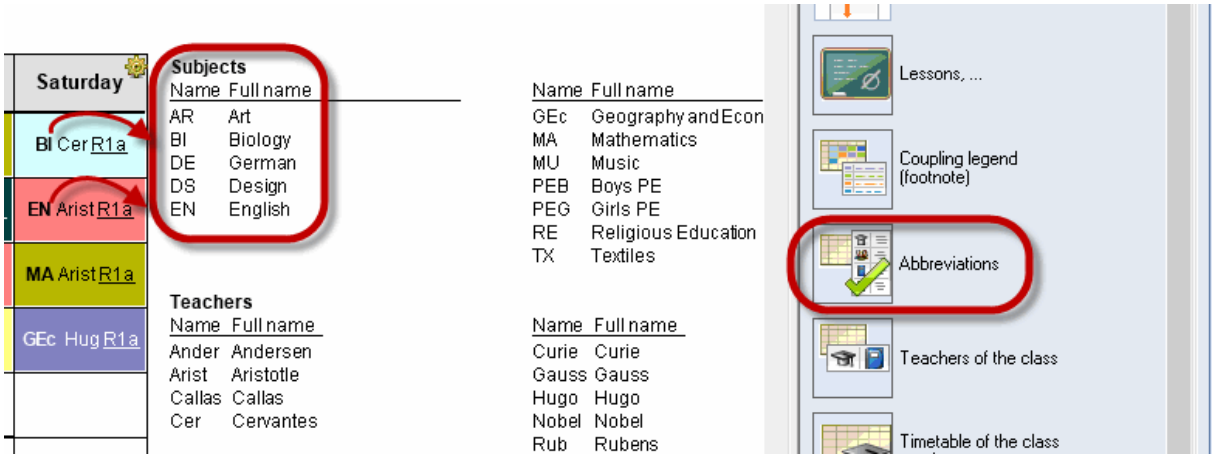
Via settings



Tip: Not in legend
If you wish to exclude a certain lesson from the printed legend, simply mark the lesson with the code '(L) Not in legend'.

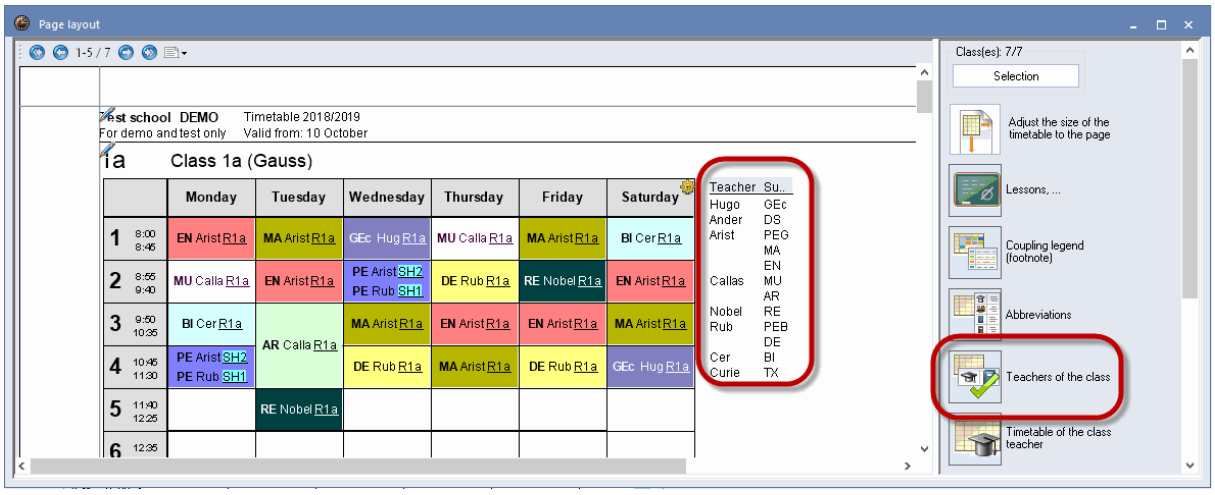
5.6.2.7 Abbreviations

In addition a legend for abbreviations of subjects and/or teachers can be printed. In the following example short and full names of the subjects are listed next to the timetable.



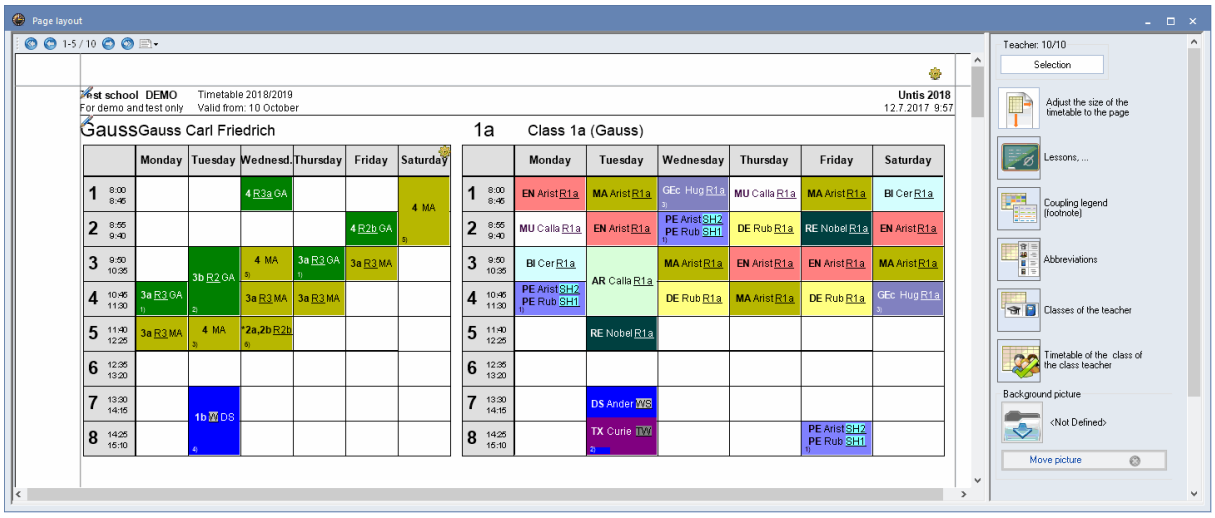
5.6.2.8 Additional information classes/teachers

With the class timetables additional information on teachers, who teach the class plus the respective subjects can be displayed and vice versa, with the teacher timetables his/her classes and the respective subjects can be shown.



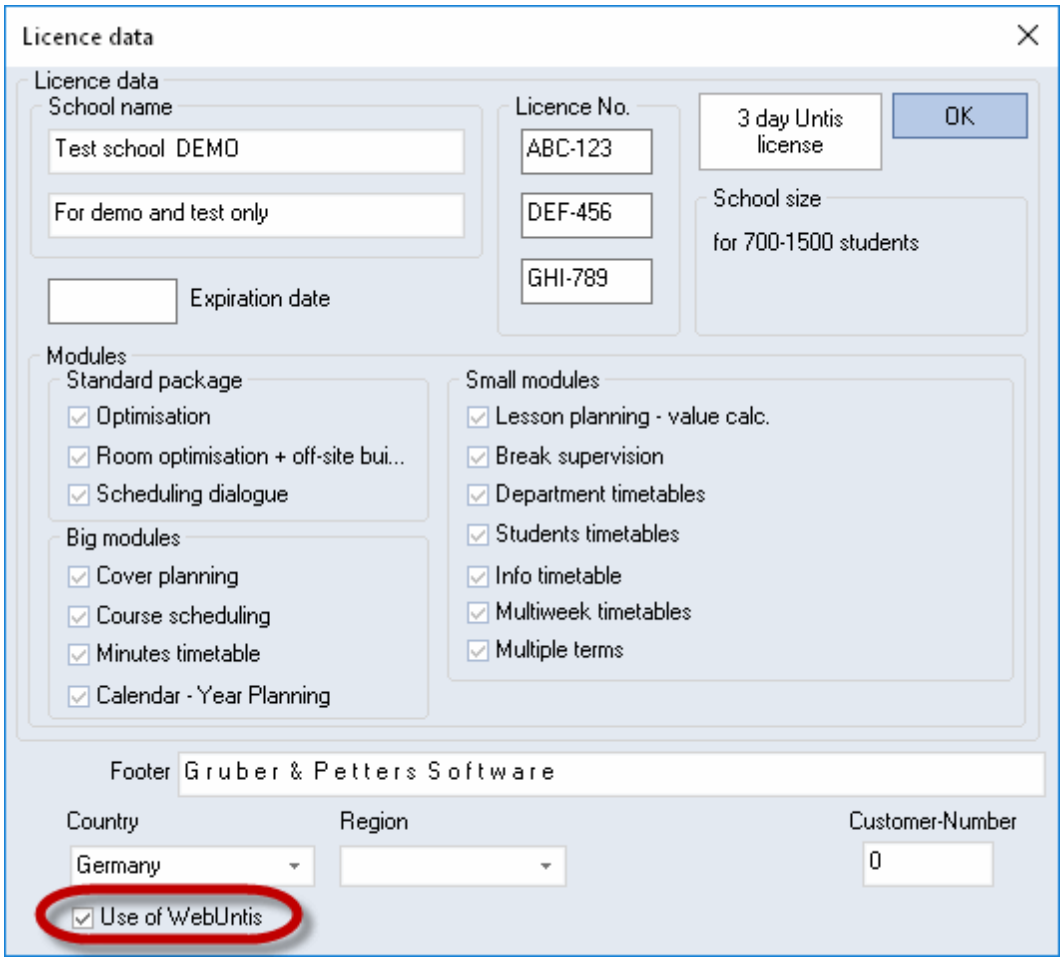
5.6.2.9 Timetable class of class teacher

Gauss is class teacher (form teacher) of Class 1a as entered in the master data. The timetable of 'his' class can be printed on the same page.



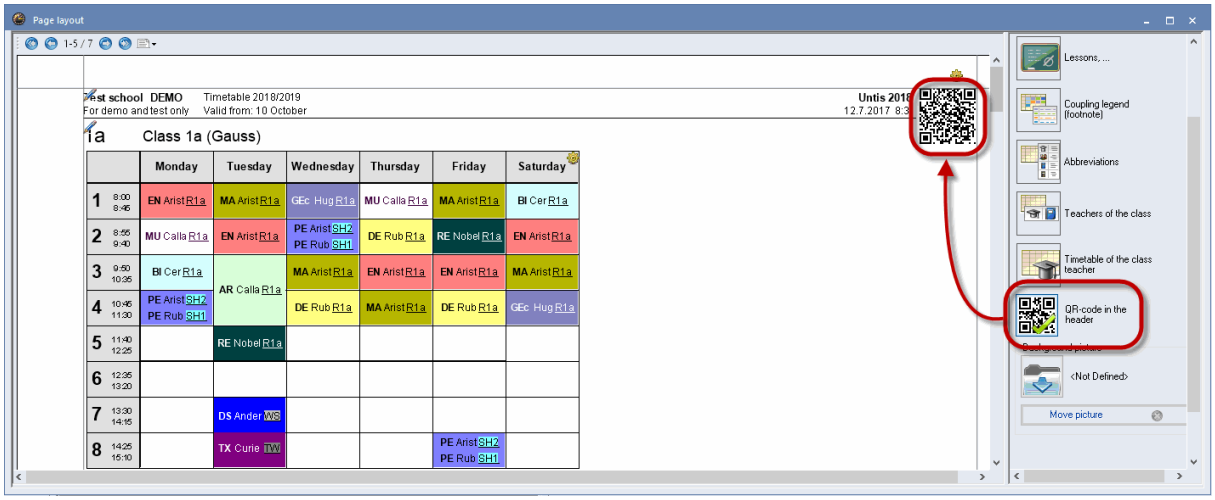
5.6.2.10 QR code

If you use WebUntis you can check the box 'Use of WebUntis' in the licence data window. The program now ‘knows’ that you use WebUntis which makes several work processes easier.



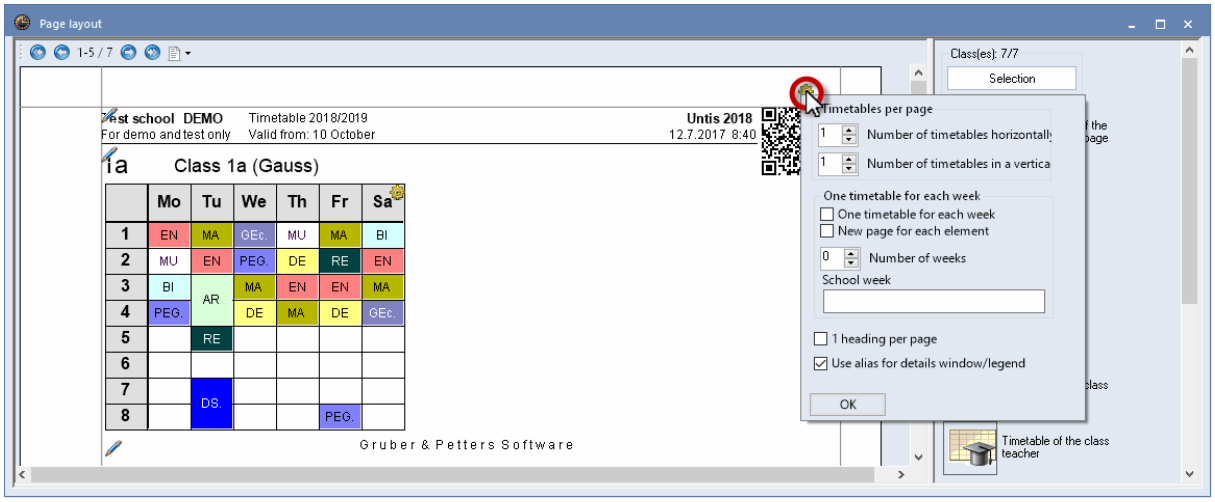
If you check this box, the QR code is printed by default which brings students, parents and teachers to the installation page of our Untis Mobile App. Everybody involved can be informed on the timetable and its daily changes easily and quickly.

The QR code can be shown or hidden in the timetable layout.



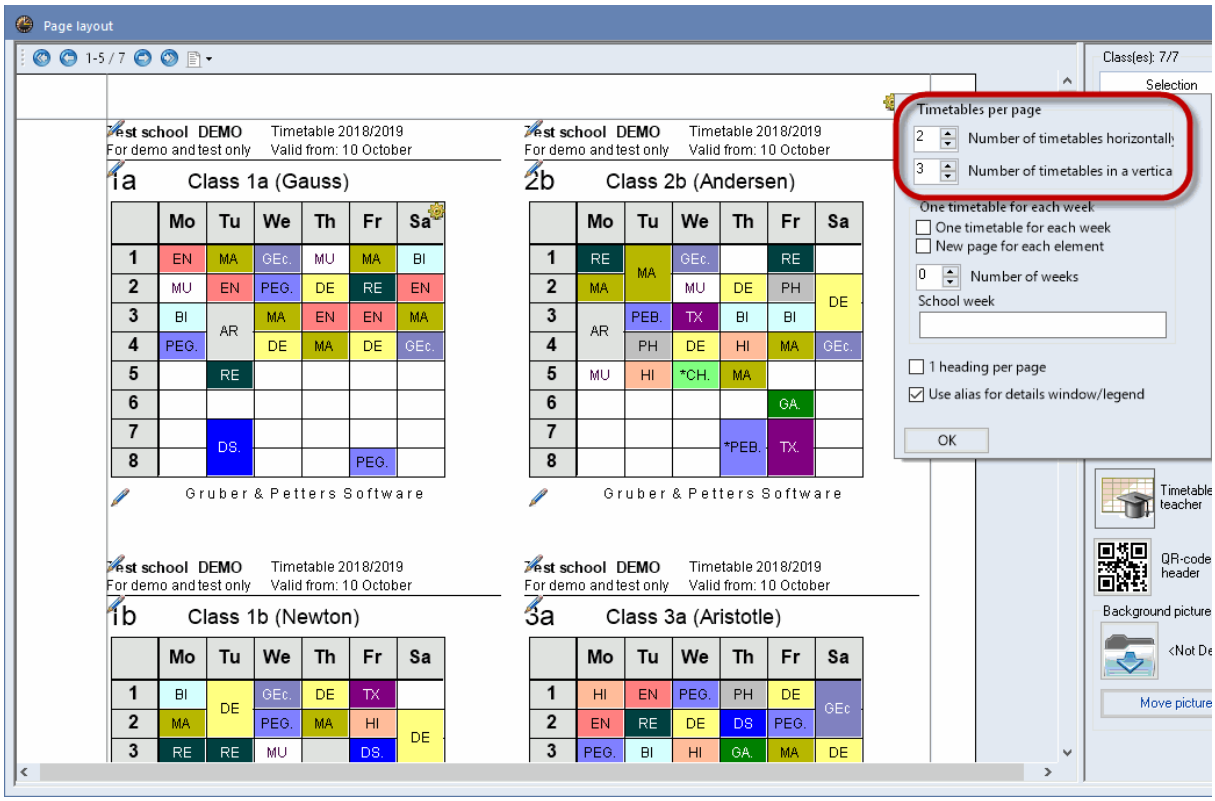
5.6.2.11 Several timetables per page

Click on <Settings> under 'Page layout' to access further printout options. The settings options vary depending on the timetable format. The following descriptions apply to individual timetables with formats 1 and 10:



Timetables per page
Specify how many timetables you wish to print on one page. The example shows a page containing 6 timetables.

Tip
The print details are stored separately for each timetable layout. It is therefore quite easy to store individual settings for different printing requirements.

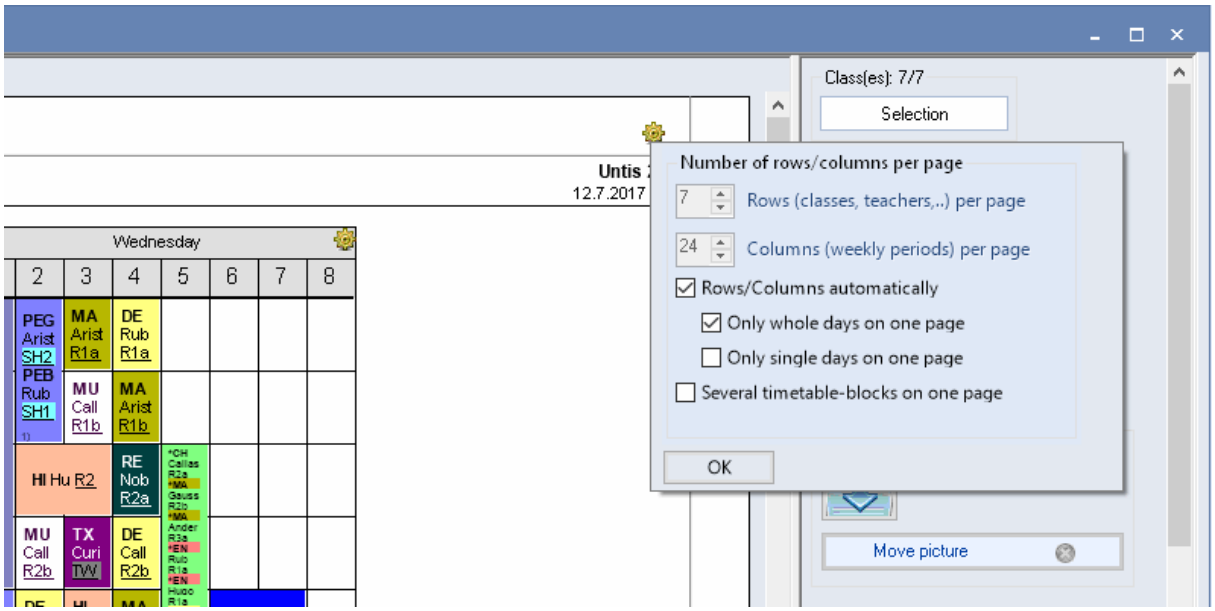


Check the option 'One timetable for each week', if you wish to print a separate timetable per week for each selected element. In addition, the field 'School week' can also be used to specify which weeks should be printed. If this field remains empty, those weeks will be printed that were selected under <Settings>. This is a particularly useful option for schools with irregular lessons. Check the option 'New page for each element', if you wish timetables to start on a new page for each new class or teacher.

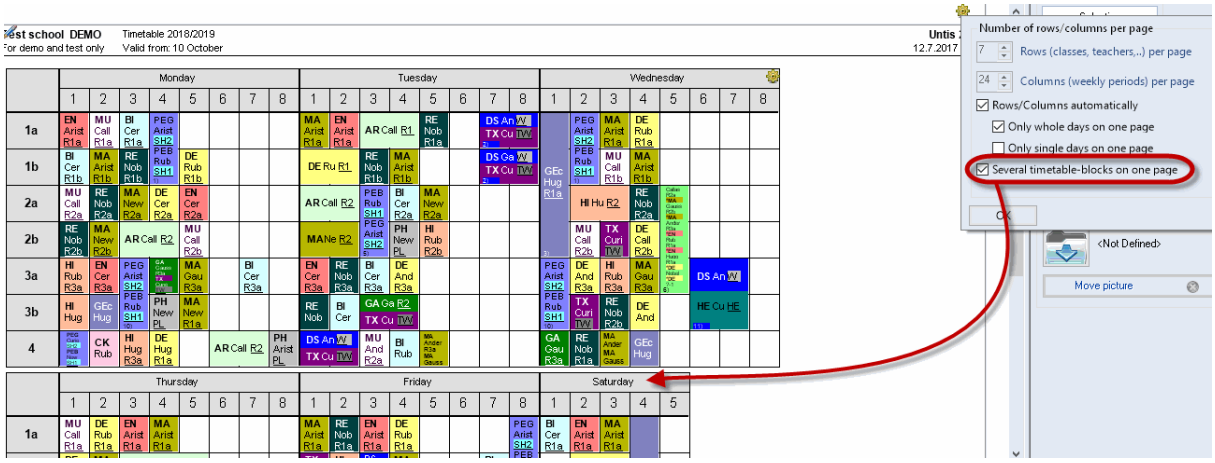
5.6.2.12 Details, overview timetables

The following print options are available for overview timetable formats 11, 20 and 30:

Number of rows/columns per page
This option allows you to specify the number of rows and columns to be printed on one page. The example shows an overview timetable for the room availability for classes. The number of rows and columns is to be calculated automatically. In this case there is space for three days.

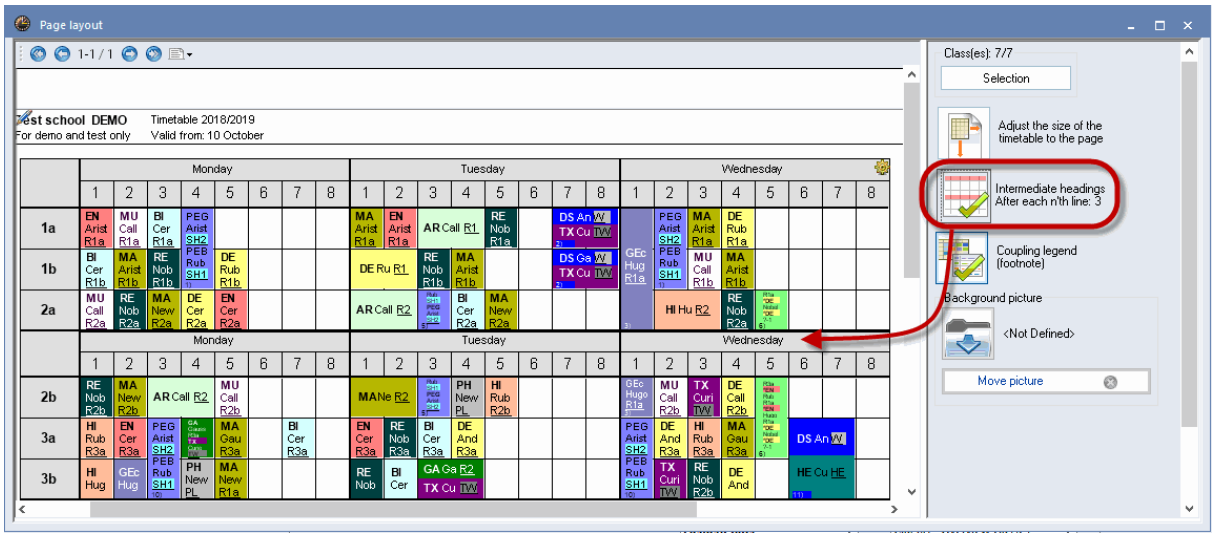


With the option 'Several timetable blocks per page' you can define that individual days of the overview timetable are printed underneath each other on the same page. 'Timetable blocks' refere here to consecutive days which can be printed next to each other on the respective page.



Coupling legend
As with individual timetables, the printed versions of overview timetables can also include a legend containing the details for which there is insufficient space in the timetable periods. The legend for overview timetables is always printed on a separate page.

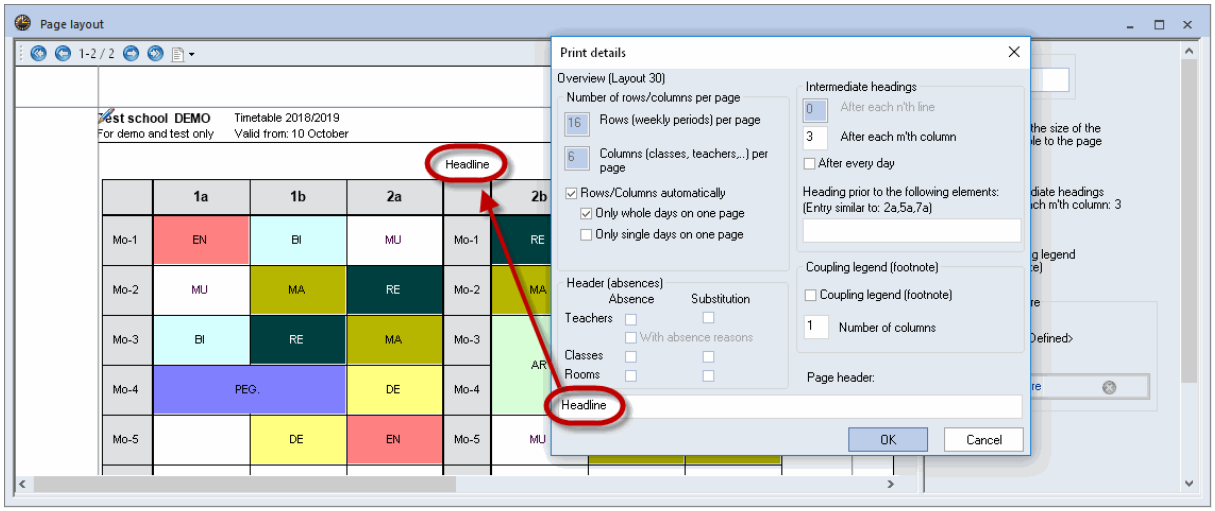
Intermediate headings
Overview timetables can contain a large amount of data. For purposes of clarity, the row and column headings can be repeated at regular intervals.



If intermediate headings are not to be repeated at regular intervals but before specific elements, please use the field 'Heading before this element'.(Print | Details)

Page heading

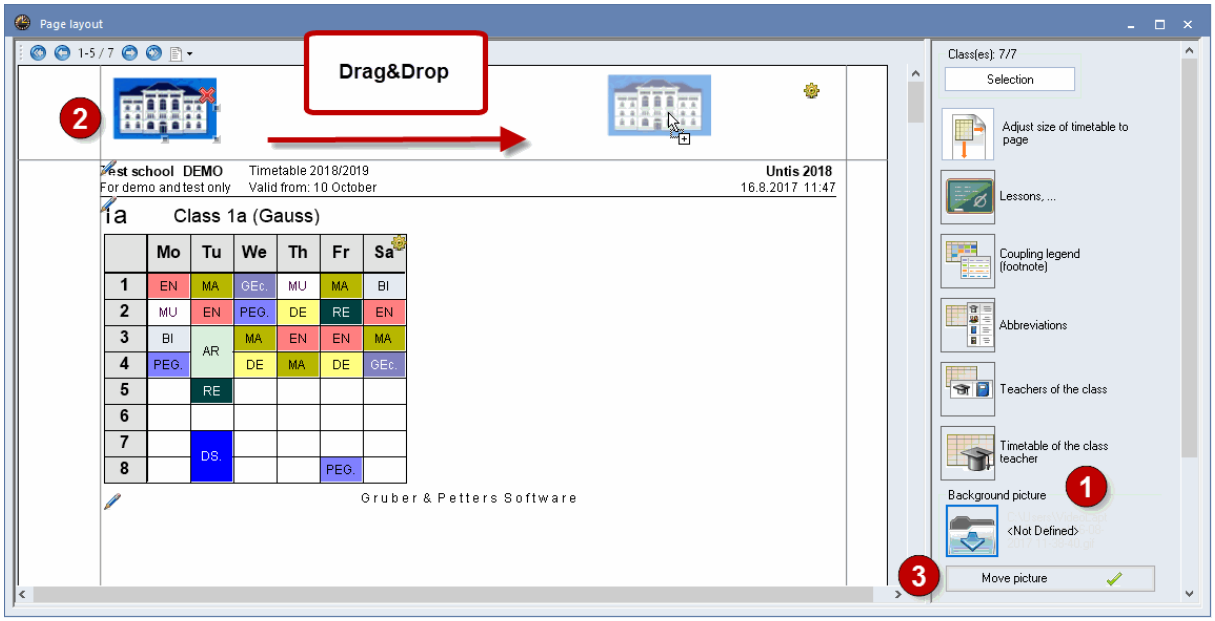
In the field 'Page heading' (Print | Details) you can define a text which will be printed as a heading on every page.



5.6.2.13 Background

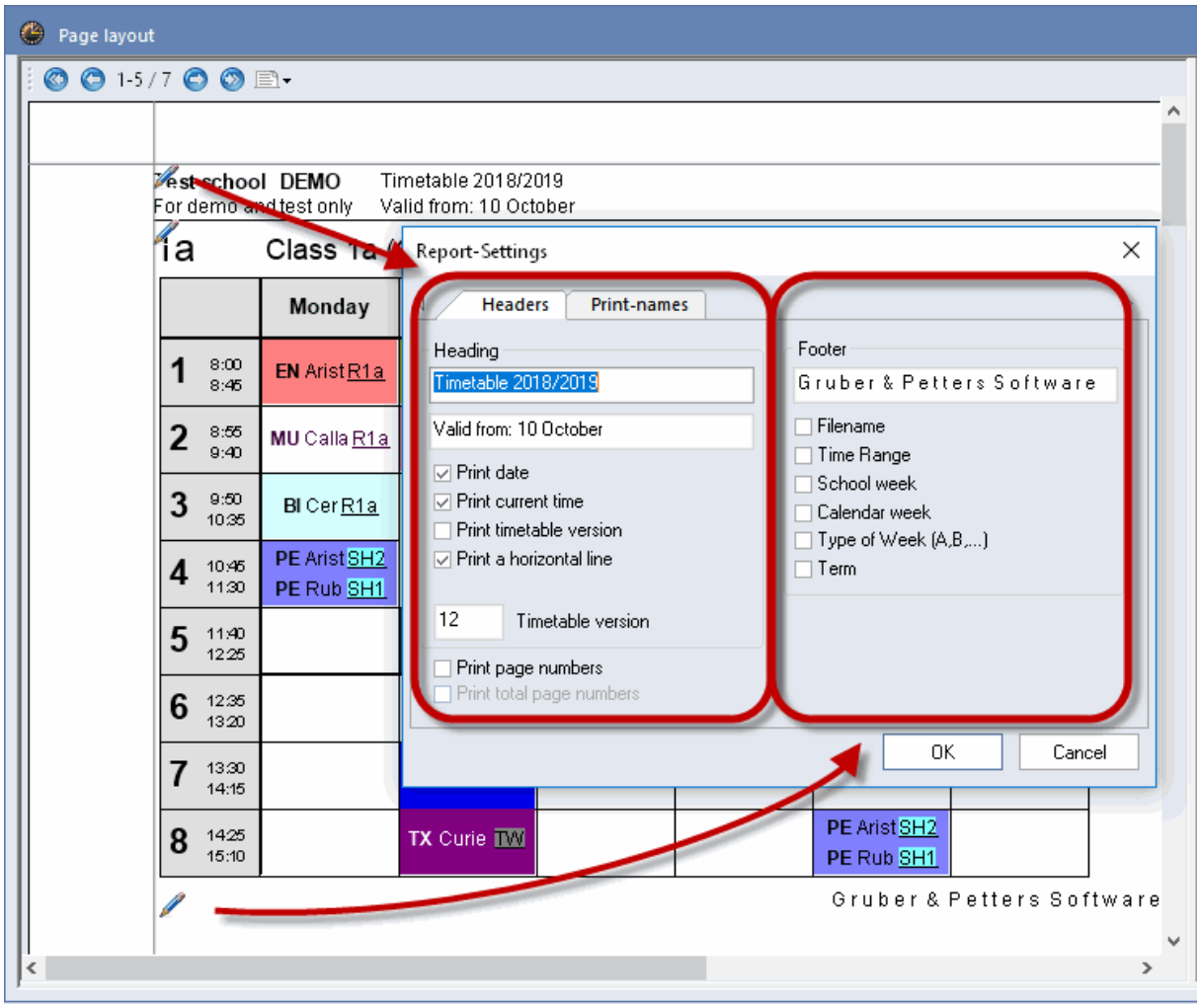
You can include images and graphs on your printed timetables. The image must be available as a .bmp, .gif, or .jpg file. Depending on the image or graph you want to include, you can use this function to print your school logo or a background for the timetable.

1. Click on 'background image' in page layout, select the image in .bmp format you want to have as a background image.
2. Click on the option 'Move image' to drag the image to its new position.
3. Deactivate the option 'Move image' to fix it at the position you want.



5.6.2.14 Header and footer

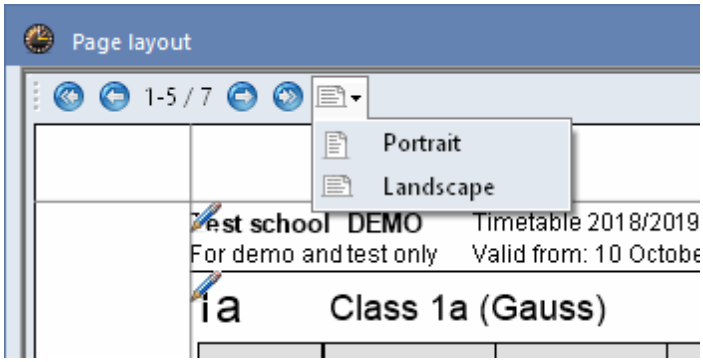
The information displayed in the headers and footers can be changed by clicking on the pen symbol in the page layout. The licence text (school name and address) is always displayed and cannot be suppressed.



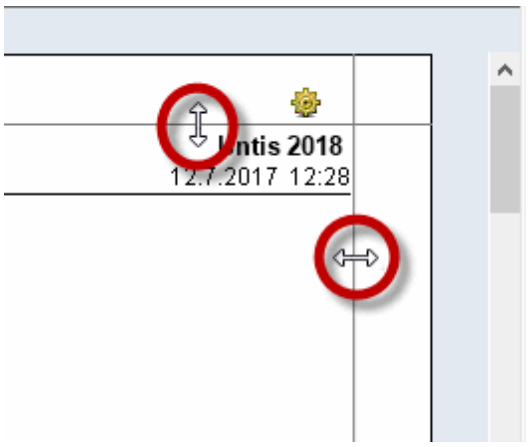
5.6.2.15 Page setup

You can specify the paper orientation (portrait or landscape) and the margins directly in the page layout.

Select the right format via the paper symbol.

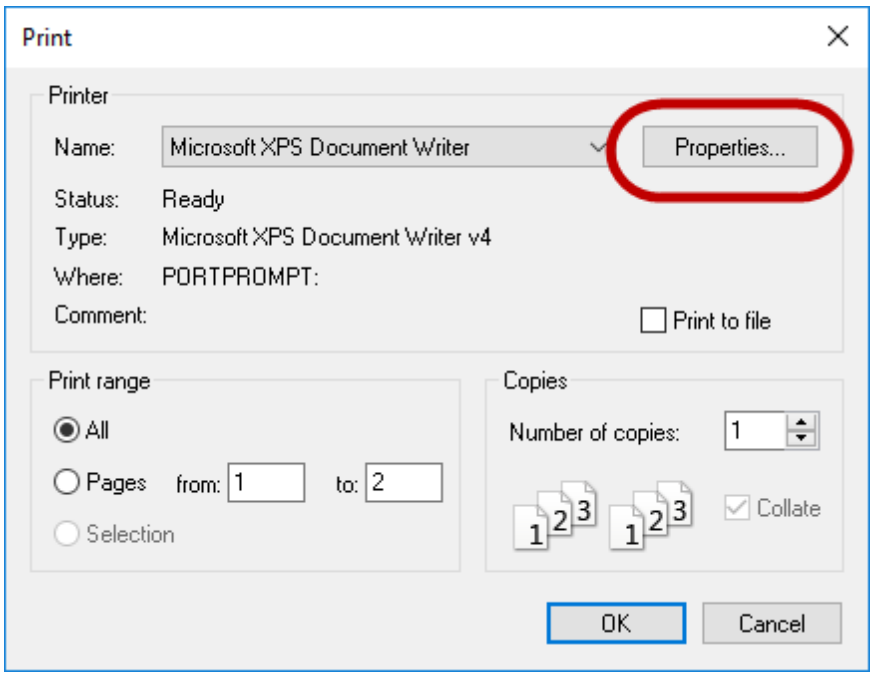


Click on the margin line on the respective side of the page and drag it to change the margin size.



A3 print
It is often useful to print overview timetables on A3 size paper. If your printer supports printing on A3 paper, proceed as follows:

Set your printer to paper size A3 (under 'Print | Prroperties'). If the A3 printer has been set as the default printer in the Windows Control Panel and if A3 paper has been set as the standard paper feed in the printer driver, the timetable will automatically be printed in A3 format.

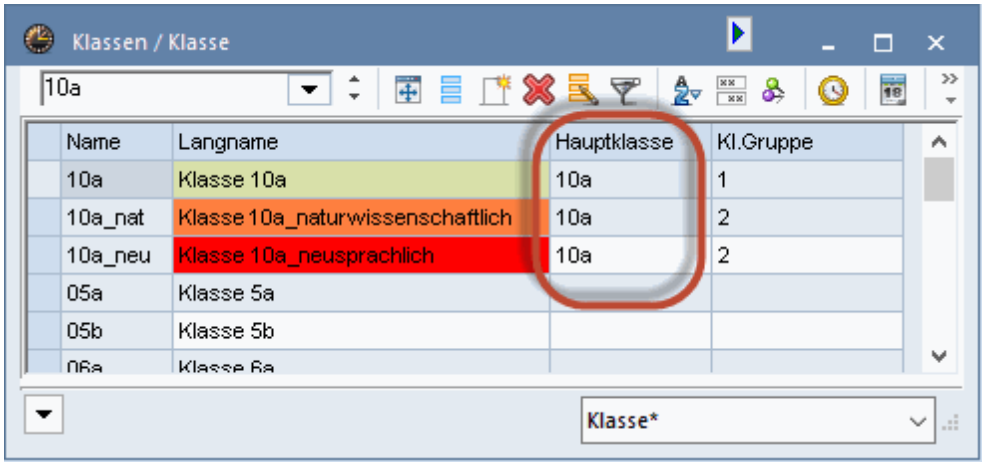


5.6.2.16 Several classes in one timetable

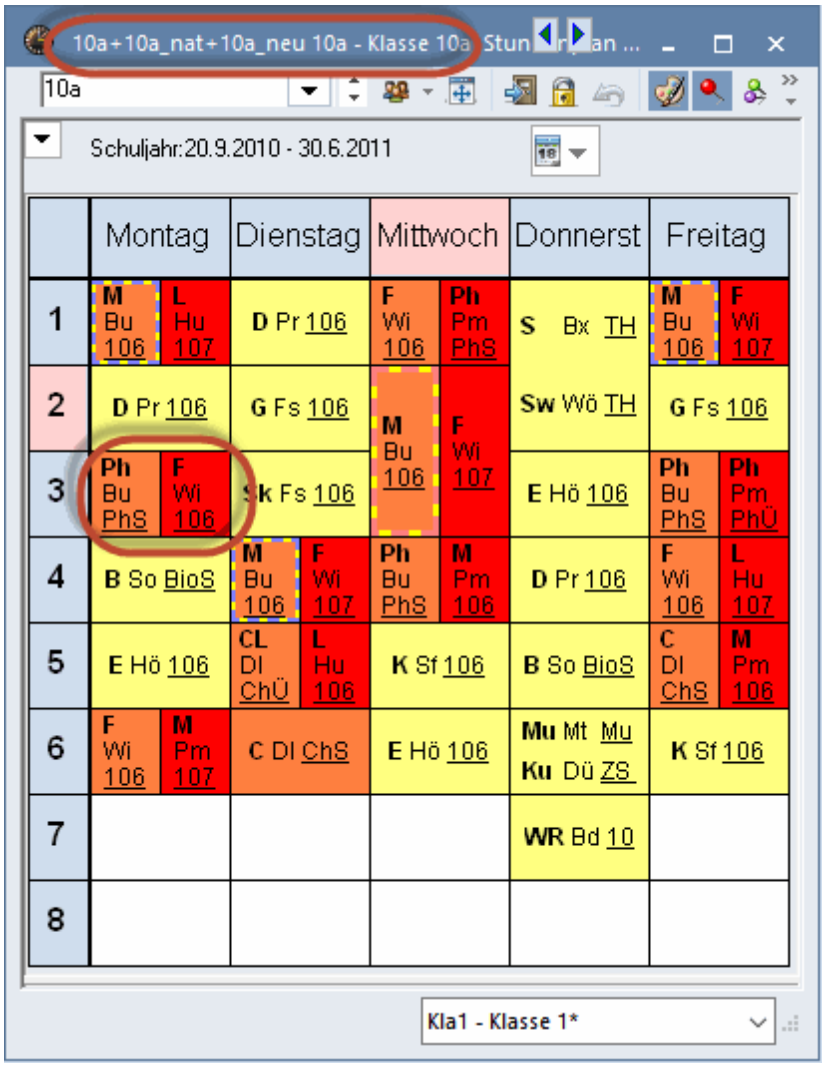
When a class is divided into two components, for instance a science and a languages group, but the timetables of the two components differ in only a few key respects, it can be useful to output the

timetables of both class components in a single timetable.

To do this, enter the combined class name of the classes whose timetables you want to print on a single timetable in the 'Master class (TT print-out)" field under 'Classes | Master Data'.



The example shows a class with a science (10a_S) group and a languages group (10a_L). The period details window shows that the students in the science group (10a_S) are scheduled to have a Physics lesson on Wednesday period 1, while the students of the Languages group (10a_L) are scheduled to have French. The combined name of the class is 10a. The screen display shows the names of all class components (10a + 10a_S + 10a_L).



The timetable printout contains all the information of the class components in a single timetable for class 10a.

Note:
If you wish to prevent timetables from being combined for specific timetable layouts, deactivate the option 'Show master classes separately' on the Layout 2 tab under <Settings>.

5.6.2.17 Timetables in HTML format

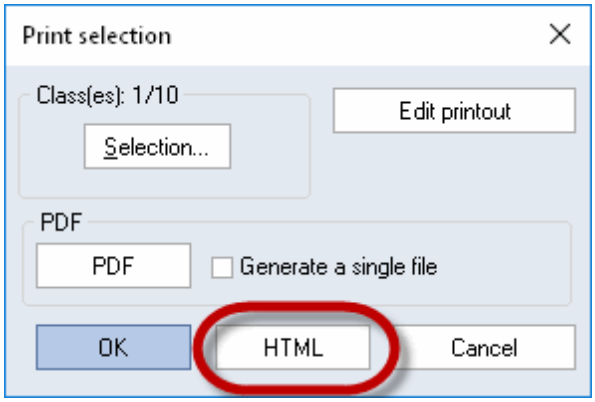
You can print out timetables in HTML format in order to make them available in your school's intranet or on the Internet,

Creating timetables in HTML format is similar to creating printouts of timetables. Proceed as follows:

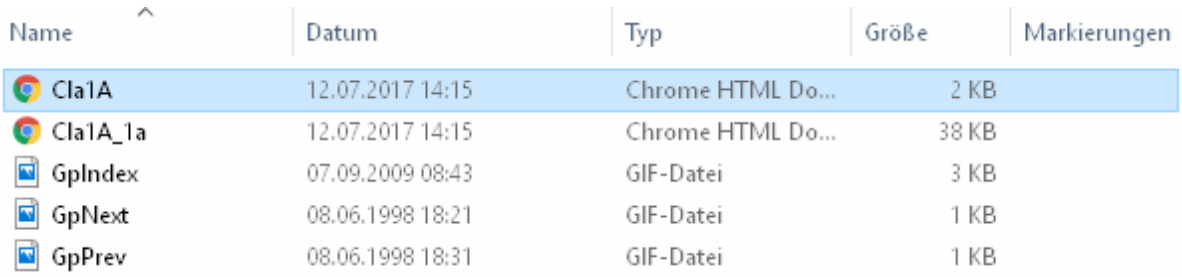
- Activate the timetable you want to save in HTML format and open the dialogue box 'Print selection' by clicking on <Print> or <Print Preview>

- Select the elements you want to print (i.e. save in HTML format) and customise settings and details (e.g. legends etc.) in the usual way.

- Click on <HTML>.

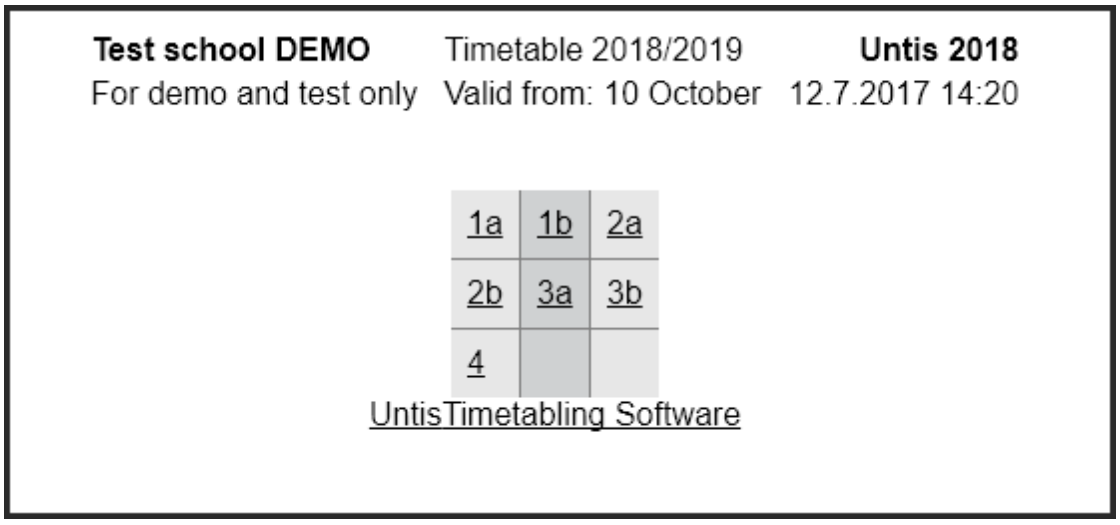


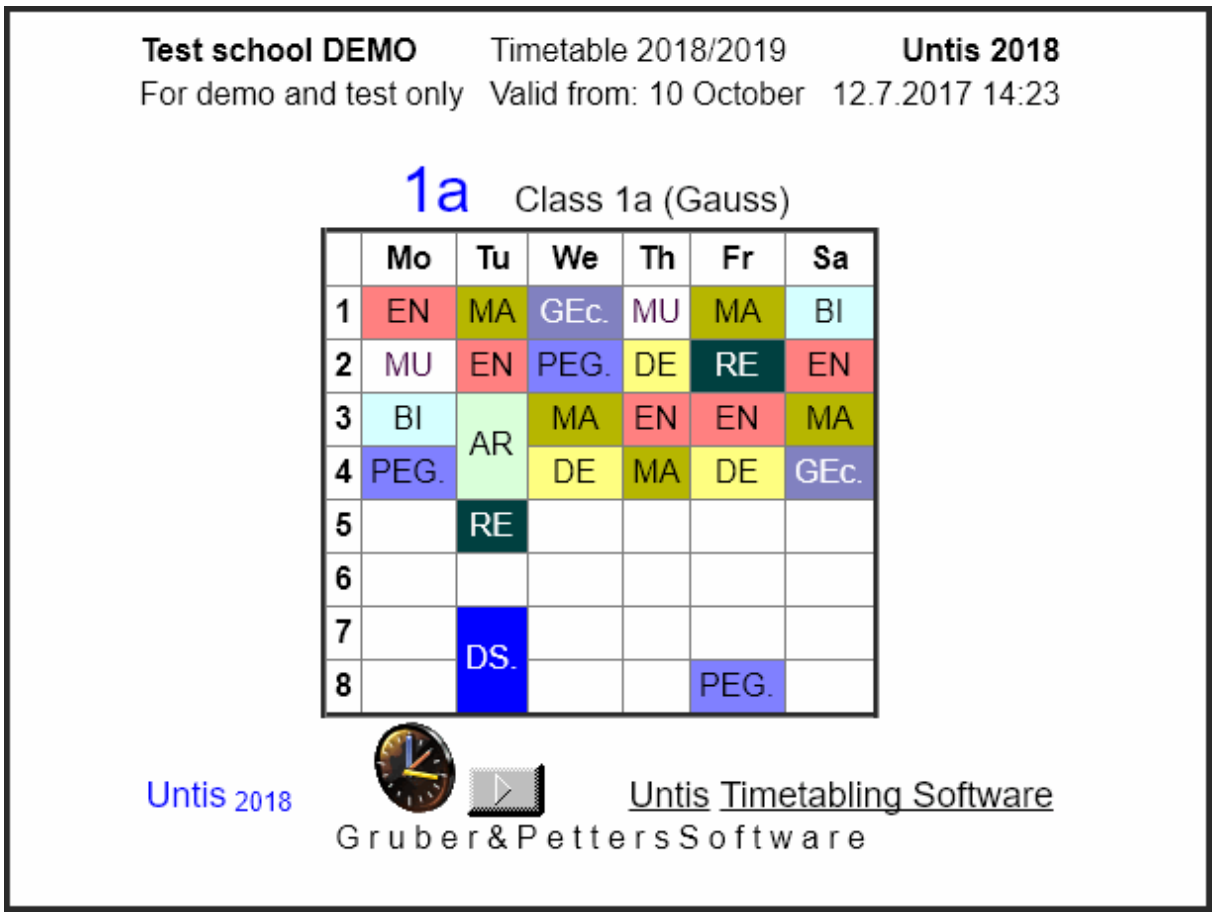
- A file dialogue box appears. Enter the name of the directory where you want to save the HTML files and confirm with <Save>.



An index file will be created for each output, allowing access to each of the output elements. The index file name is based on the format used (e.g. CLA_HTML). Use the file to open the index with the links to the exported elements.

Tip
If the full names of the elements to be output are to be used, activate the option 'HTML index page with full names' on the 'Layout 2' tab under <Settings>.

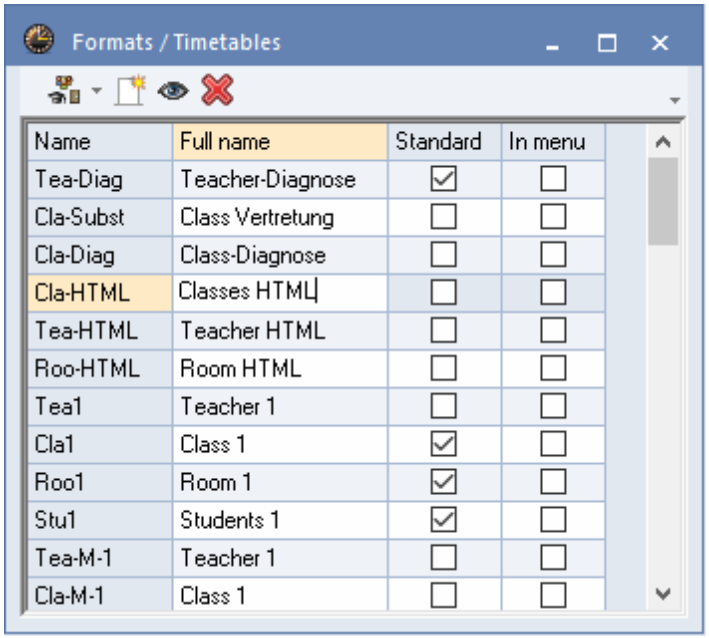




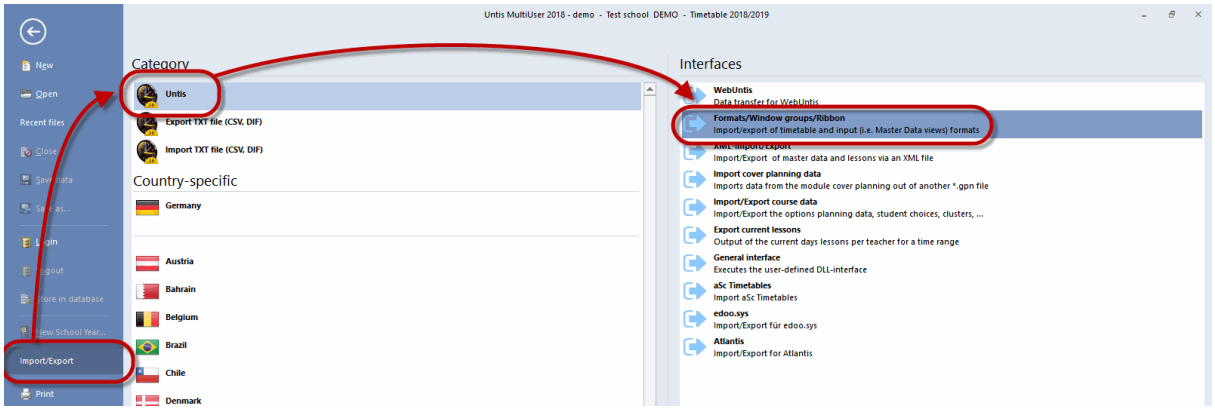
- When using the Cover planning module, the updated timetables also contain complete details on teaching cover.

5.7 Import and export of formats

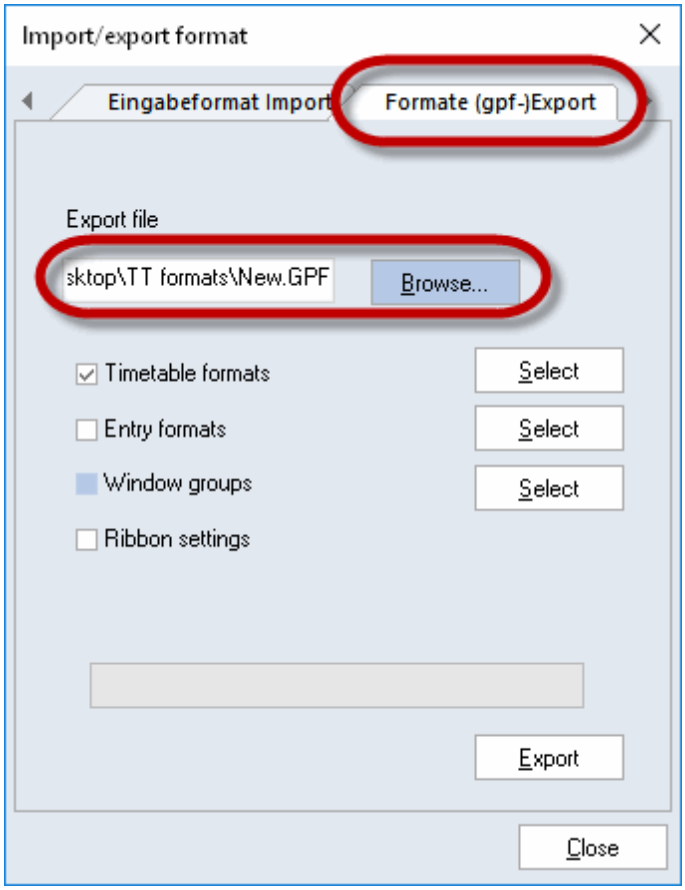
As a general rule, the formats you create are saved in the current work file. In order to make these views available for use in other files, you need to import or export them



- Select 'File | Import / Export | Untis | Formats/Window groups/Ribbon"'.
  Select the 'Export of formats (gpf)' tab from the dialogue box.

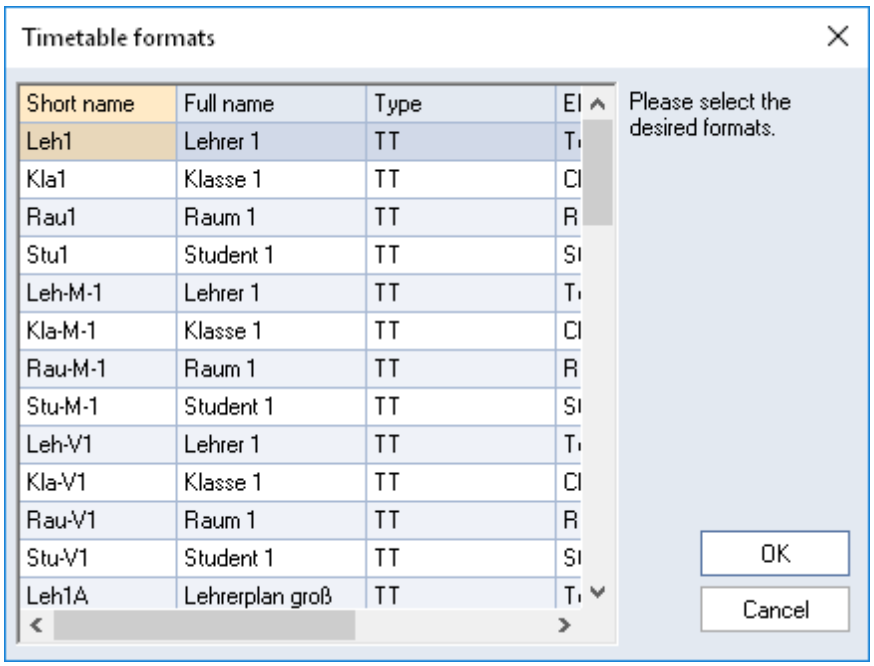


- Enter a name in the name field of the export file (e.g. 'New.gpf').



You can export the format details of timetable views and of master data views. Select a particular timetable view for export by clicking on <Select> in the row 'Timetable formats'.

- From the dialogue box, select the timetable view whose format you want to export and confirm by clicking on <OK>.



The format data has now been saved in the file 'New.gpf'. You can now make your formats available to other Untis users (minus school data) or import the formats into other files.

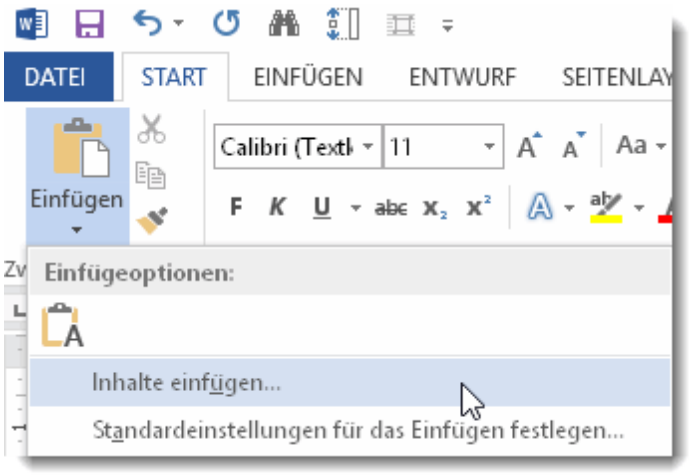
Use the same method to import formats from a .gpf or directly from a .gpn file.

5.8 Using the clipboard

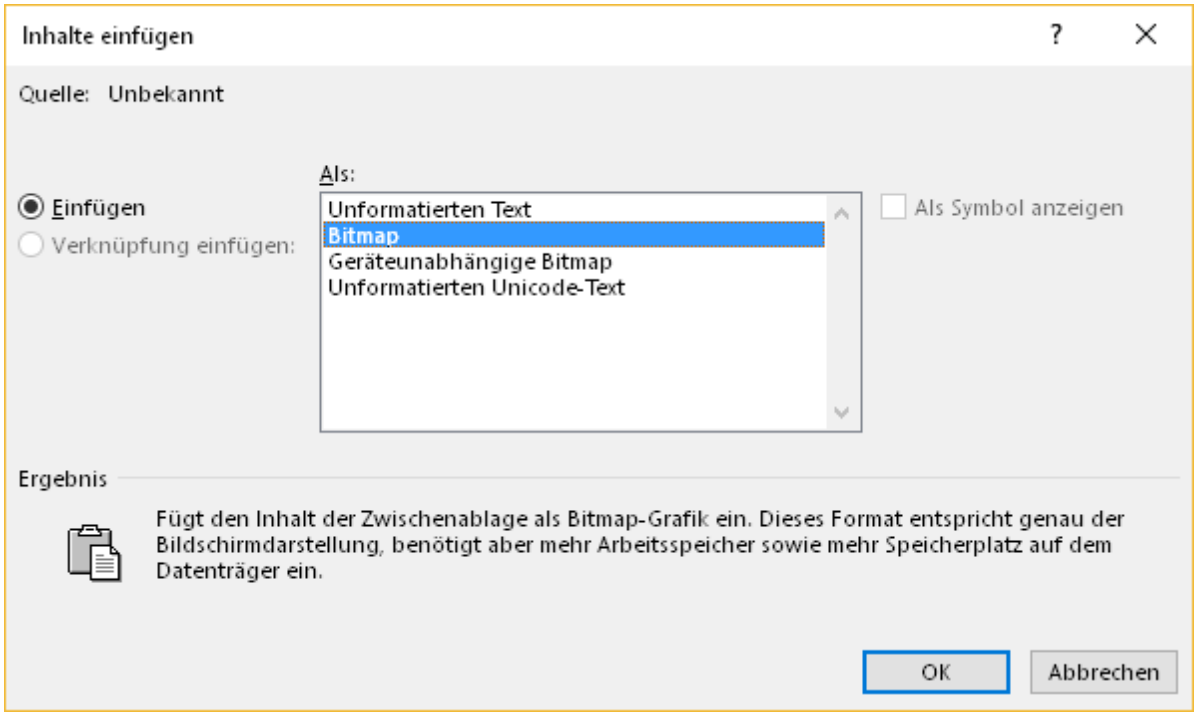
Using the clipboard, you can export timetables to other programmes such as word processing applications.

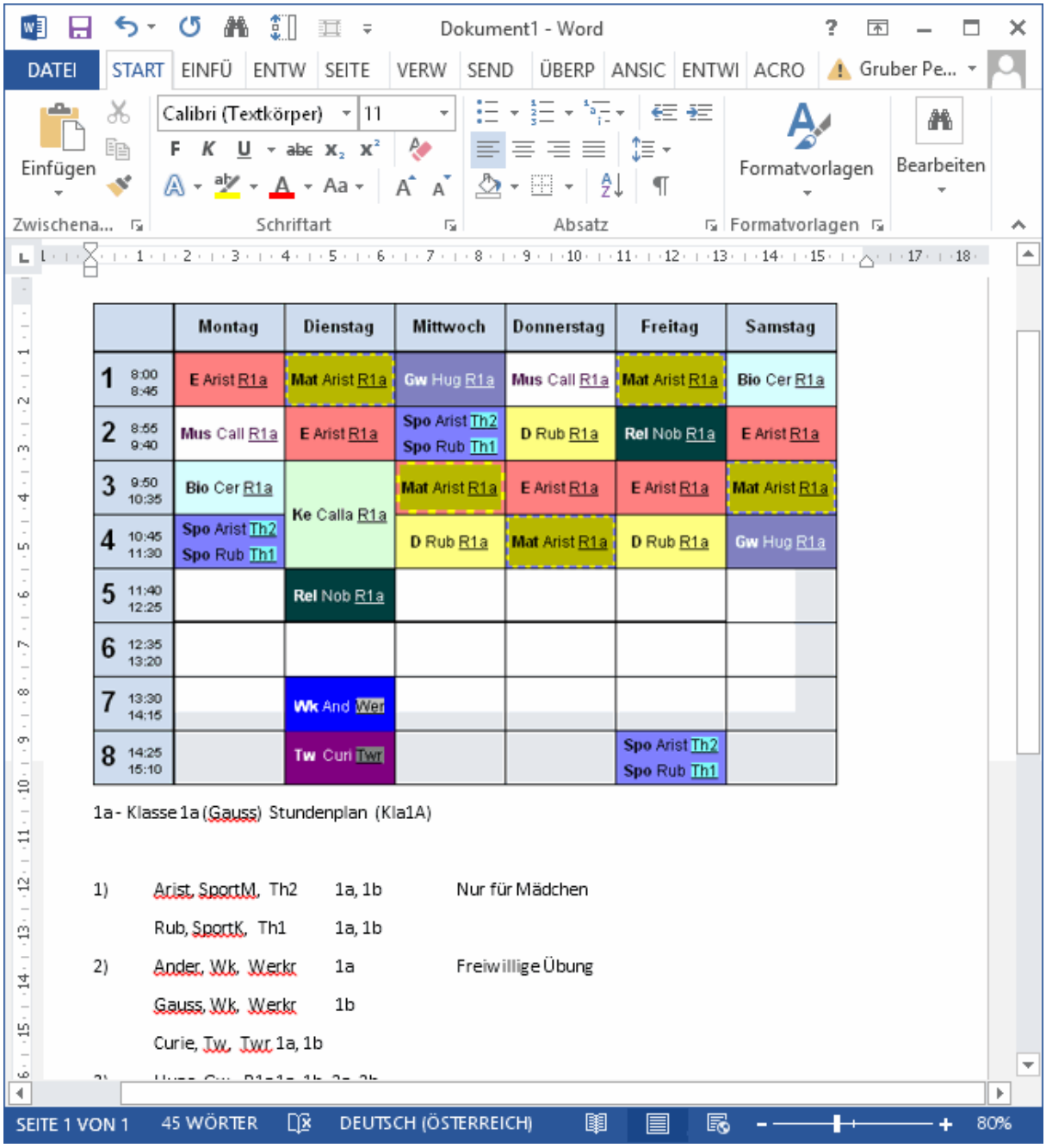
Proceed as follows:

- Click on the timetable you wish to export (the title bar must be blue)
- Copy the timetable to the clipboard (menu command 'Edit | Copy' or via the shortcut <CTRL>+C.
- Switch to your word processing application. Select 'Edit | Paste' to insert the contents of the clipboard in the form of an image.



- The 'Edit | Paste' function can also be used to export the legend.





	Montag	Dienstag	Mittwoch	Donnerstag	Freitag	Samstag
1 8:00 8:45	E Arist R1a	Mat Arist R1a	Gw Hug R1a	Mus Call R1a	Mat Arist R1a	Bio Cer R1a
2 8:55 9:40	Mus Call R1a	E Arist R1a	Spo Arist Th2 Spo Rub Th1	D Rub R1a	Rel Nob R1a	E Arist R1a
3 9:50 10:35	Bio Cer R1a	Ke Calla R1a	Mat Arist R1a	E Arist R1a	E Arist R1a	Mat Arist R1a
4 10:45 11:30	Spo Arist Th2 Spo Rub Th1		D Rub R1a	Mat Arist R1a	D Rub R1a	Gw Hug R1a
5 11:40 12:25		Rel Nob R1a				
6 12:35 13:20						
7 13:30 14:15		Wk And Wer				
8 14:25 15:10		Tw Curi Twr			Spo Arist Th2 Spo Rub Th1	

1a - Klasse 1a (Gauss) Stundenplan (Kla1A)

1)	Arist, SportM, Th2	1a, 1b	Nur für Mädchen
	Rub, SportK, Th1	1a, 1b	
2)	Ander, Wk, Werkr	1a	Freiwillige Übung
	Gauss, Wk, Werkr	1b	
	Curie, Tw, Twr	1a, 1b	

6 User Tips

6.1 User tips

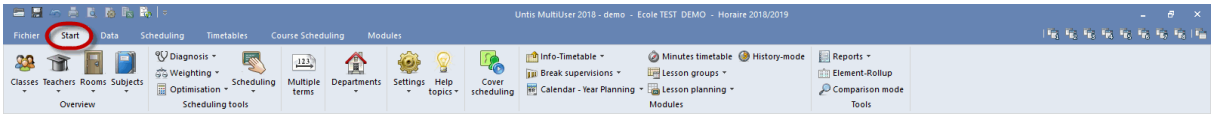
This chapter describes additional options and useful settings not covered under master data and lessons. These should help you to take full advantage of Untis in working with your timetables.

6.2 Ribbon

6.2.1 General

Untis has a ribbon or *multi functional bar* control. In the following section the most important functions of this menu control are explained.

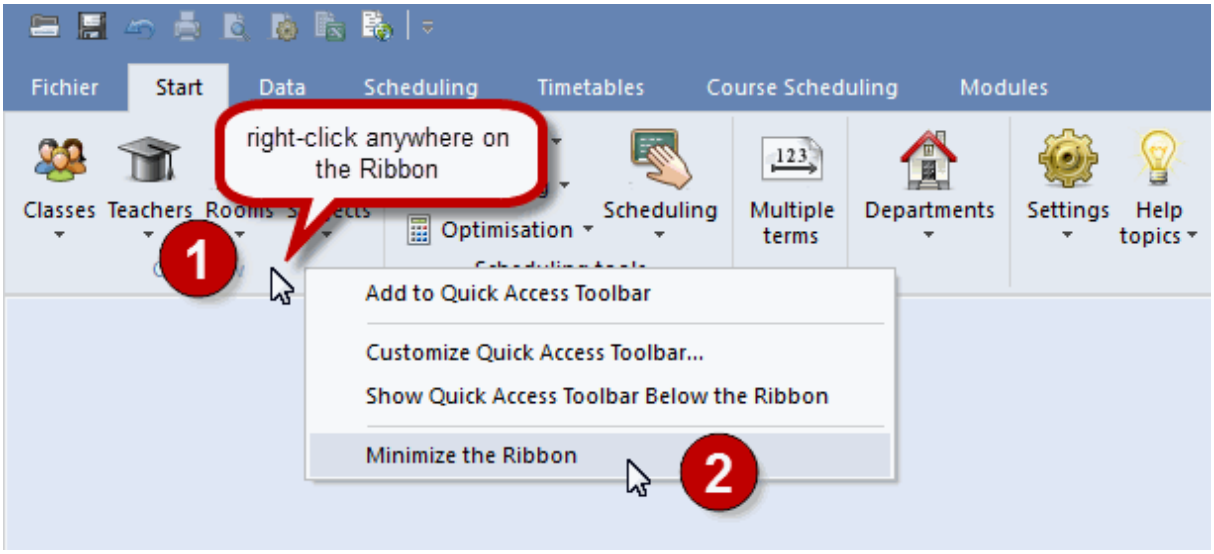
In general you will find the majority of all functions you need on the *Start* button.



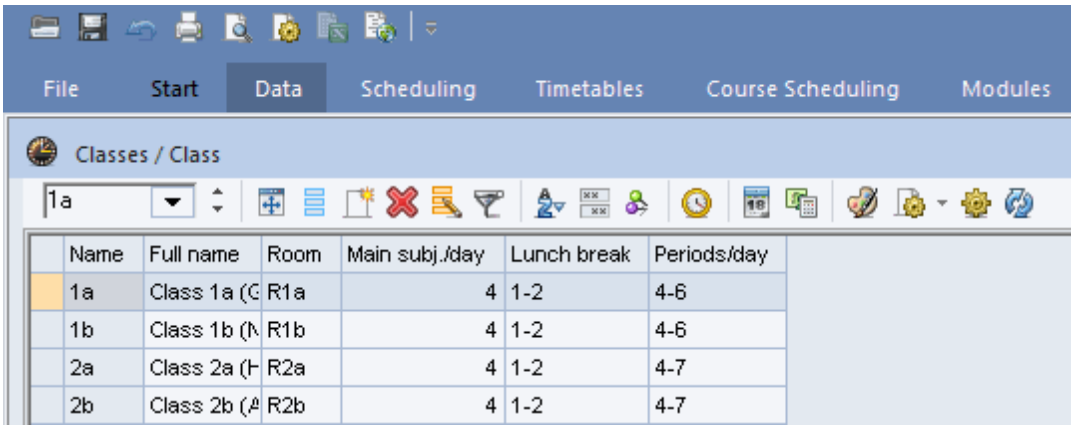
In the Untis standard package all commands are also available under the respective topics, i.e. under *Data* , *Scheduling* and *Timetables* and can be accessed via the respective tabs.

If you use *modulesn* there are even more tabs available.

Tip:
You can fold the ribbon. Just click on your right mouse button anywhere on the ribbon and choose the respective command.

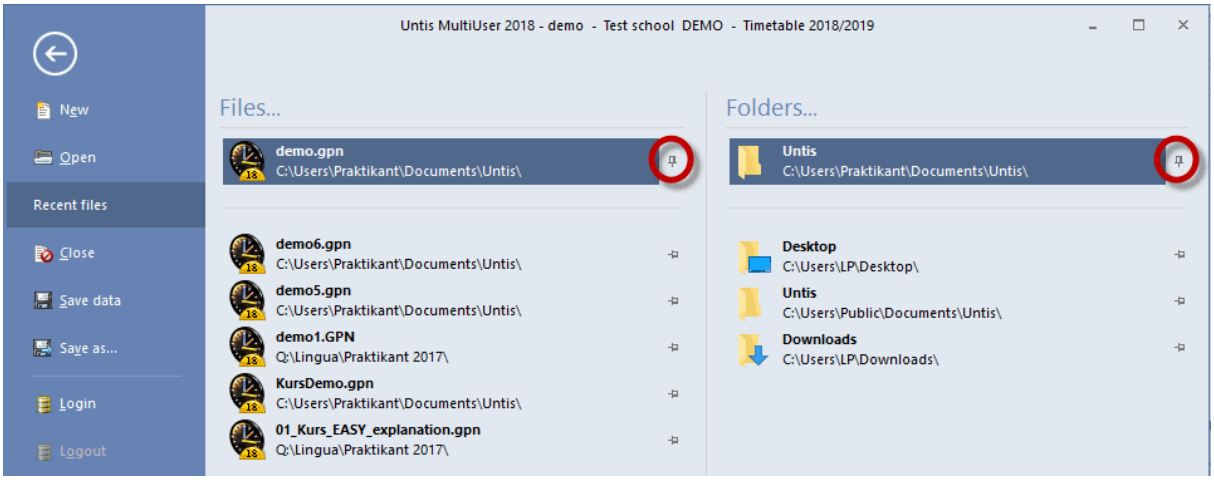


The minimised ribbon looks like a classic menu.



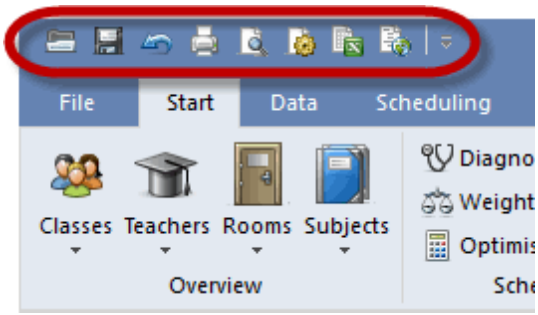
6.2.2 File tab

In the menu 'Recent files' you will see the files and the respective folders you opened last. Important files and folders can be fixed so that they are permanently shown in the list.



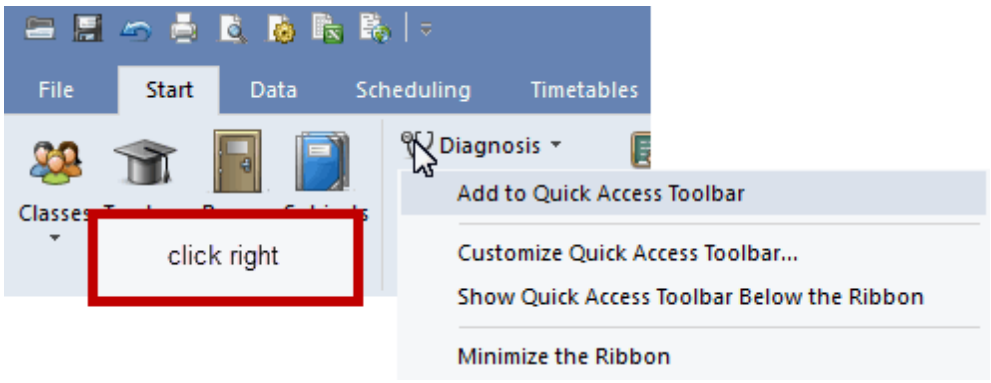
6.2.3 Quick Access Toolbar

Similar to common Office-applications, Untis also has a *Quick Access Toolbar* , which you can customise according to your needs. There are two options to do this:

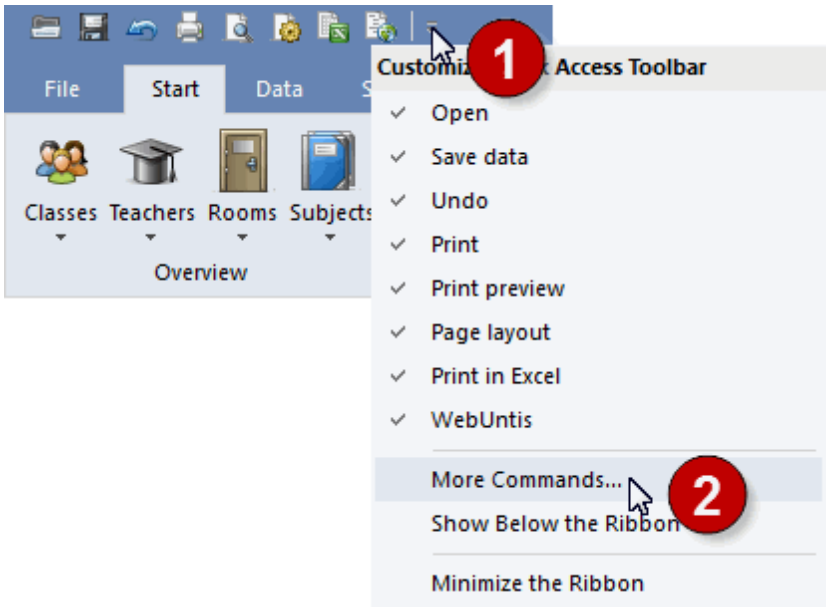


1) Right-click on an icon in the ribbon and select the option 'Add to Qucik Access Toolbar' in the contect

menu.

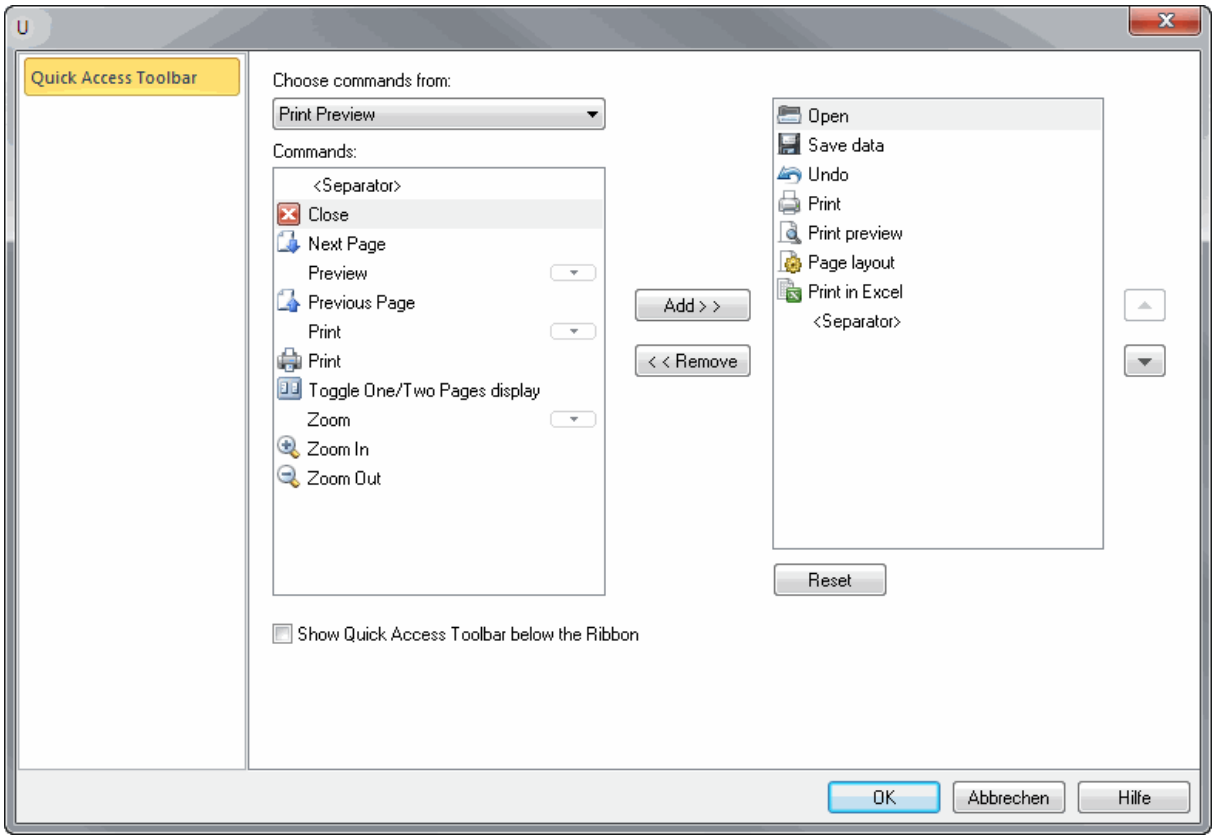


2) If you want to add or delete symbols click on the black triangle on the right side of the Quick Access Toolbar.



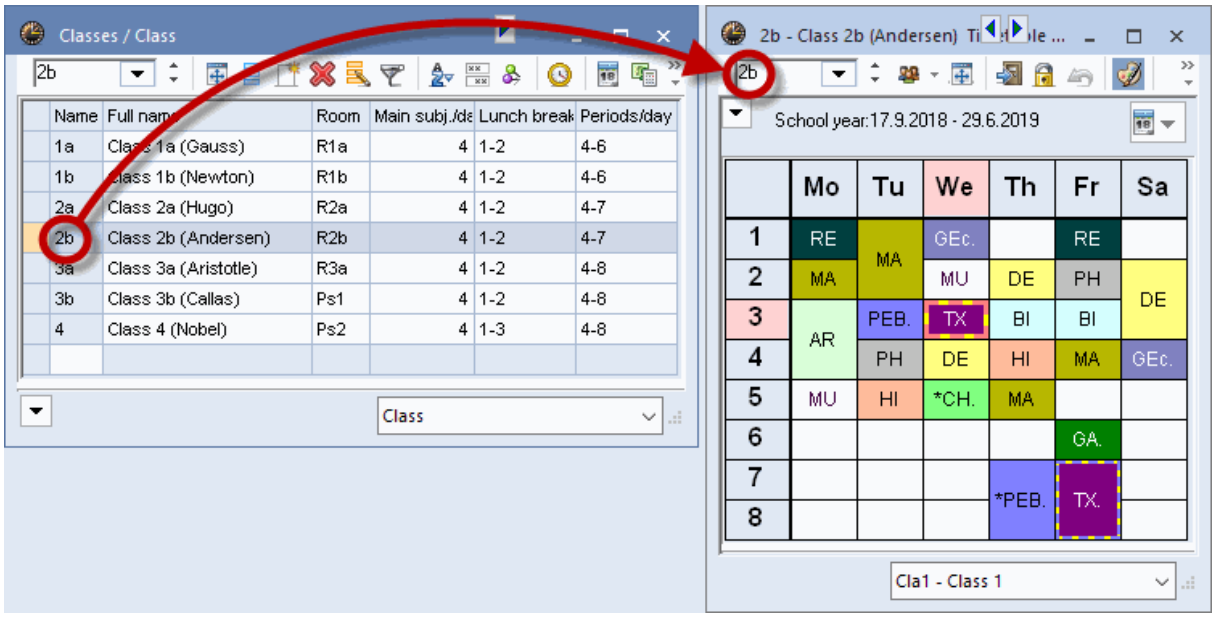
Active symbols of the Quick Access Toolbar can be deactivated directly in the toolbar. If you want to add any functions to the Quick Access Toolbar just click on <More Commands...>.

A window opens - in the order of the tabs - where you can add commands available in the Untis Quick Access Toolbar.



6.3 Working with several windows

In general the windows open at the Untis desktop synchronise automatically. This means that switching to another element in the master data window affects, for example, an open timetable window.



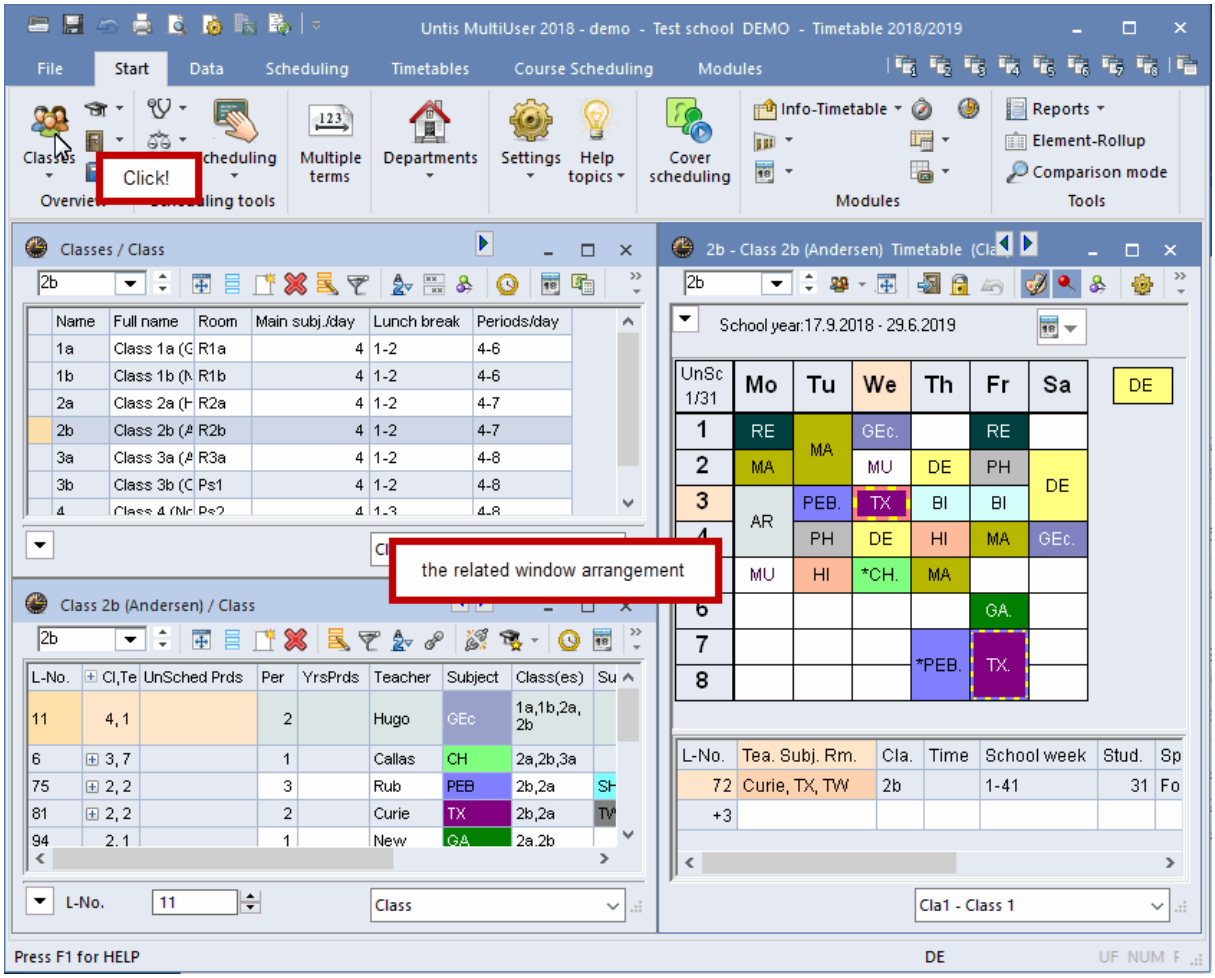
Therefore it is recommendable to have several windows open at the same time. Please note that the different phases of working on the timetable have different requirements concerning *ad hoc* information which the scheduler needs to have: an open scheduling dialogue is simply in the way when you are working, for example on the assignment of subjects, i.e. all lessons at school need to be assigned to all teachers at the school. Equally, the presence of a weighting window is simply inconvenient when all you are trying to do is some last manual fine-tuning of the timetable.

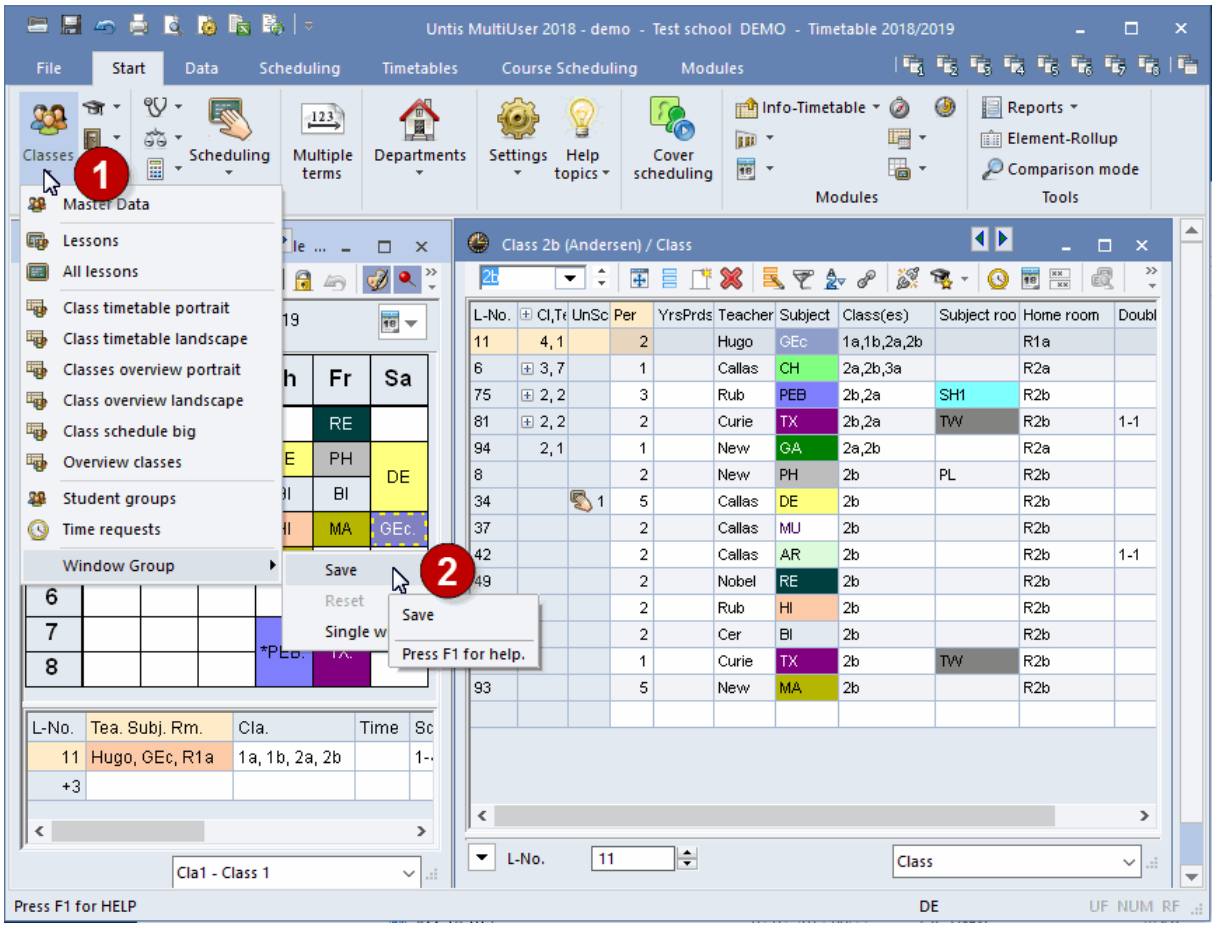
Untis provides you with two possibilities to save frequently used window combinations and to quickly switch between these window arrangements.

1. Window arrangements
2. Window groups

6.3.1 Window arrangements

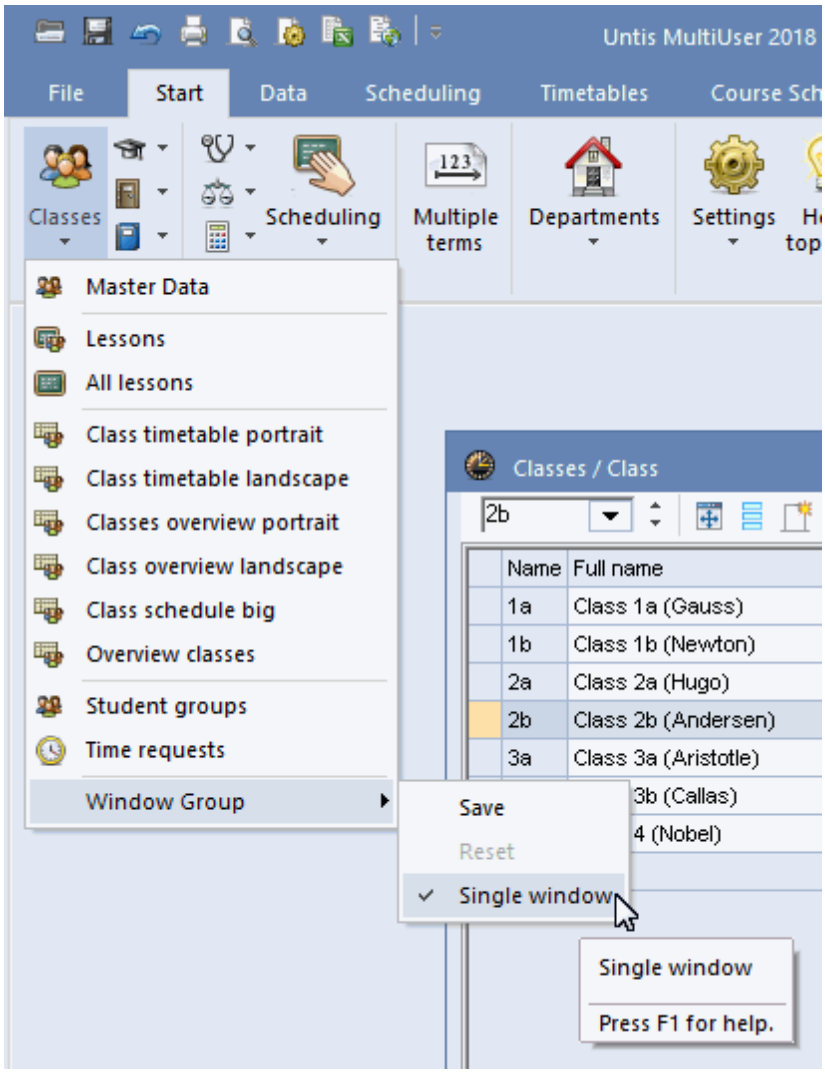
The Untis ribbon is designed in such a way that by clicking on a button a pre-defined *window arrangement* is opened.





The window arrangements can be customised individually. For changing the pre-defined window arrangements you need to do the following:

1. Arrange your screen (by opening and positioning the relevant windows) the way you want it.
2. In the menu below the respective button there is the sub-menu *Window group* , where you can save the window arrangement.



3. Your individual window arrangement is saved now. Next time you click on the respective button your window arrangement will be opened.

Tip:
If you want a single window to open additionally to the windows already open on your screen when clicking on the respective button, then activate the option *Single window* .

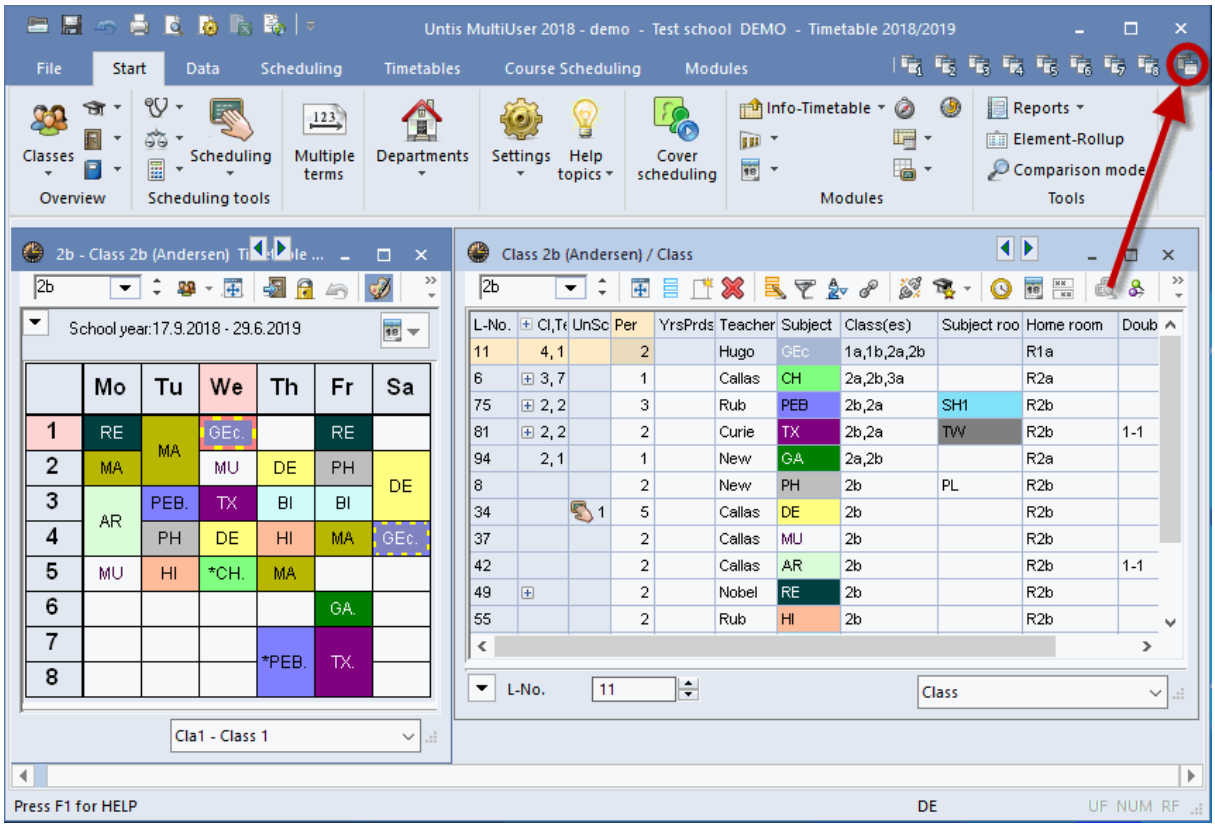
Note:
If you want to get back to the originally defined window arrangement, just go to the sub-menu 'Window group' and click on *Reset* .

6.3.2 Window groups

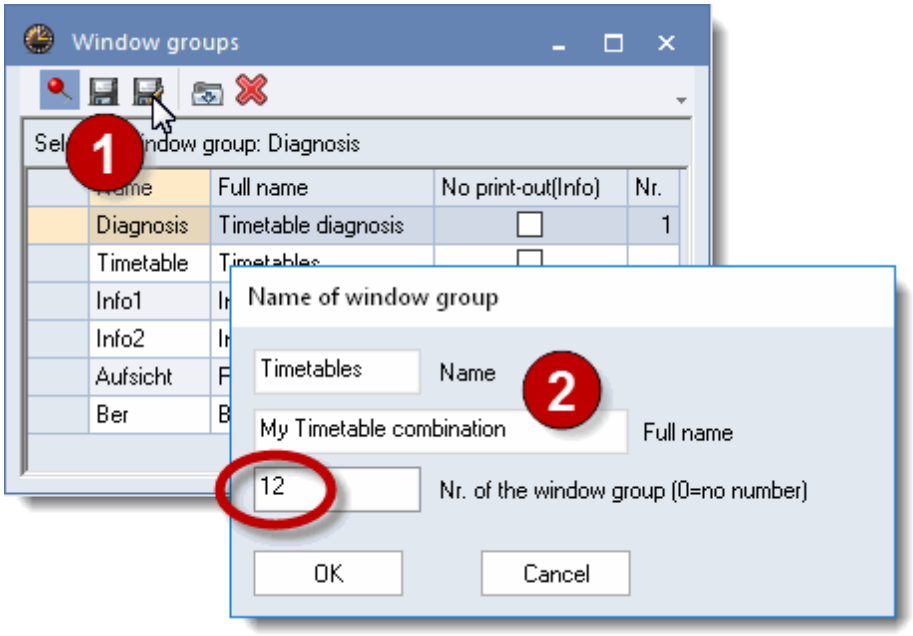
Window groups have been used before the ribbon was introduced and can still be used.

The following example will demonstrate how to create a windows group.

1. Open the respective windows and arrange them just as you need them when you work with them
2. Click on the <Window Group> button on the top right in the main tool bar.



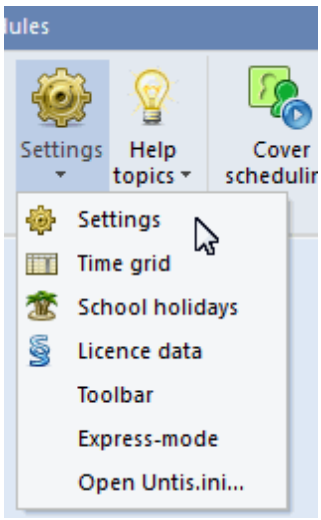
3. The *Window groups* window is opened.
4. Click on the button <Save window group as> and assign meaningful short and long names.

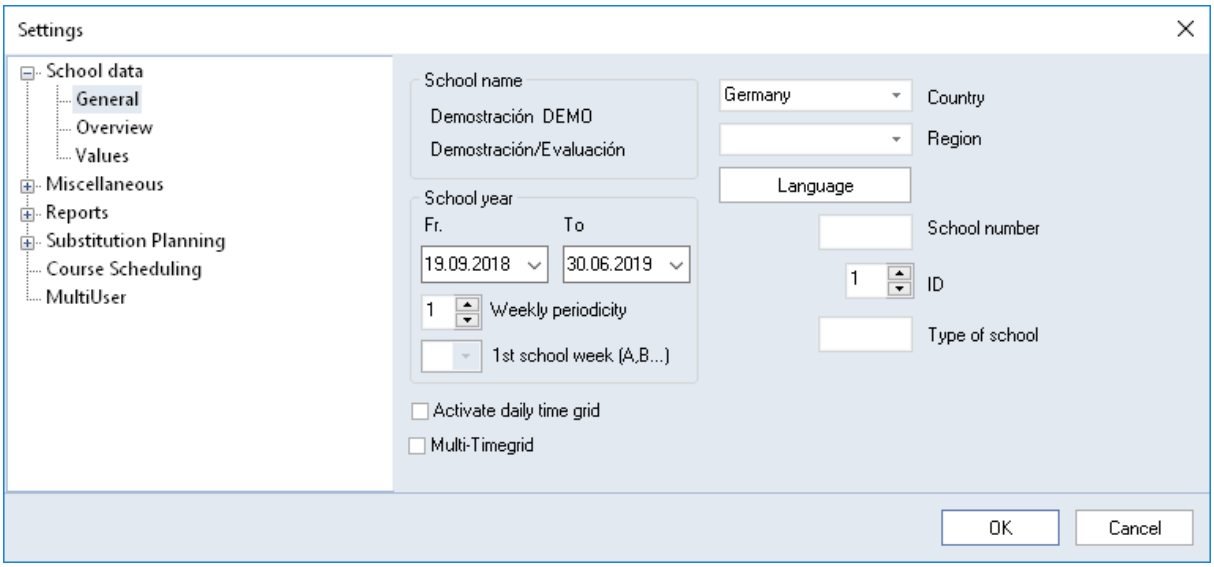


Tip: Import/Export of window groups
You can transfer the window groups from one file to another at any time. To do this, open the file into which you wish to import the settings and select 'File | Import/Export | Untis | Formats/Window groups/ Ribbons'. On the 'Import window groups' tab you can now navigate to the Untis file from which you wish to import the window groups and start the import process.

6.4 Settings

On the 'Start' button under 'Settings' you can define all relevant settings in one central place. The most important of these will be introduced in the following section.





6.4.1 Time grid

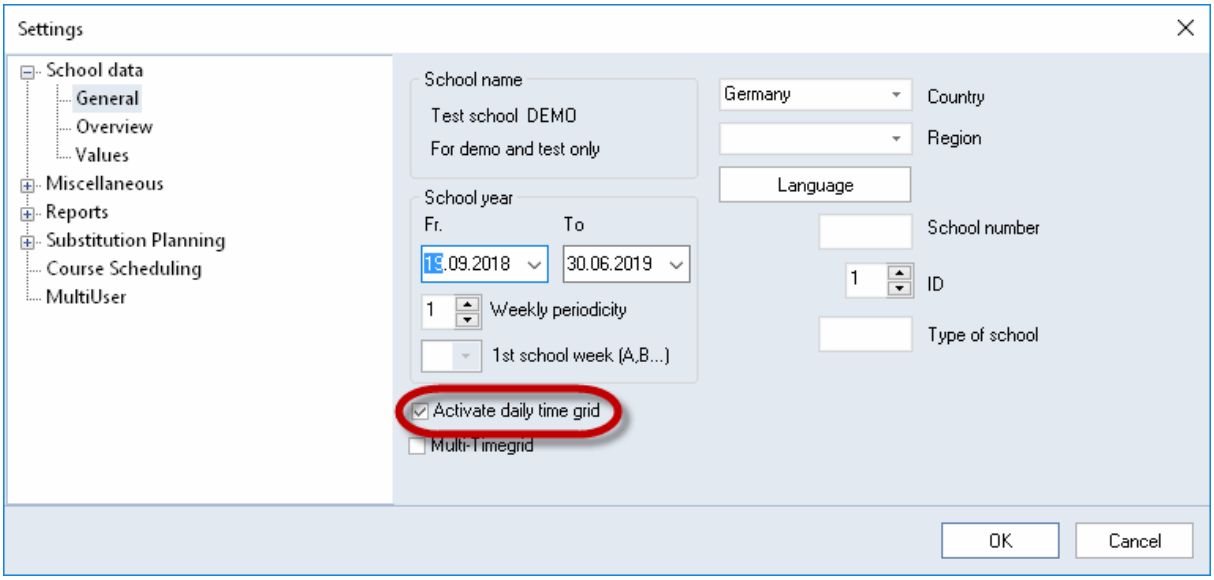
Defining a simple time grid with the same arrangement of periods on every day of the week is described in detail in the brochure 'Getting Started'.

However, it is also possible to define individual time grids for every day of the week, which is described in the following chapter: *Daily time grid* .

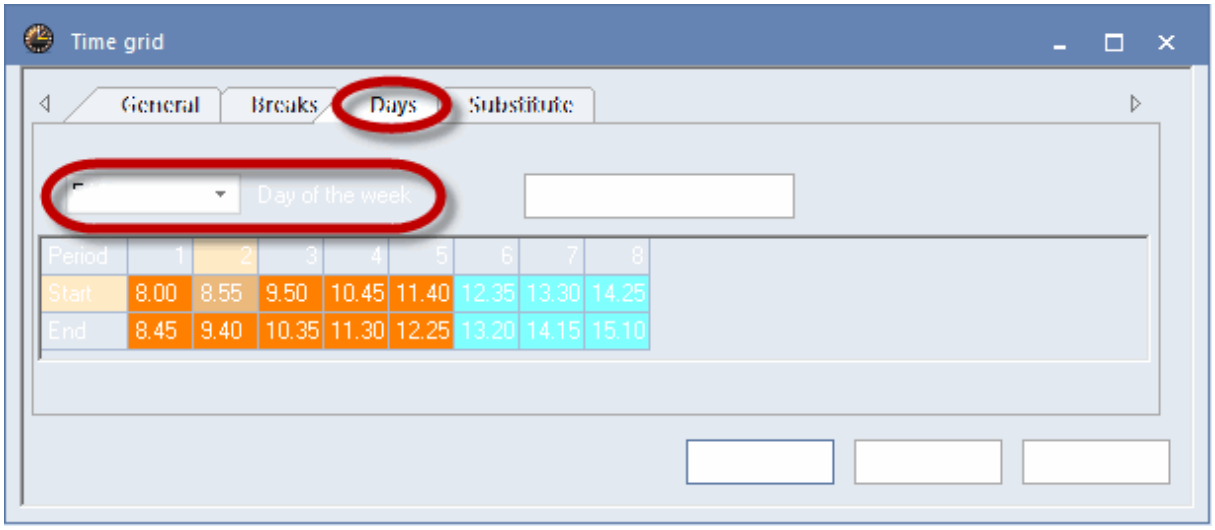
6.4.1.1 Daily time grid

Untis presumes that every day of the week has the same arrangement of periods.There are, however, schools which have a different time grid every day.

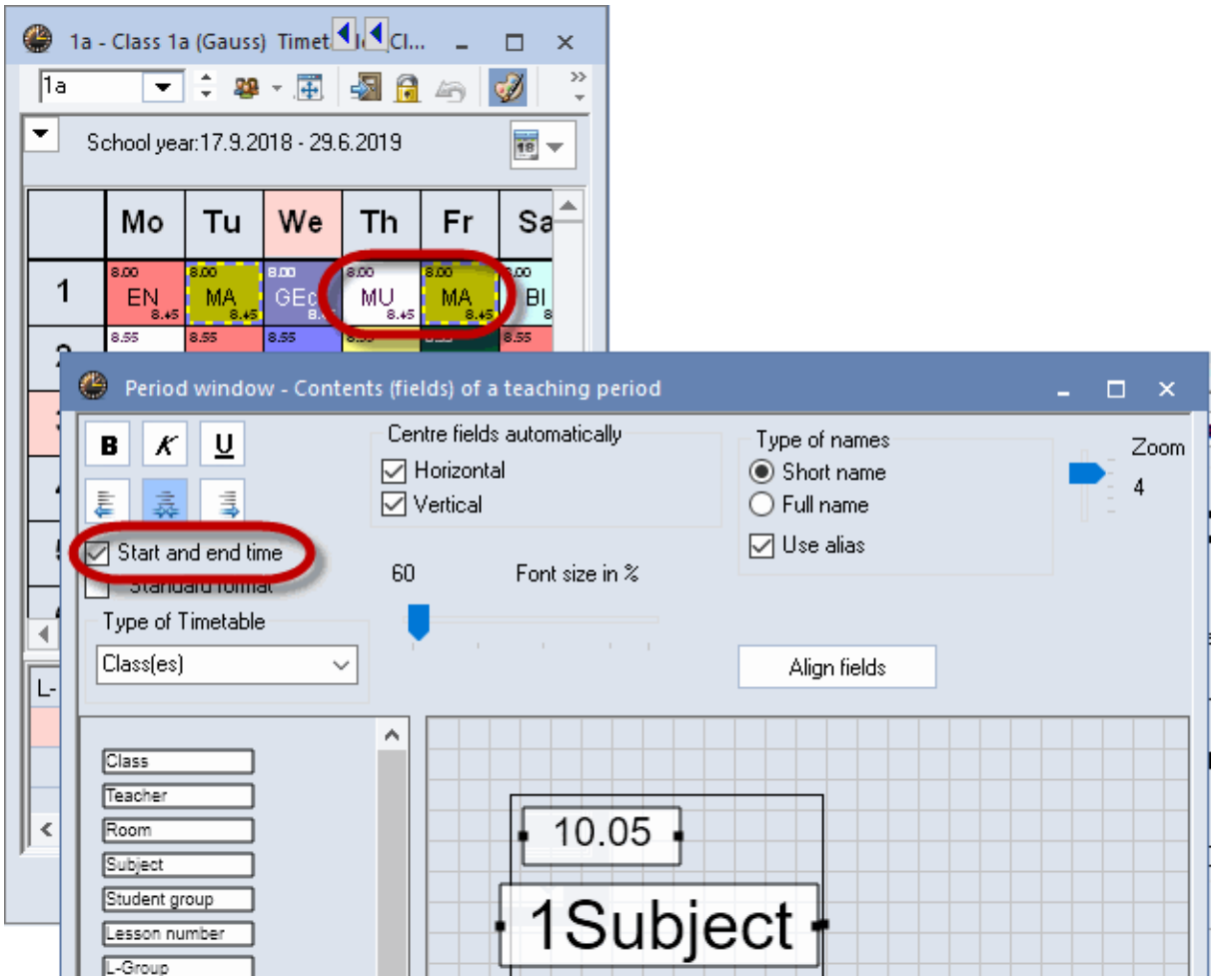
In this case you need to go to the *Start* tab, open the 'Settings', go to the section *School data* and check under *General* the option 'Activate daily time grid'.



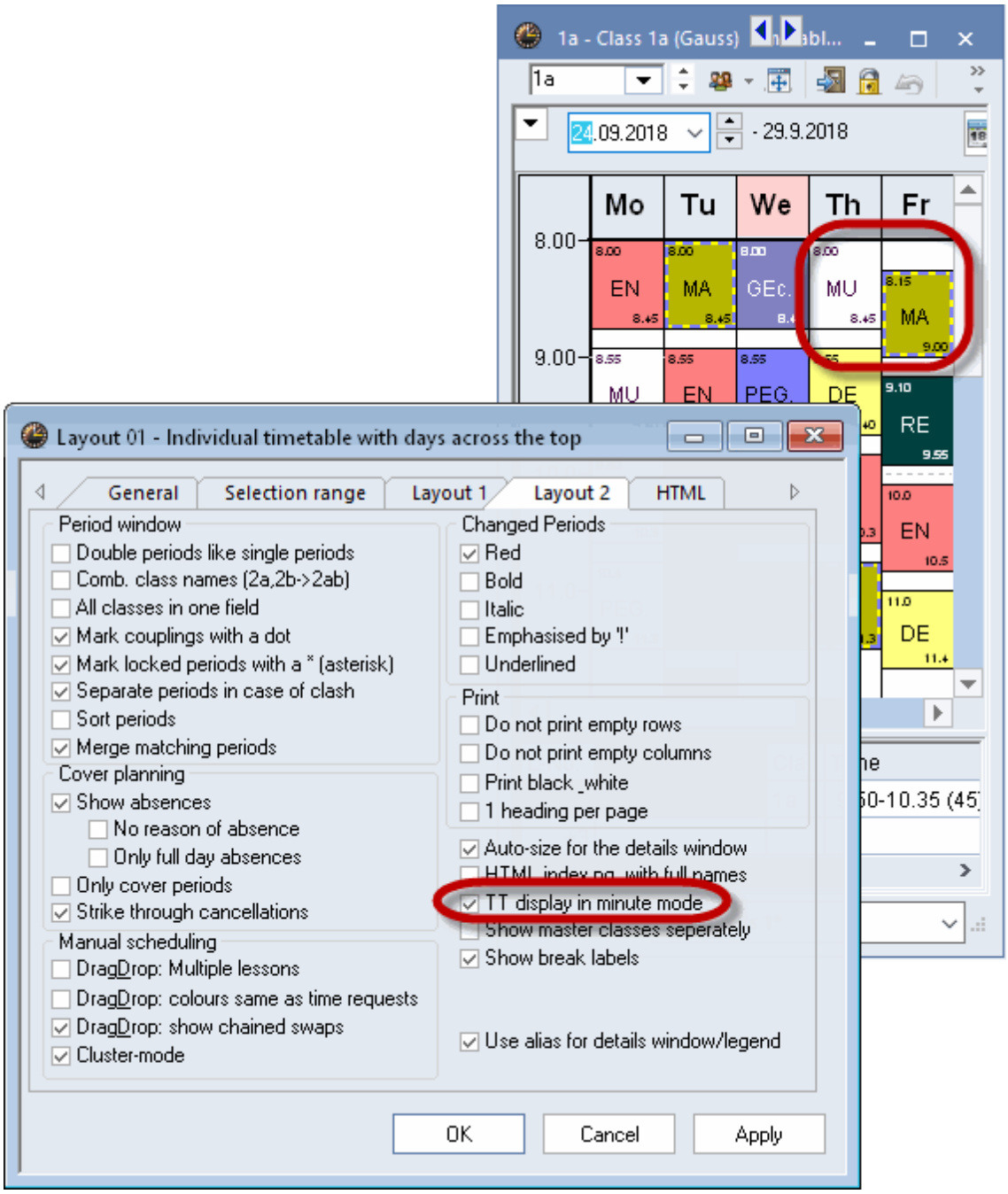
When you have confirmed with <Ok> and closed the window, an additional tab called 'Days' appears in the time grid ('Settings | Time grid').



Choose one of the days from the list (in our example: Friday) and change the start and end times of the periods.



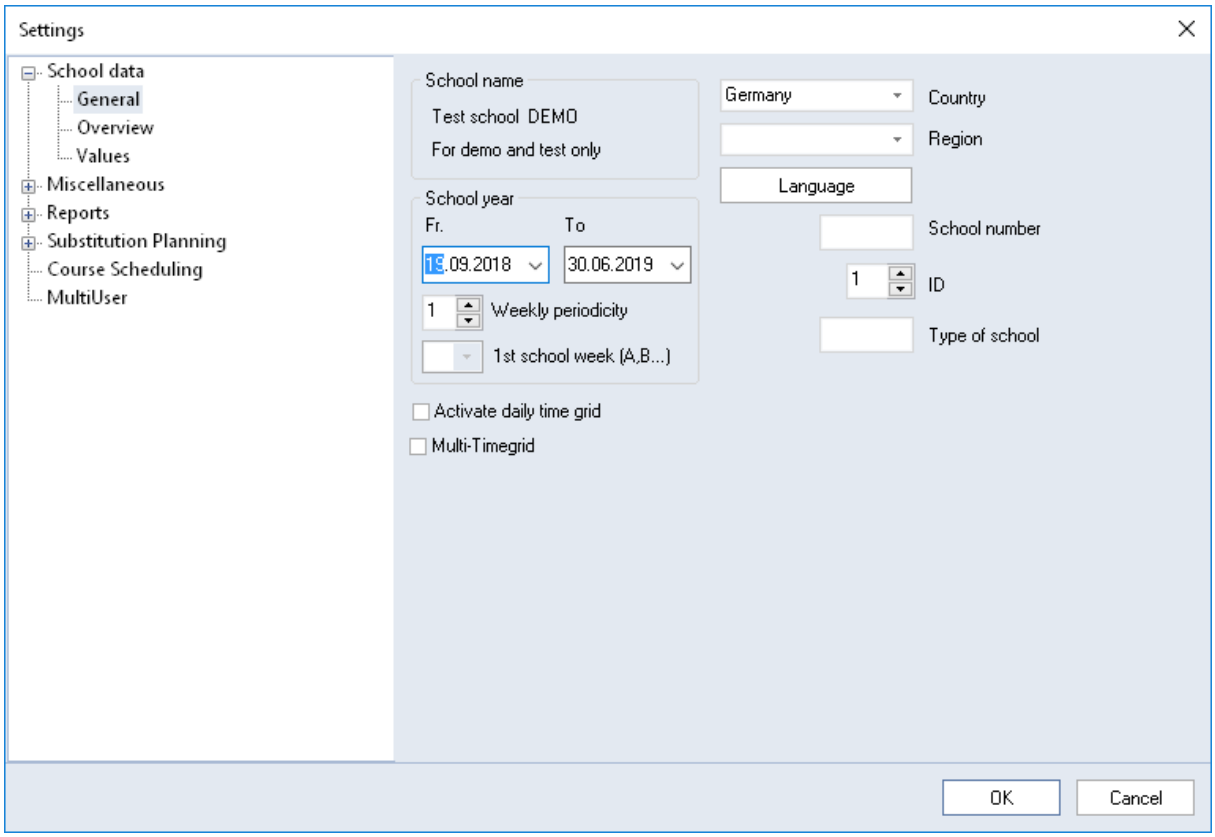
The different times are visible, if you activate 'Start and end time' display under <Timetable settings>



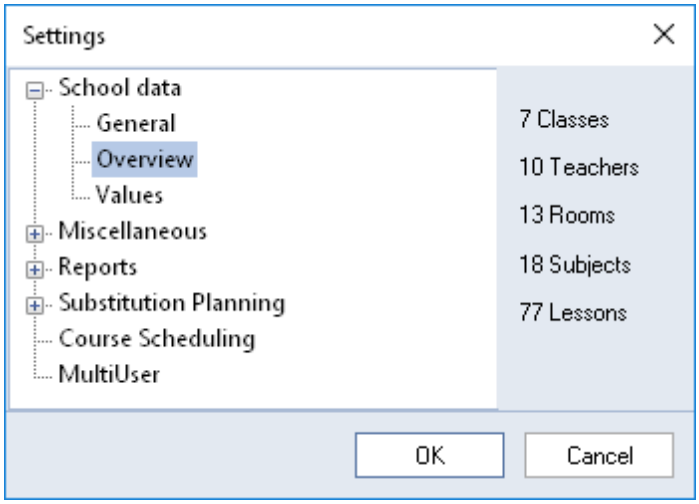
or display the timetable in minute mode ('Layout 2' tab).

6.4.2 School data

In the *School Data* section under *General* you can enter details such as the start and end date of the school year, country, region and type of school. The details entered in this window are required for a number of different (statistical) processes and calculation methods.



The item *Overview* provides an overview of the number of classes, teachers, rooms and lessons at your school.

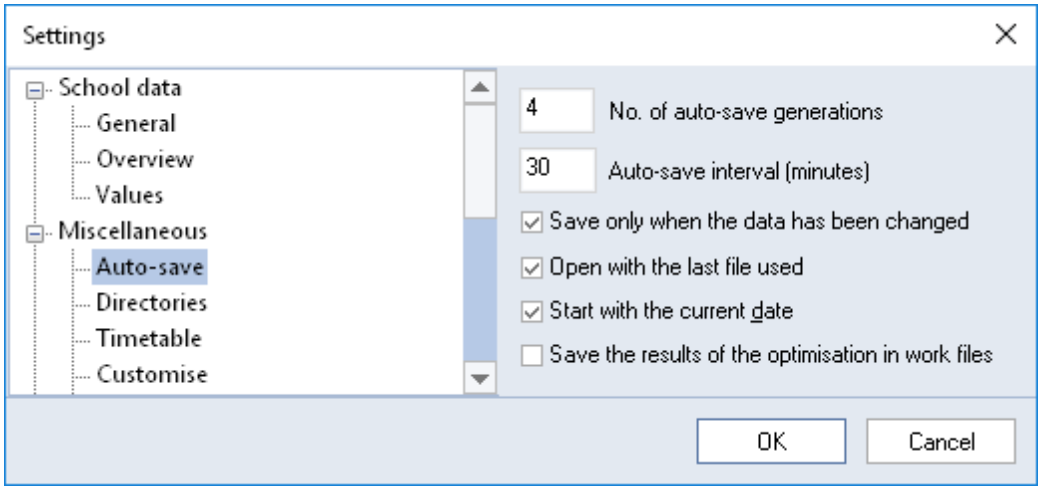


6.4.3 Section Miscellaneous

6.4.3.1 'Auto-save'

Here you can specify the interval at which Untis should automatically save data and how many backup

generations should be archived. The settings in the figure mean, for example, that Untis should save the data every 30 minutes and use four generations of backup. These data are saved in files Save1.gpn, Save2.gpn, Save3.gpn and Save4.gpn. The most current data are always in file save1.gpn and the oldest – in relative terms – in file save4.gpn. In order to avoid identical save files being created we would recommend that you check the option 'Save only when the data has been changed'.



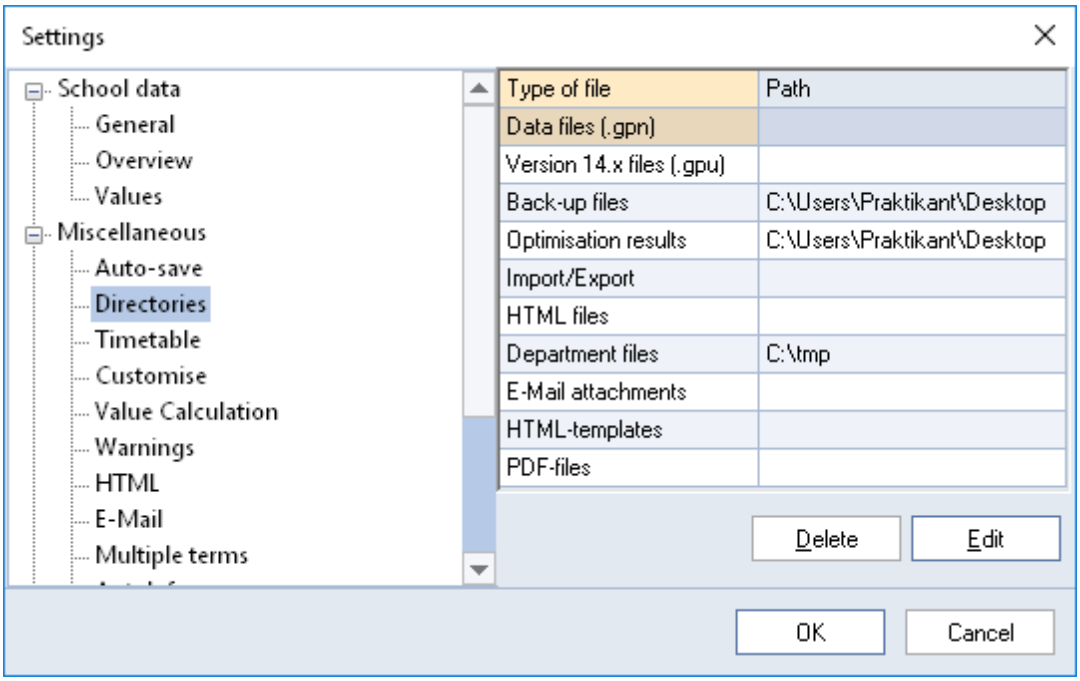
When you check the option 'Open with the last file saved', Untis will automatically load the last file to be processed. You can prevent this happening by holding <SHIFT> pressed when launching Untis.

In addition, the option 'Start with current date' also allows you to determine whether windows in which it is possible to select the date should be opened with the current date or with the date last saved.

You can view the results of optimisation in the optimisation dialogue immediately after the optimisation run. Check the option 'Save results of the optimisation in work files' if you wish to have these timetables available after you exit Untis. This causes the result to be saved in so-called work files.

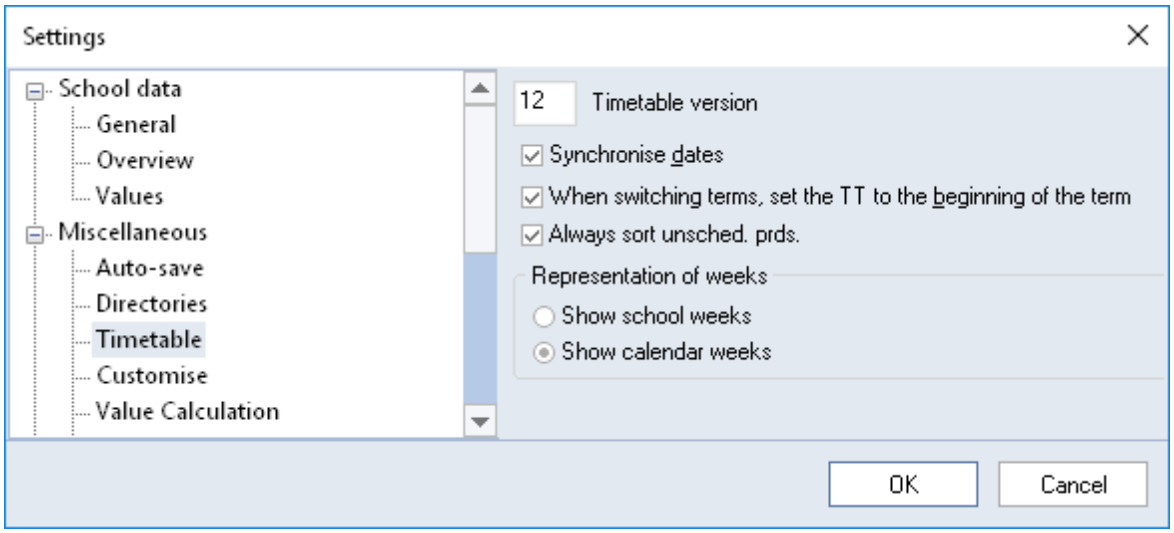
6.4.3.2 'Directories'

In this section you can specify various standard paths. We would recommend that you create your own directories for your backup and work files (i.e. the files containing the different timetables of your school saved during optimisation) and enter the paths on this tab.



6.4.3.3 'Timetable'

The settings of this section are relevant for a number of different timetable functions.

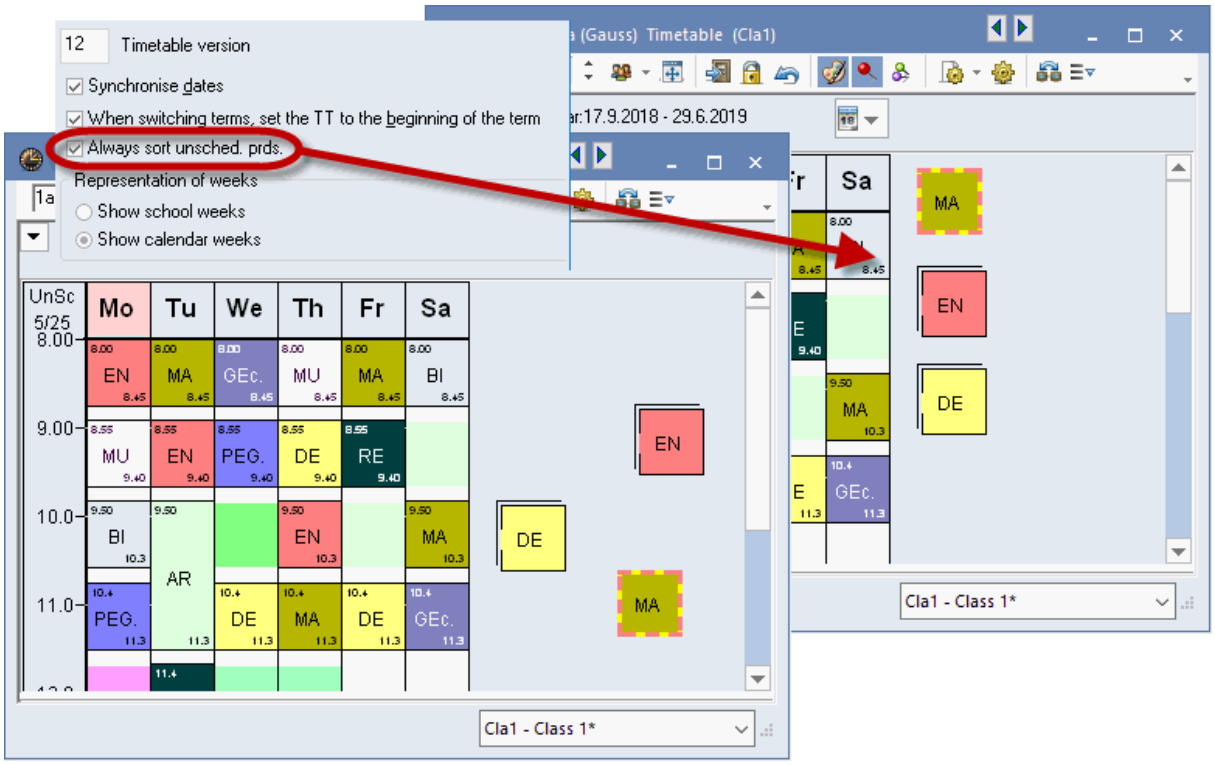


For instance, the timetable version number you can assign to each timetable version will be included on all printouts (please refer to chapter *Timetable display*).
The *Synchronise dates* option allows you to specify, if a date change implemented on one particular timetable should also apply to *all* other timetables open on the screen. This function is particularly important when using the *Multi-Week Timetable* and the *Multiple Term Timetable* modules

The option 'When switching terms, set the TT to the beginning of the term' is only active for use with the

Multiple Term Timetable module.

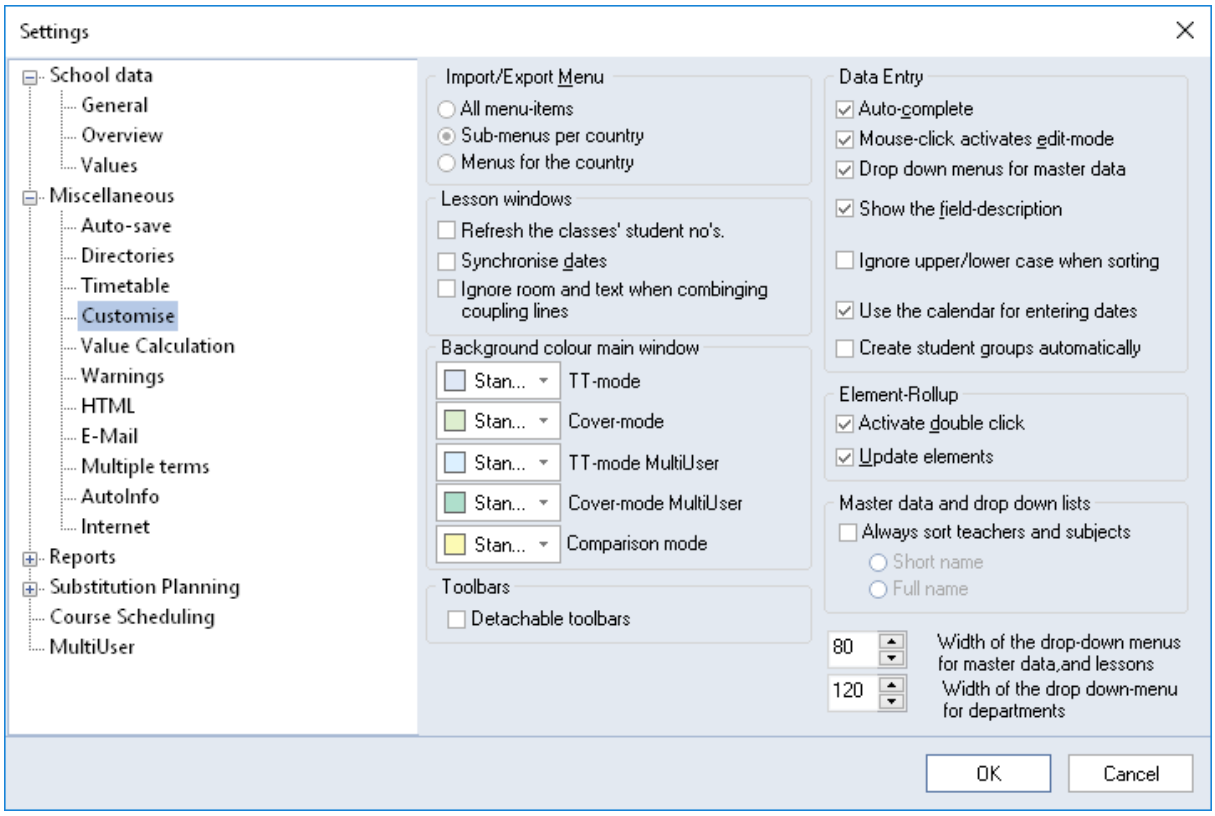
The option 'Always sort unscheduled periods' refers to the periods available for scheduling next to the timetable you work on. When you check this box the unscheduled periods will be displayed right to the timetable and it will not be possible to move these periods manually.



The last two options under 'Representation of weeks' are only active, if you hold a licence for one of the following modules: 'Multi-Week Timetable', 'Cover scheduling' or 'Calendar-Year Planning'. Here you have the option to define whether you want school weeks or calender weeks to be shown in the timetables.

6.4.3.4 'Customise'

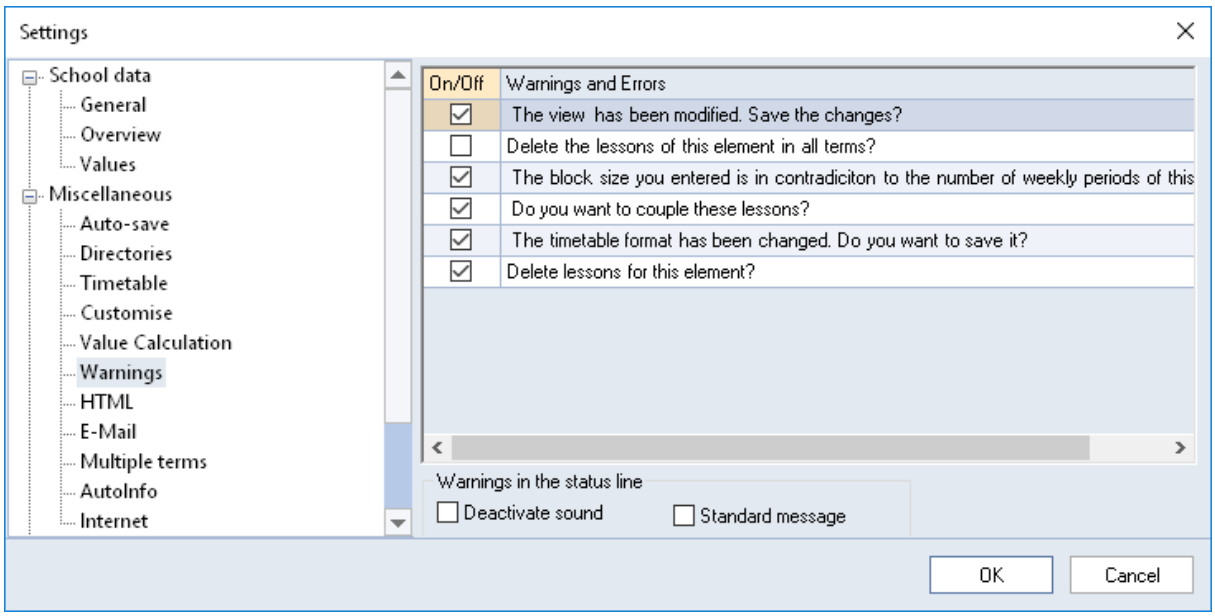
In this chapter you can customise how you want to work with Untis by defining several options according to your needs.



The options for the **data entry** block are described in the following section Input assistance.

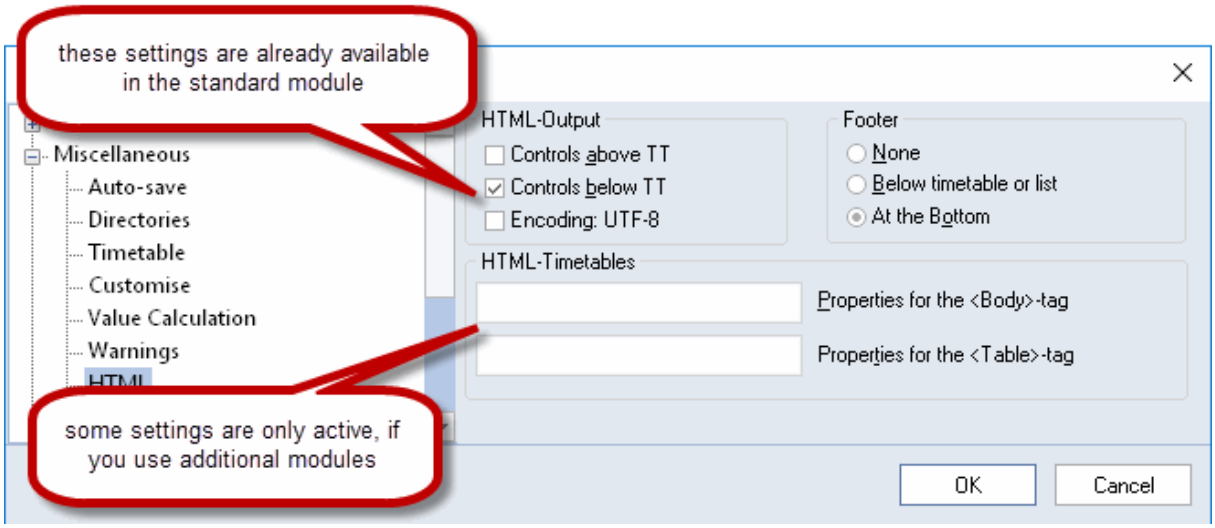
6.4.3.5 'Warnings'

Several warning messages by Untis can be turned off. Here you can individually activate and deactivate warnings.



6.4.3.6 'HTML'

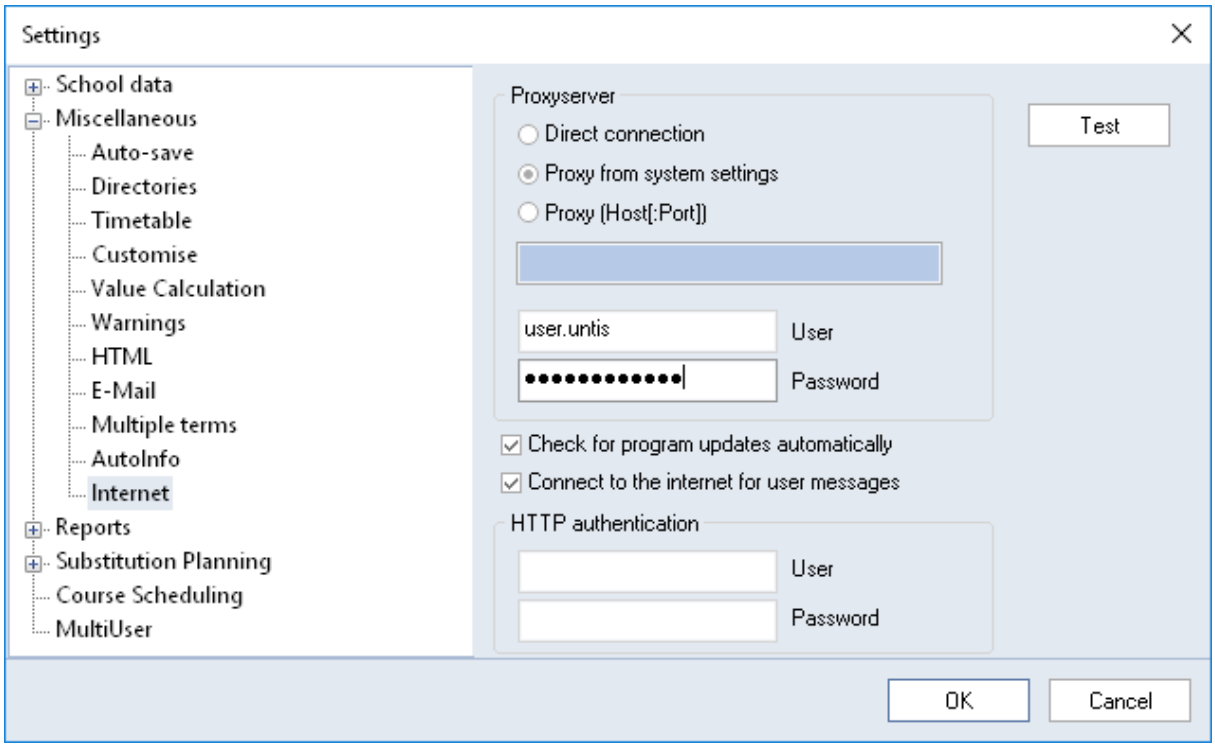
In this section you can define different settings for HTML outputs of timetables.



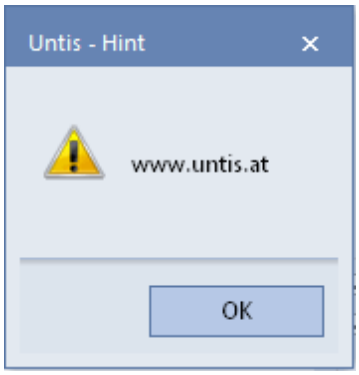
If you use other modules in addition to the standard module, e.g. the Info module, there are also additional settings available for you.

6.4.3.7 'Internet'

Untis allows you to receive information about version updates. In addition to activating the option 'Automatically check the internet for program updates', you must also specify how your computer accesses the Internet - direct or via a proxy server. Please contact your system administrator if you are uncertain about these settings.



You can use the <Test> button to test whether the settings you have made are correct and whether Untis can reach the Gruber&Petters web server. The following message pops up when Untis was successful in connecting with the server.

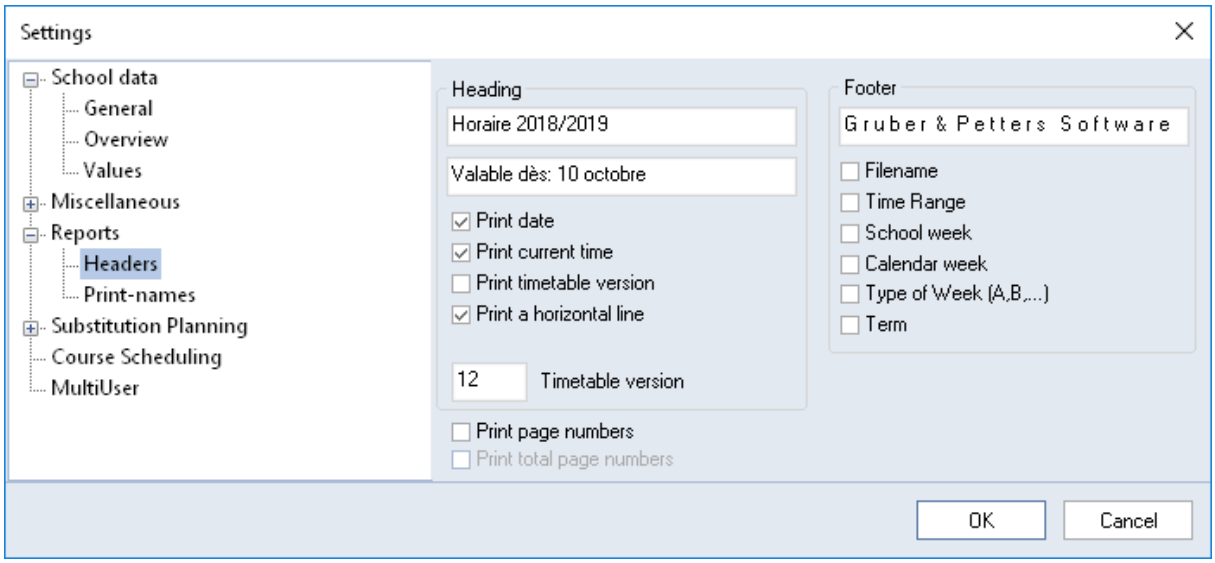


The option 'Connect to the internet for user messages' is used to specify whether you wish to receive messages from your local Untis partner and from Untis directly.

HTTP authentication is generally not required.

6.4.4 Section Reports

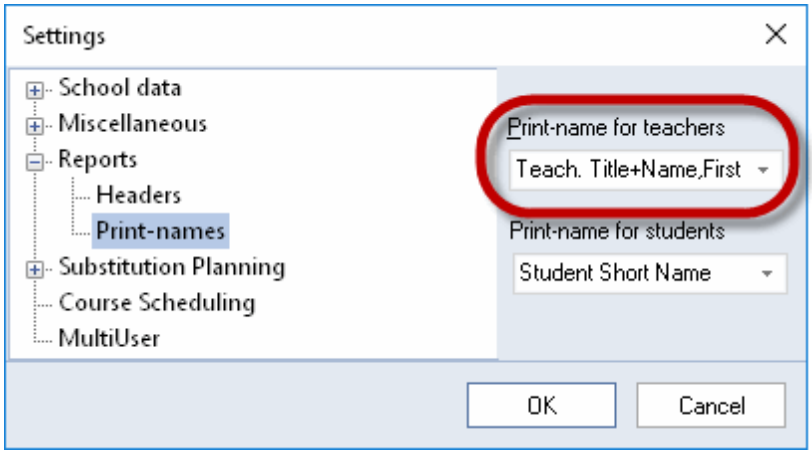
6.4.4.1 Headers

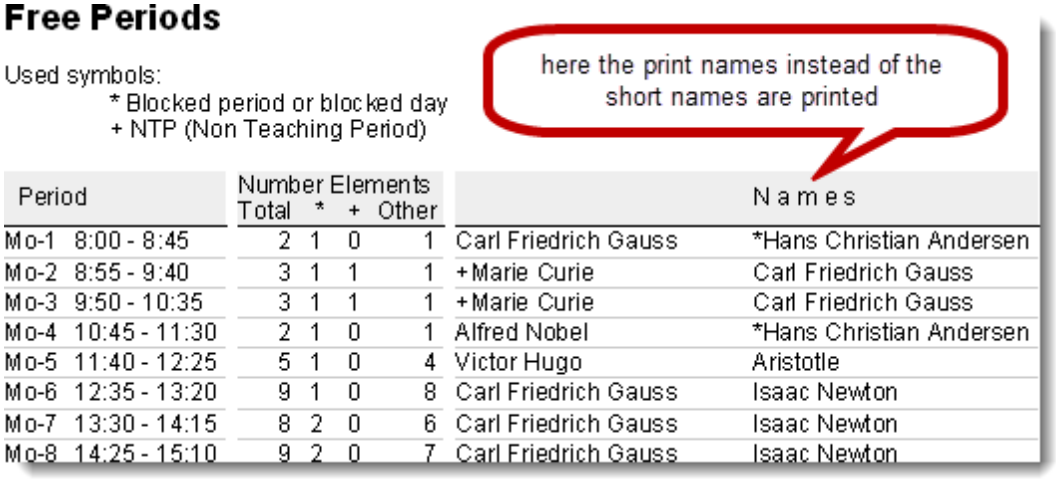


The options you can define here are mainly for headers (headings) and footers of printouts. For a detailed description please refer to chapter 'Timetable print outs'.

6.4.4.2 Print-names

With print-names, Untis provides you with the easy-to-use possibility to replace shortnames in reports (and also in timetables) with pre-defined combinations of first and surname. In the example below the combination 'Title Name First Name' was selected for the printout.





Free Periods

Used symbols:
* Blocked period or blocked day
+ NTP (Non Teaching Period)

here the print names instead of the short names are printed

Period	Number Elements Total	*	+	Other	Names	
Mo-1 8:00 - 8:45	2	1	0	1	Carl Friedrich Gauss	*Hans Christian Andersen
Mo-2 8:55 - 9:40	3	1	1	1	+Marie Curie	Carl Friedrich Gauss
Mo-3 9:50 - 10:35	3	1	1	1	+Marie Curie	Carl Friedrich Gauss
Mo-4 10:45 - 11:30	2	1	0	1	Alfred Nobel	*Hans Christian Andersen
Mo-5 11:40 - 12:25	5	1	0	4	Victor Hugo	Aristotle
Mo-6 12:35 - 13:20	9	1	0	8	Carl Friedrich Gauss	Isaac Newton
Mo-7 13:30 - 14:15	8	2	0	6	Carl Friedrich Gauss	Isaac Newton
Mo-8 14:25 - 15:10	9	2	0	7	Carl Friedrich Gauss	Isaac Newton

6.4.5 Licence Data

Entering licence data is described in detail in the brochure 'Untis, Getting Started'.

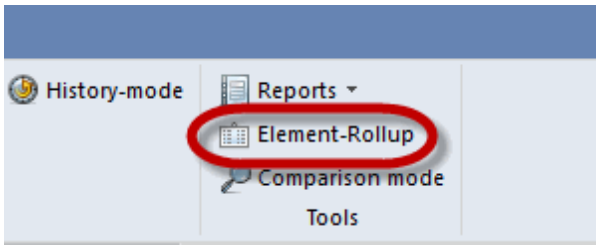
6.5 Input assistance

6.5.1 Element-Rollup

You may use the Element-Rollup window in order to make entries in lists viadrag&drop.

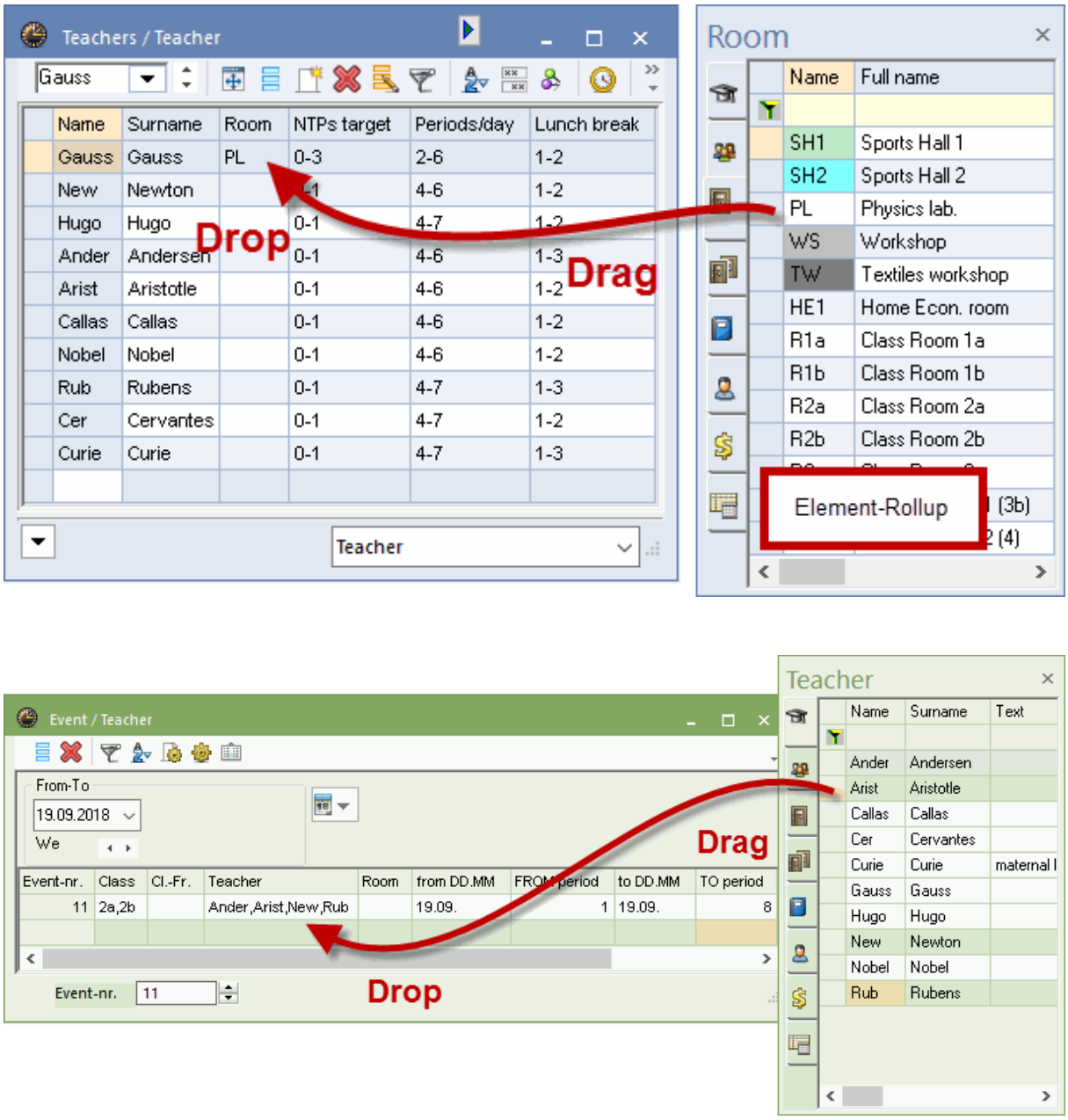
Example:
Allocations of rooms to teachers.

Open the file Demo.gpn
Open the Element-Rollup via the *Start* tab.



Activate in the Element-Rollup the room tab.

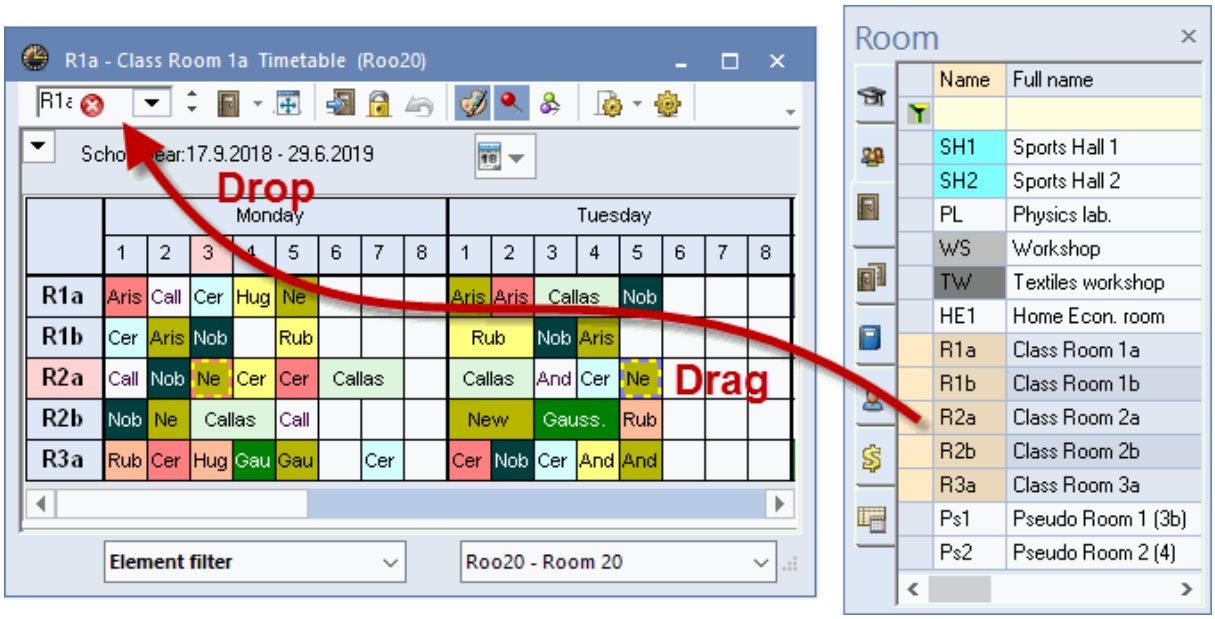
Select in the Element-Rollup a room, in the example below it is the pyhsics lab. and *drag* the room to the teacher master data window. Drop it in the field room of teacher Gauss.



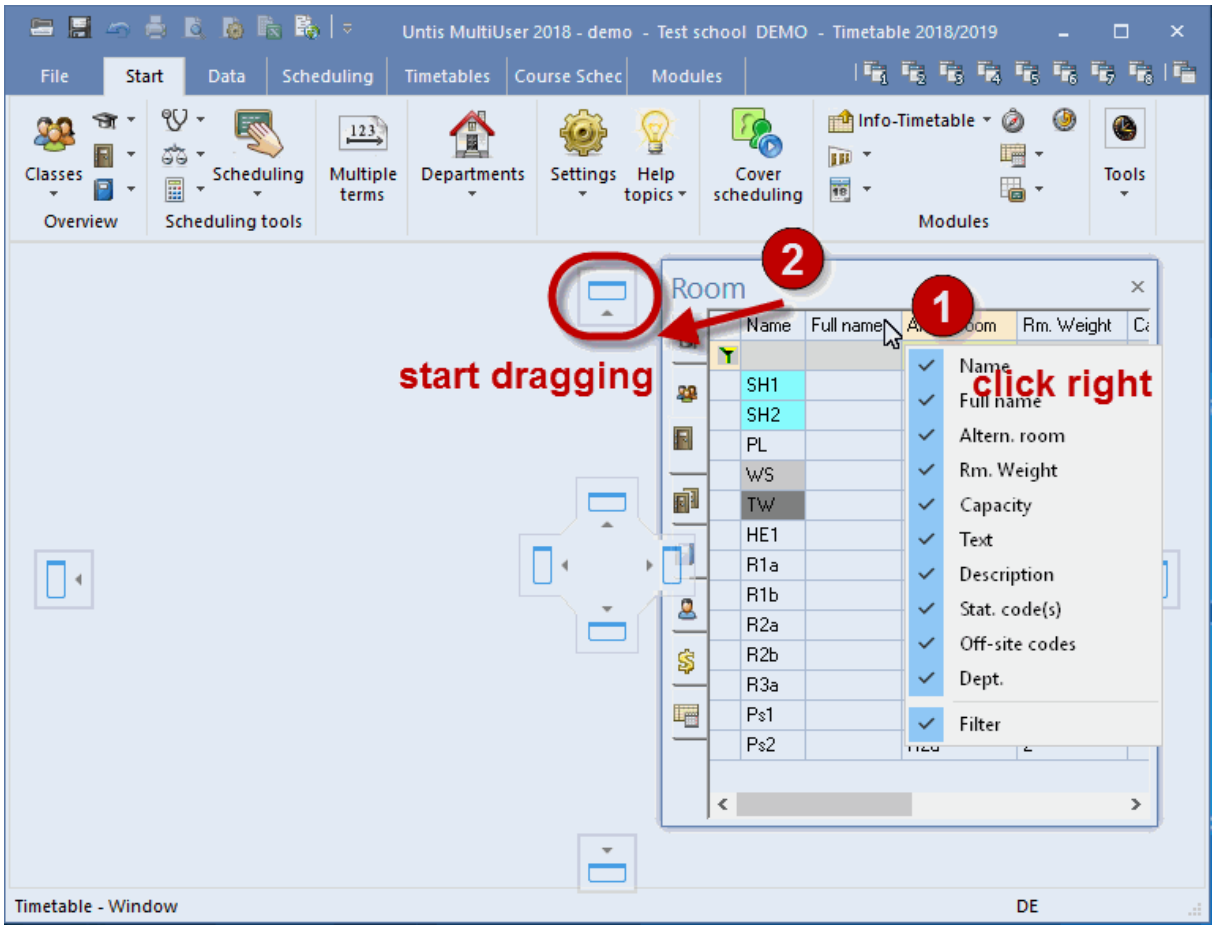
You now have allocated the physics lab. to teacher Gauss via drag&drop.

Note:
Please note that you can dock the Element-Rollup to one of the 4 edges of the Untis main window.

As soon as you move the Element-Rollup on your screen, symbols directing to the 4 edges of the window appear at the edges (and in the centre).



Dropping the Element-Rollup at one of the symbols fixes it to the respective edge.

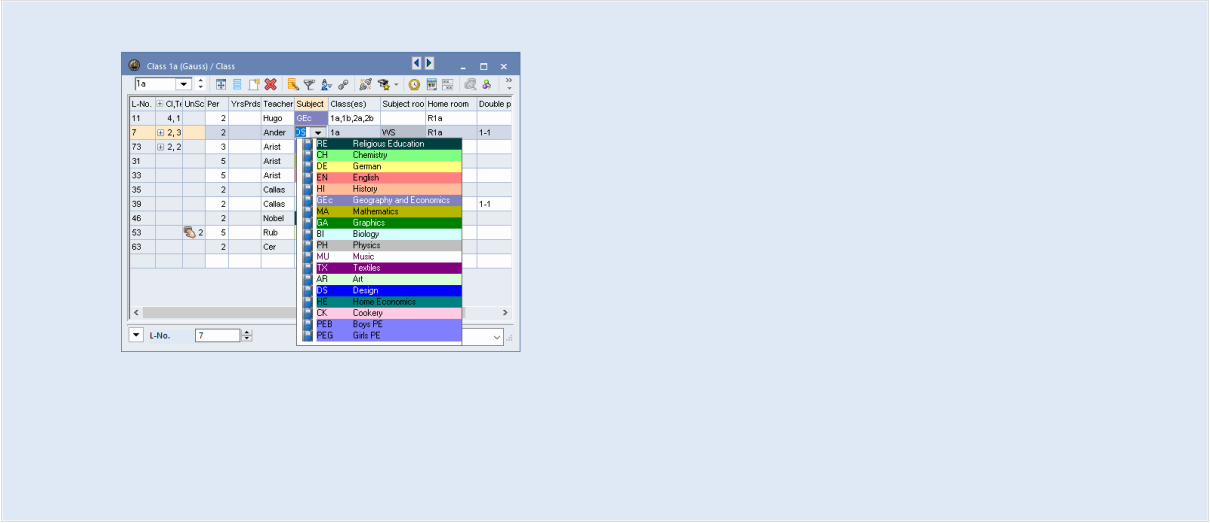


Please note that you can add (or delete) further columns via the context menu of your right mouse

button.

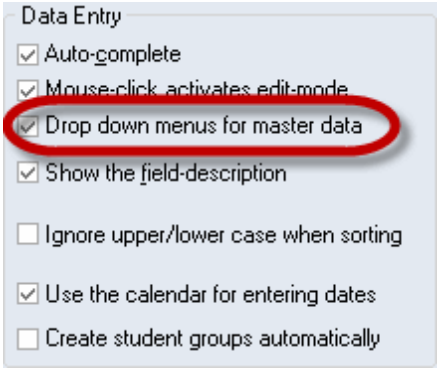
6.5.2 Selection lists

Selection lists are activated in the master data and lesson lists by default.



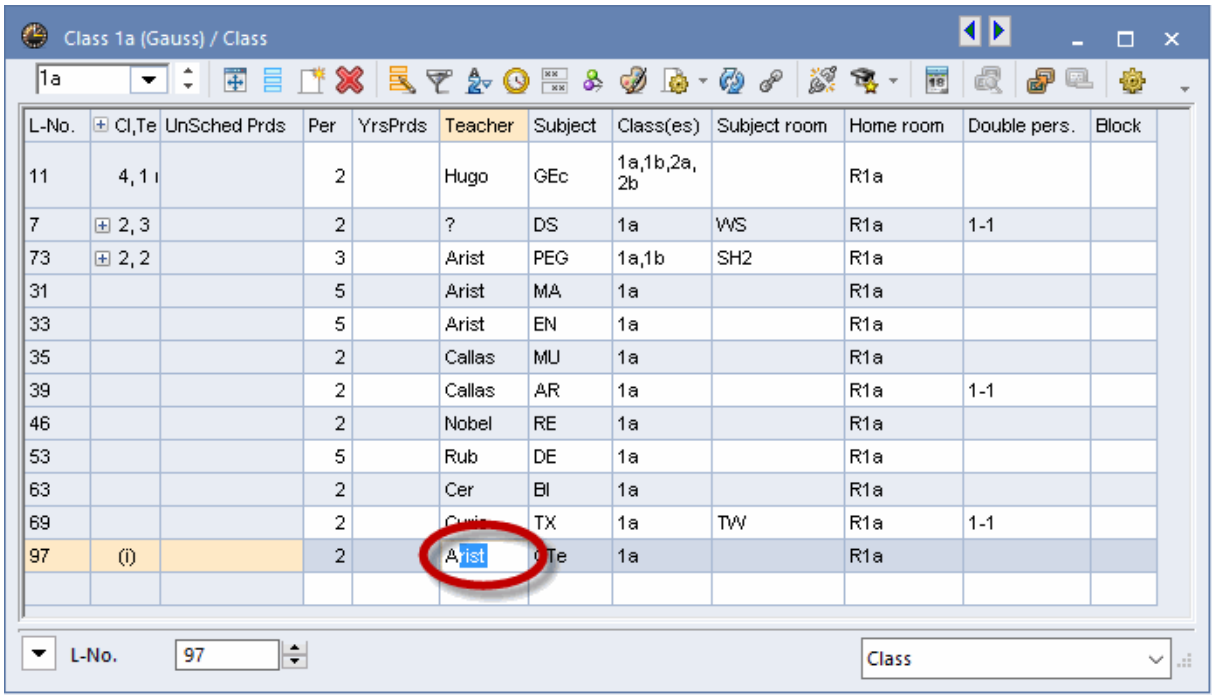
With the help of these selection lists you may choose available elements in, for example, the lessons window when entering data.

If you do not want to use selection lists, just deactivate the respective option in the *Settings* , section *Miscellaneous* , *Customise* :

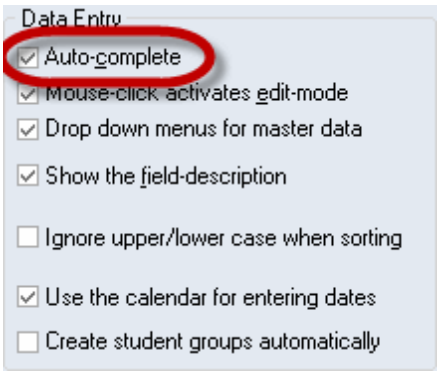


6.5.3 Auto-complete

If you deactivated the selection lists, Untis tries to complete the master data you are entering in the fields while you are typing them by suggesting suitable elements.

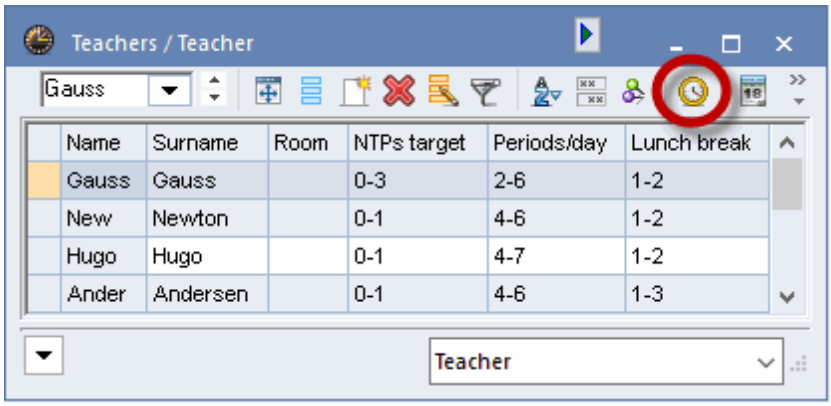


You also can deactivate this behaviour in the *Settings* , section *Miscellanious* , *Customise* .



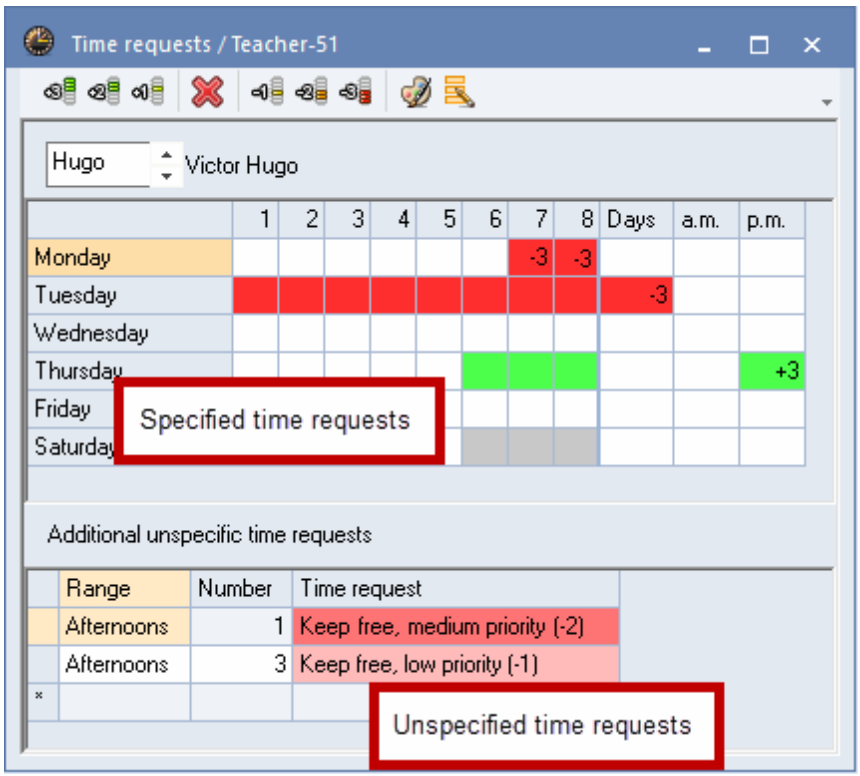
6.6 Time Requests

Time requests are an important element of the Untis timetabling software. Time requests can be entered for master data elements and for lessons. The button for this function can be found on the tool bar of the master data or lesson window.



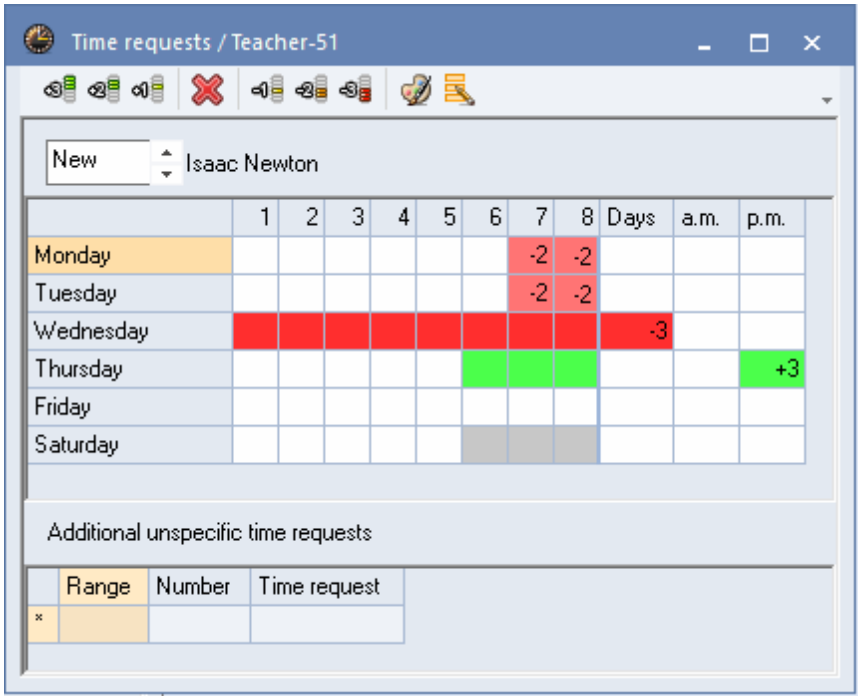
Time requests are graded from '- *3* ' (*completely blocked*) to '+ *3* ' (core time) which corresponds to a very strong desire to for work.

There are two different categories of time requests *specific time requests* and *unspecified time requests* . Specific time requests refer to specific days and periods. Unspecified time requests, by contrast, are requests where only the duration and the type of request (e.g. 1 day of '-3') are specified and where the selection of the day or period is up to the software program.



6.6.1 Specified time requests

Here you see the time request window of the teacher Newton:



The following time requests are active:

Monday and Tuesday, periods 7 and 8: '-2'. If possible, Newton whould *rather not* have lessons scheduled in these periods.

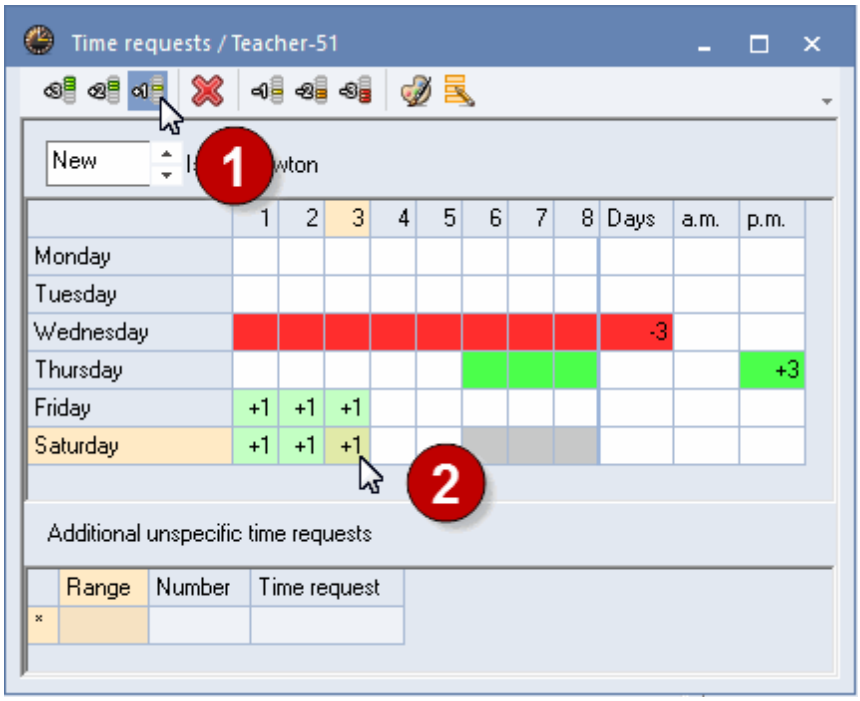
Wednesday, all day: '-3'. This means that Wednesday is definitely *blocked* , i.e. teacher Newton is not available to teach on Wednesdays.

Thursday (pm): '+3'; Newton wants to teach periods in the afternoon (periods 6 – 8).

Please note that time requests for entire days and half-days can be entered on the right-hand side of the time grid (bottom part of window). This speciality will be described later in detail.

Entering time requests

If you want to enter new time requests, click on the respective button and highlight the respective cells.



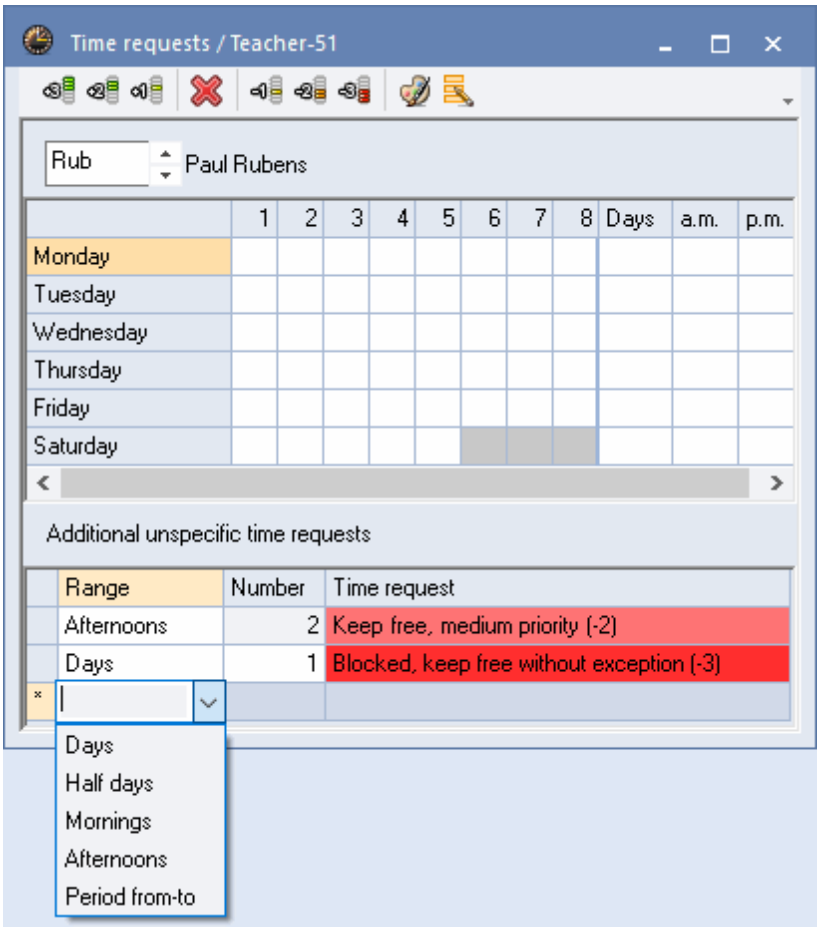
Please not that the button remains active until you click on it again, i.e. you can enter additional time requests of the same kind by clicking on the respective fields in the time request grid.

Delet time requests

Deletes time requests for certain periods or blocks of periods by highlighting the cells and clicking on <Delete>.

6.6.2 Unspecified time requests

In the lower part of the time request window you can enter unspecified time requests. You can select days, half days, mornings, afternoons and any period range. When selecting a time range, define the amount and priority of the time request, and optimisation will calculate the best position so that you do not need to define it yourself.



If you enter time requests for half-days in the column 'time range', the optimisation tool will decide whether to schedule the half-day in the morning or the afternoon.

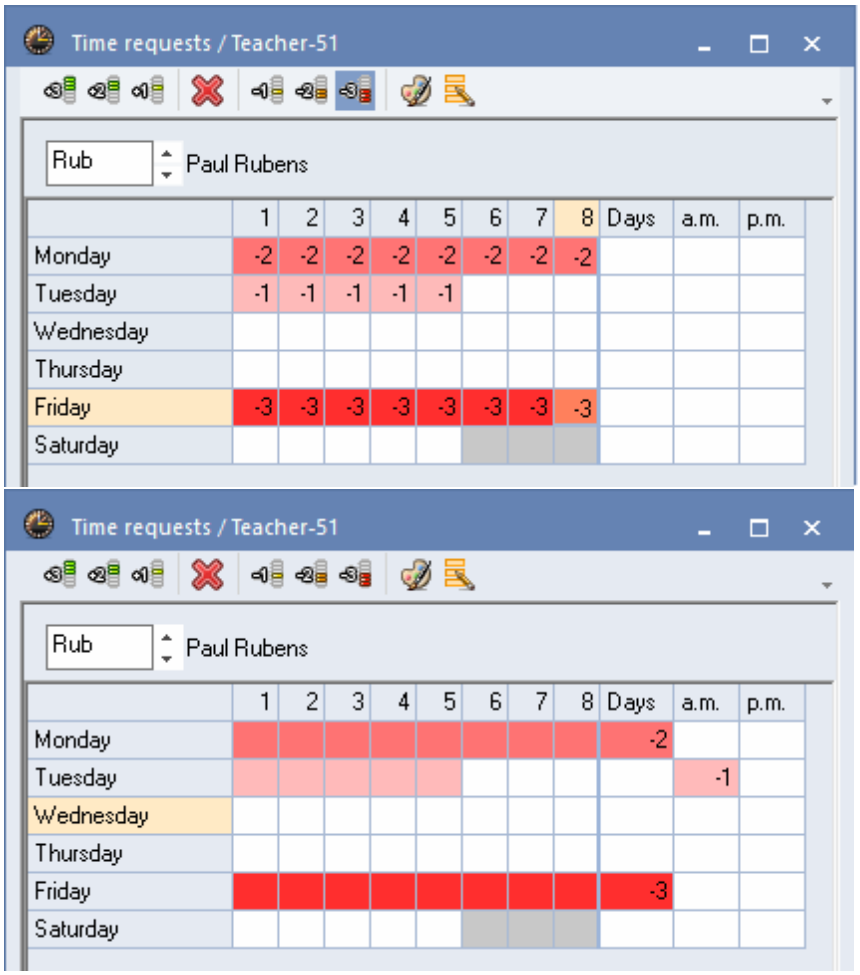
Note:
Use unspecified time requests whenever possible to allow the optimisation tool as much flexibility as possible.

Warning:
Specific and unspecified time requests are cumulative. If Tuesday, for example, is blocked with a time specified time request and an unspecified time request is entered with a priority of '-3' to keep a full day free, two complete days will be without periods – Tuesday plus an additional day.

6.6.3 Period and (Half) day requests

In the chapter ' Specific time requests ' it has already been mentioned that you can highlight (half) days in the right part of the time request window, instead of selecting several hours on the left side of the grid.

The two input methods are not totally equivalent to each other.



Please not the time requests of the two teachers AE - Einstein and Ander- Hans Christian Andersen in the example.

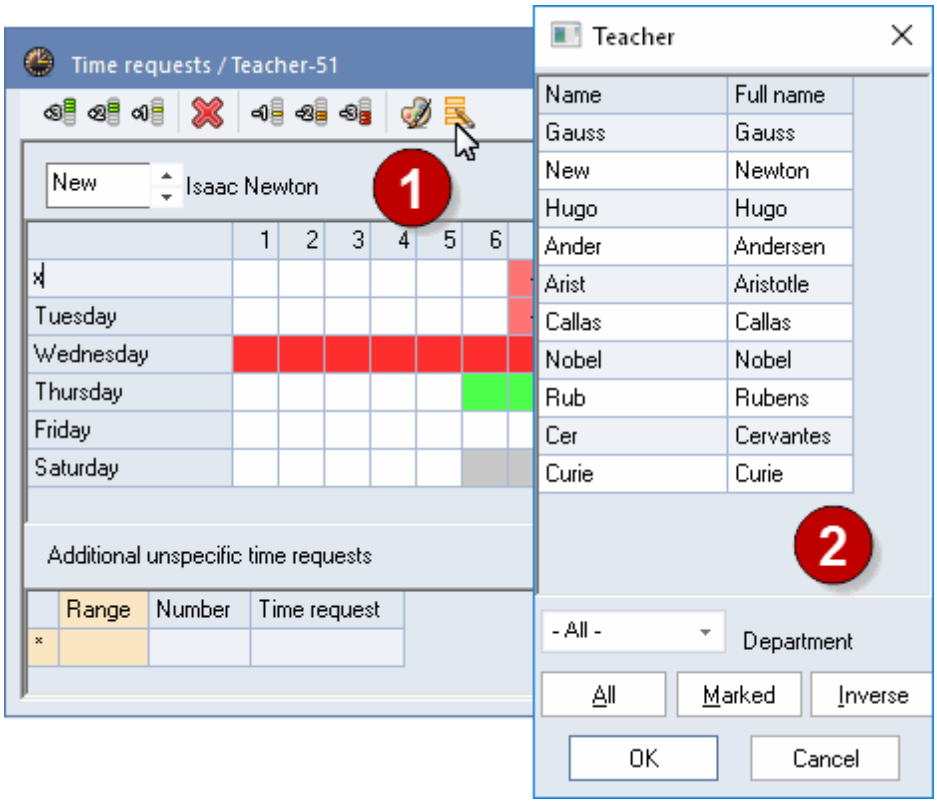
With AE all requests are entered in the left part of the grid as period requests, Ander's time requests were entered as (half-) day requests.

The *-3* -blockings on Friday are equivalent to each other for optimisation - Friday will not be scheduled. Optimisation tries to alternatively keep a half day free for the weaker entries, *-2* and *-1* of Ander, if it will not be possible to Monday or Tuesday morning unscheduled. With Einstein, optimisation only takes care that Monday all day with significance of *-2* and Tuesday morning with a significance of *-1* are kept free.

Note:
Optomisation will probably shift (Half-) day requests with -2 or -1 to another day.

6.6.4 Copying time requests

You can copy the time requests of an element to the clipboard and paste them in different elements (<Ctrl>+C, <Ctrl>+V). It is also possible to copy all the time requests of an element to any other in the time request window using the <Serial Change> option

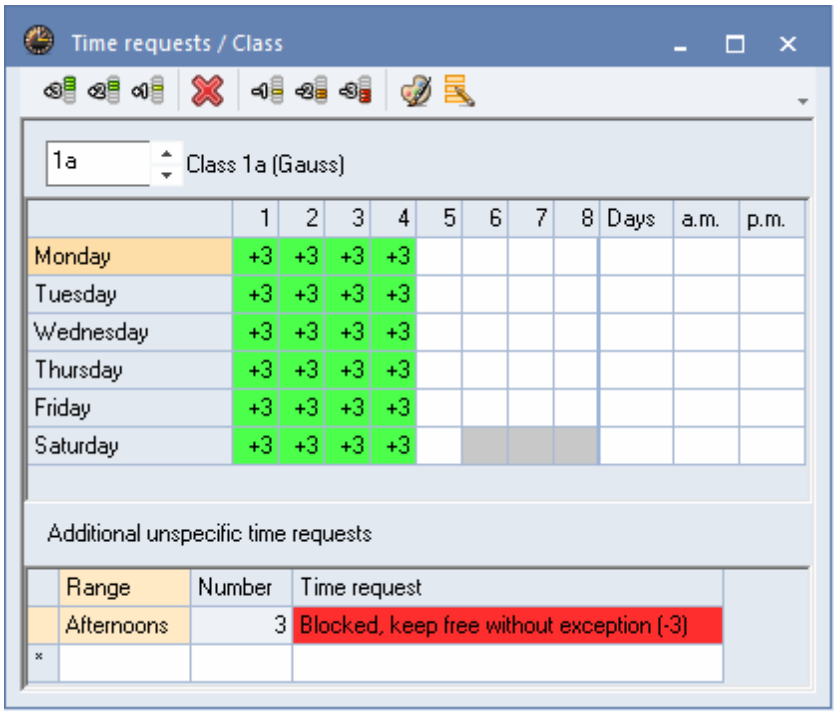


6.6.5 Deleting time requests

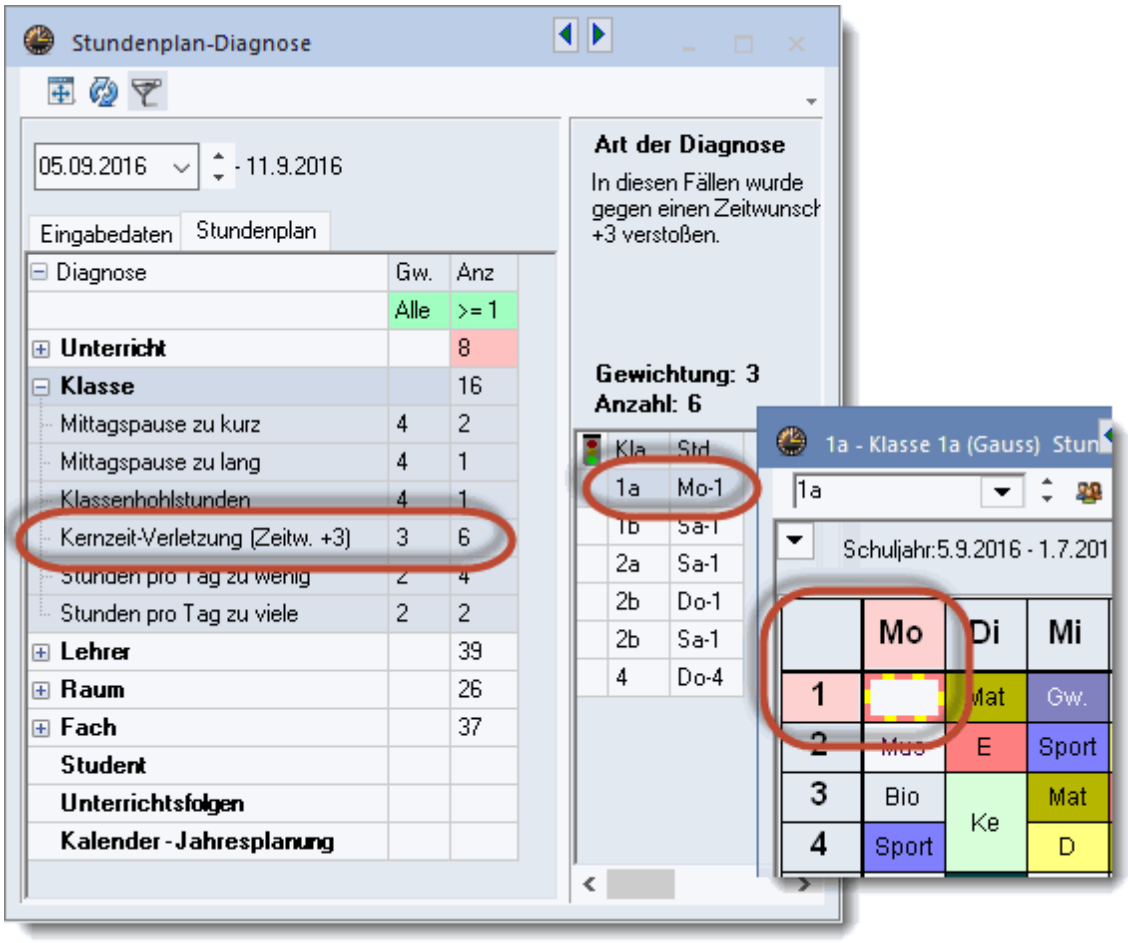
You can also use the Serial Changeoption to delete all time requests. Remove all time requests from one element and then copy and paste these settings to all other elements where you wish to delete time requests.

6.6.6 Core time

If you would like Untis to schedule morning lessons first, enter a time request of '+3' for some of the morning periods (usually the first 4 or 5) under classes. Use the 'Change time requests' function described above.

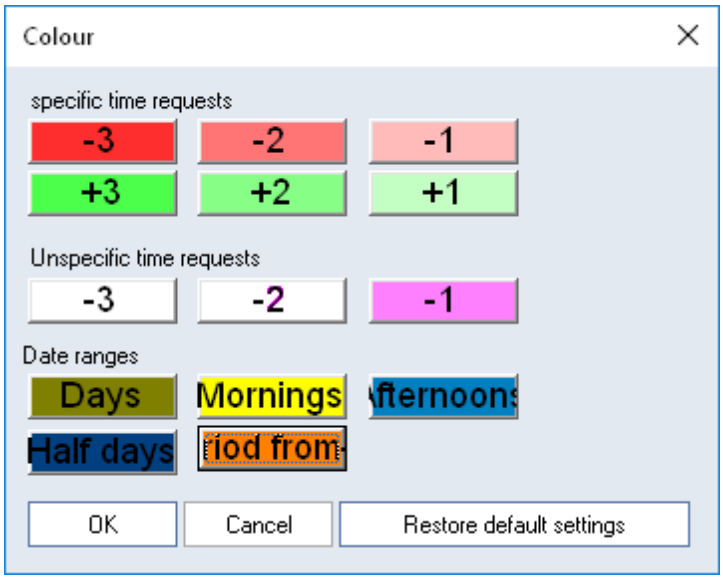


The time request '+3' defines the so-called *core time* . The optimisation tool *must* try to schedule these ranges in the grid of the elements, which have entered time request '+3'. The Untis optimisation algorithm regards a core time violation as a serious offence which is displayed in the optimisation window, as well as a separate diagnosis item. Please make sure that the sum of core times (+3) per class needs to be smaller than the sum total of periods defined for this class.

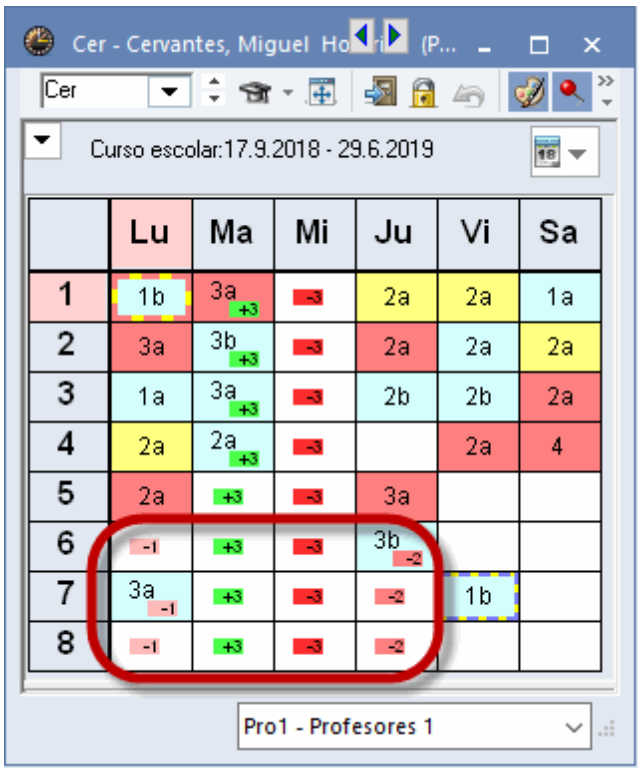


6.6.7 Colour codes

Use this function to customise the colour codes used to highlight the different time requests on the timetable or in the scheduling dialogue.



This is very useful for persons who suffer from *dyschromatopsy* (red green colour blindness),and you can differentiate specific from unspecified time requests.



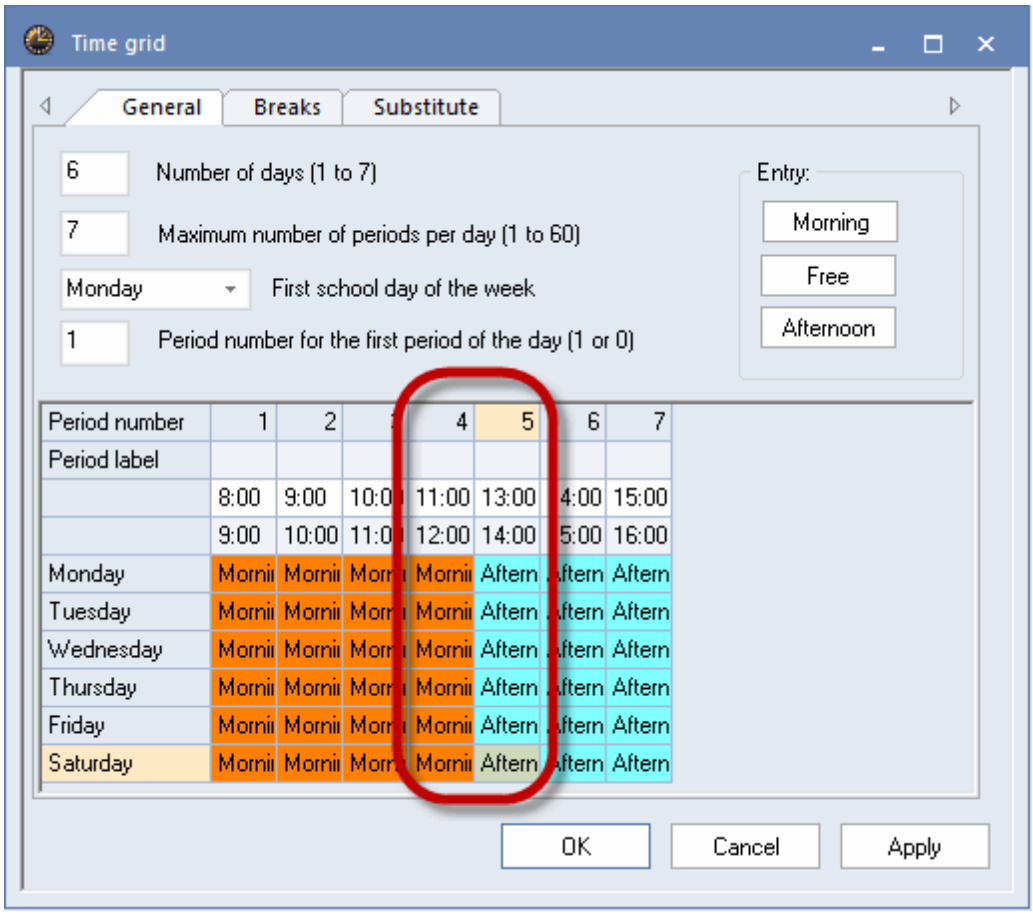
6.7 Lunch breaks

You can specify the exact times of a lunch break between morning and afternoon lessons for classes and teachers using the *time grid*

You have the following lunch break options:

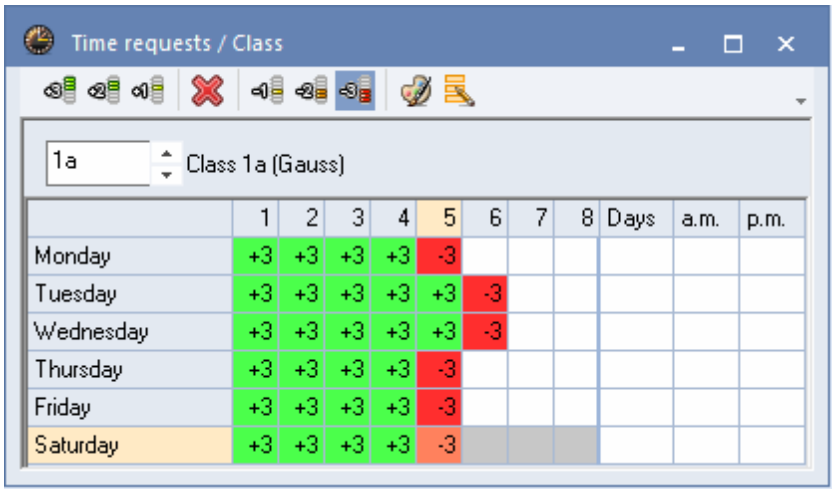
Specify a uniform lunch break for the entire school (e.g. 12:00 - 13:00).

In the time grid, enter 12:00 as the time when the last morning lesson should end and 13:00 as the time the first afternoon lesson should start. The software will treat the time between 12:00 and 13:00 as a lunch break (not as a period).



Specify element-specific lunch break blocks (time request '- 3').

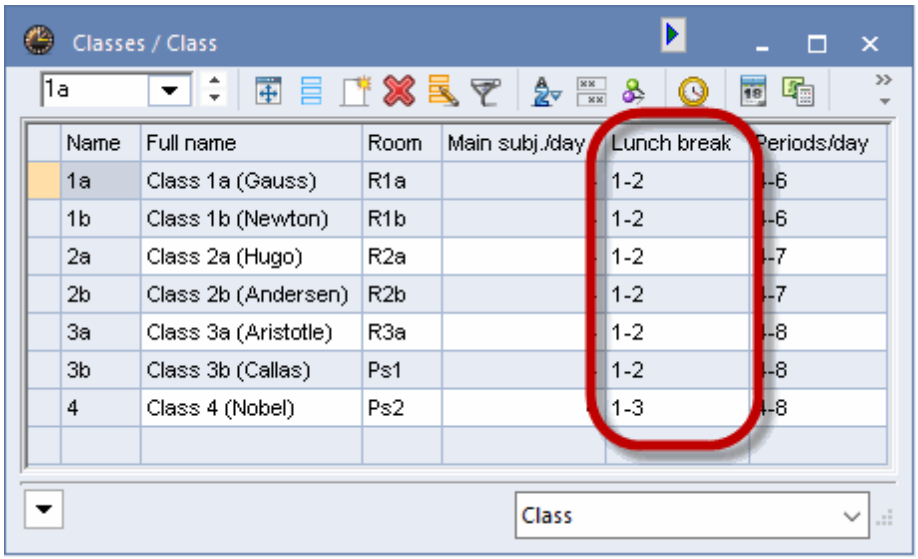
Block the periods of the respective elements in which the lunch break is meant to be with time request '- 3'.



Include the lunch break in timetable creation.

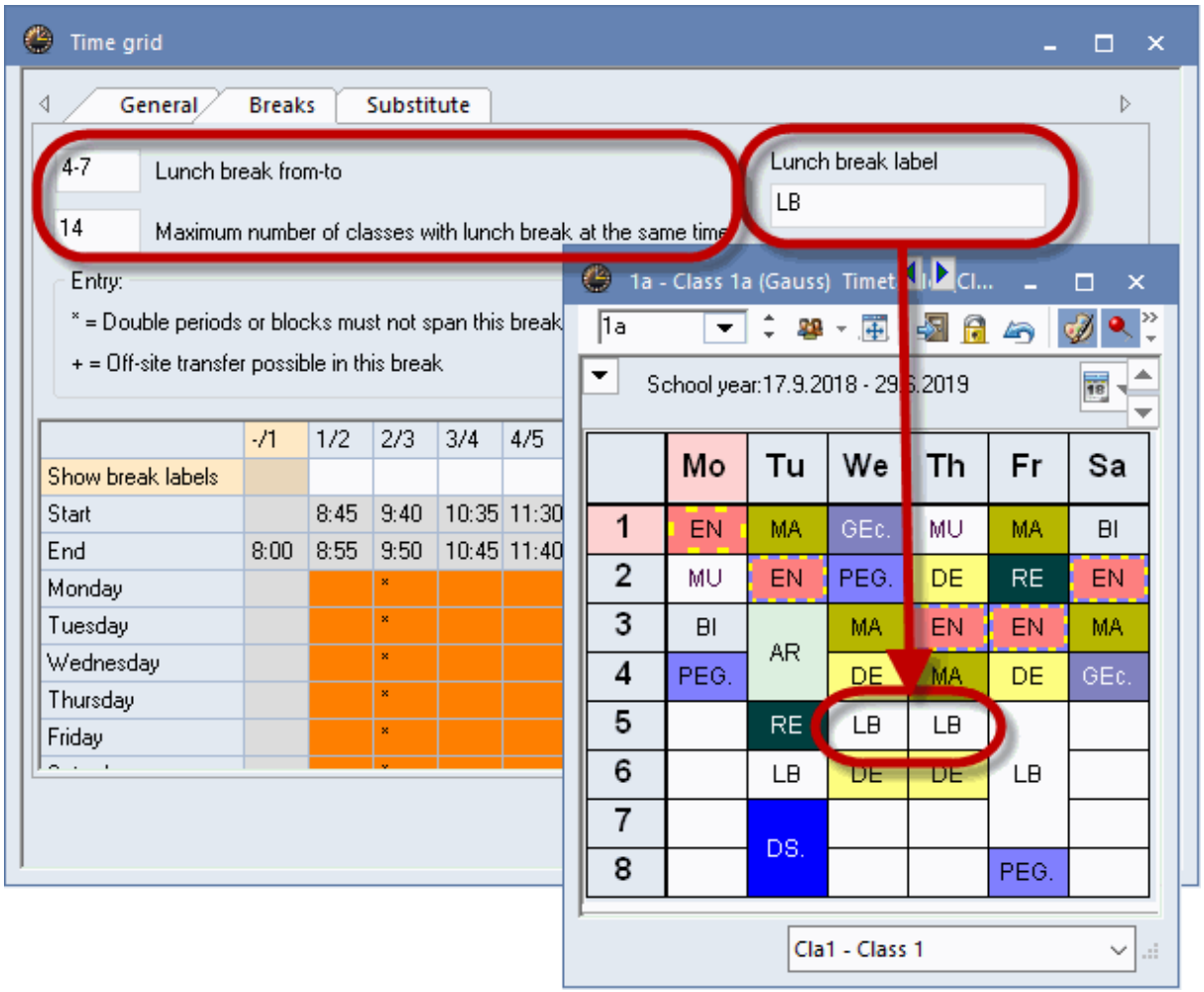
This last lunch break scheduling option allows for a better use of subject rooms. The option enables you to specify different lunch break durations for individual teachers and classes. Enter '1-2' in the box
Lunch break min, max
to instruct the software to schedule either 1 or 2 lunch break periods for the selected element

Based on the weighting, the lunch break will be scheduled during the last morning periods and/or the first afternoon periods.



Vary the time during which a lunch break can be scheduled by specifying the

**first and the last period when a lunch break may be scheduled (on the 'Breaks' tab in the
 time grid
). The boundary between morning and afternoon lessons must lie within the specified time interval (see figure below).**



If your school cafeteria has a limited capacity, use the same tab to enter the maximum number of classes that can have a lunch break at the same time (figure above).

Tip:
Please note that you can also enter a lunch break label on the 'Breaks' tab. This label is then also printed on the respective timetables.
Violations against specified lunch break times are displayed in the diagnosis window.

6.8 Couplings

The composition of *couplings* has a major effect on the quality of a timetable. Unfavourable couplings can prevent the construction of a high-quality timetable. The following criteria are important for the creation of couplings:

- Teacher teams
- Class couplings

6.8.1 Teacher teams

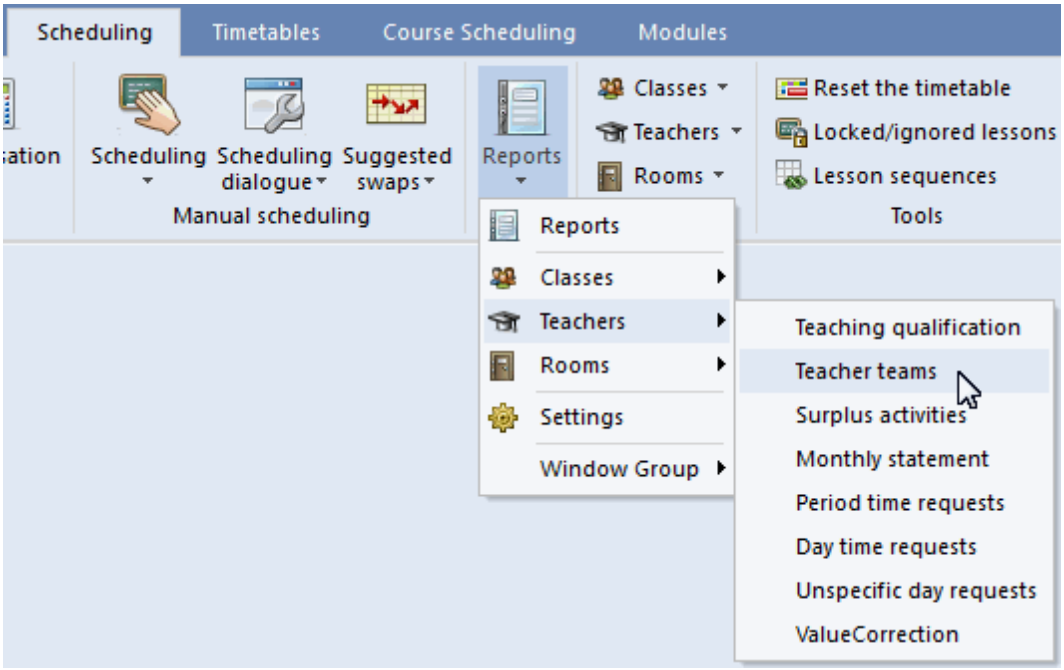
In the easiest case a teacher team is made of two teachers teaching each one group of students at the same time. Teacher teams are required, for instance, in PE lessons where students of a class are divided into a male and a female group. Each group requires its own teacher, and both teachers must always be scheduled at the same time. Both teachers must always be scheduled together for the lesson concerned.

As a general rule, it is desirable to keep the number of teacher teams as small as possible and to ensure that each teacher is only part of a teacher team if absolutely necessary (see the example at the end of this chapter).

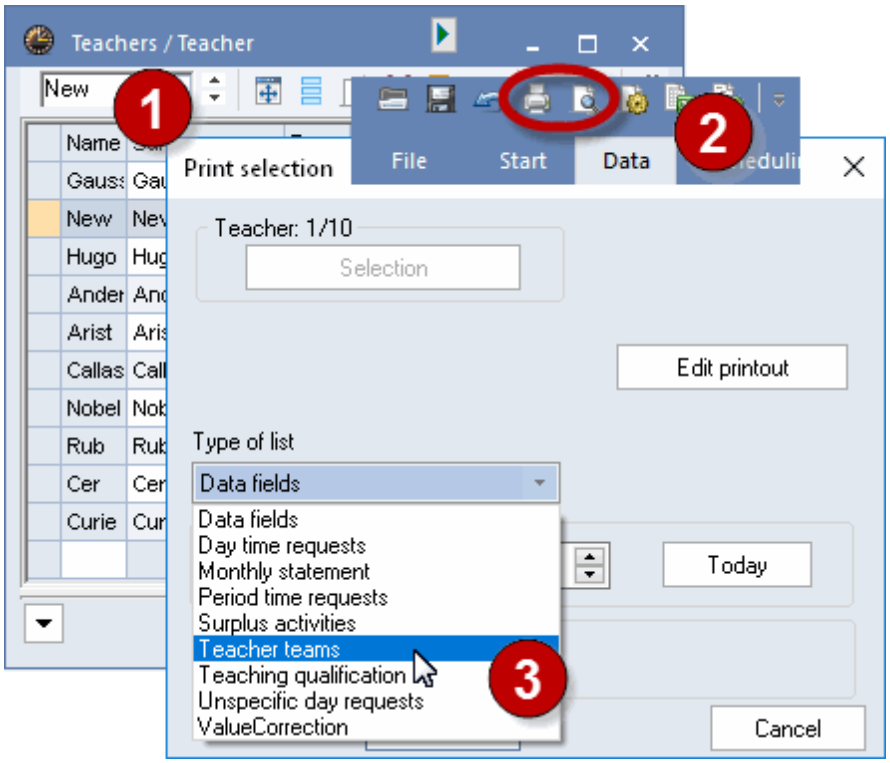
To help you organise your teacher teams, Untis provides a 'Teacher team' list where you can view all teacher teams at a glance.

Access the list via one of the two following options:

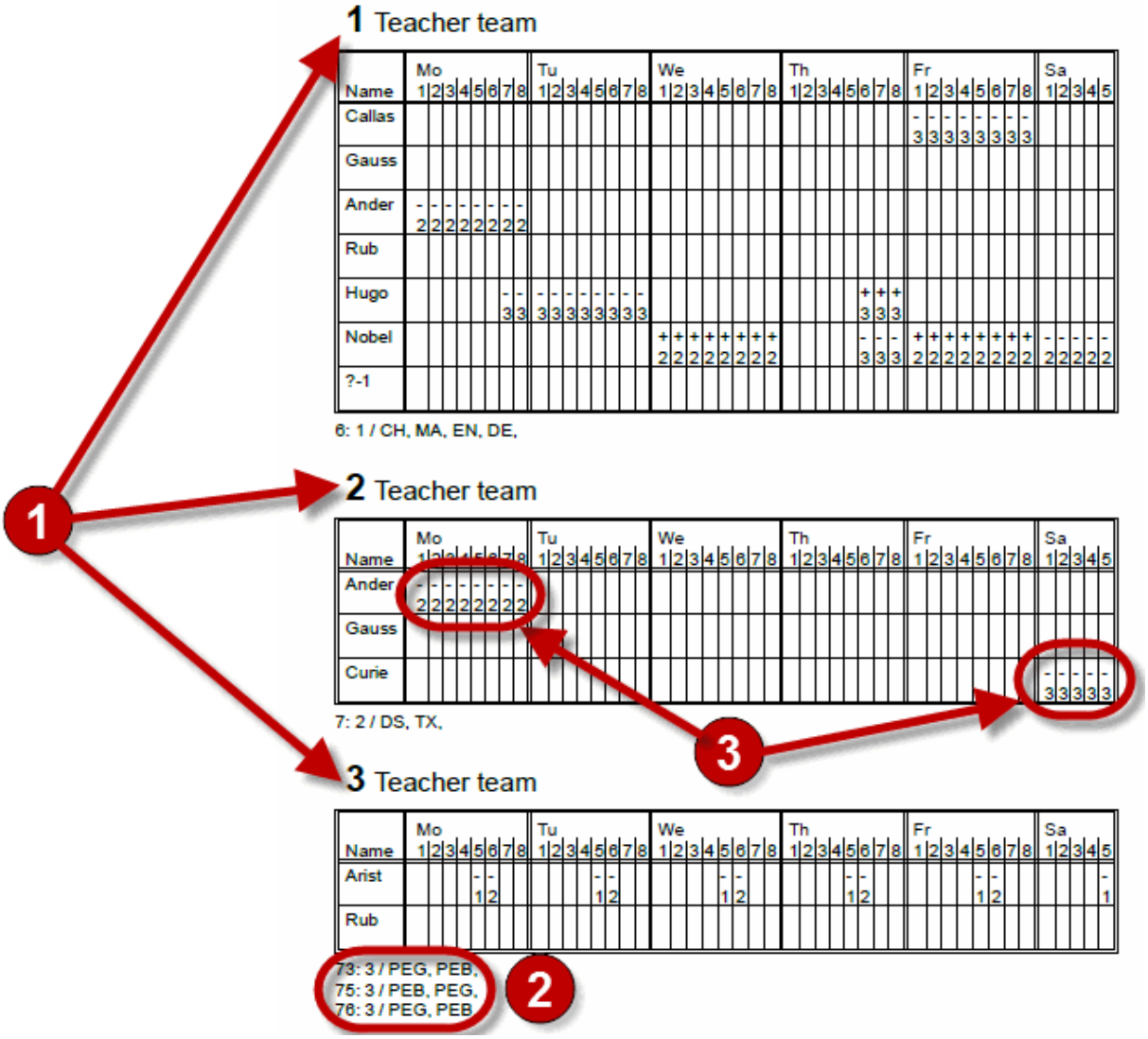
1. Go to the 'Scheduling' tab, click on 'Reports | Teachers | Teacher teams'.



2. Open the 'Teachers | Master data' window, click on <Print> or <Print preview> on the quick access toolbar and select the type of list: 'Teacher teams'.



The following figure shows what such a list could look like.



The printout shows:

1 The total number of different teams. The general rule is: the fewer, the better.

2 The lessons (including details) in which a team is involved. The general rule is: the more, the better.

3 The time requests entered for the individual teachers in the team. If a number of different time requests need to be taken into consideration, the timetable quality will deteriorate as a result since a teacher team can only be scheduled when all the teachers of the team are available.

In the example above, the PE teachers *Rub* ('Rubens') and *Arist* ('Aristotle') form teacher team no. 1.

Let us assume that you have another teacher team (e.g. team no. 4 comprising teachers Rubens and Hugo) scheduled to teach Design. Each time, team 4 is scheduled, team 1 would be blocked since teacher Rubens belongs to both of them.

In this case you need to decide if teacher team 4 is necessary at all (since there already is a teacher team for Design, i.e. team 2). You could also find out if Ruben's team colleague Arist is qualified to teach

Design, as well. If so, the Design lesson could also be taught by team 1. In any case, one teacher team would be eliminated, lending a greater flexibility to the optimisation tool.

As mentioned earlier, the CCC analysis is a perfect tool for identifying such problematic compositions (see the chapter ' CCC analysis ').

Time requests and teacher teams

Time requests are another problematic issue when dealing with teacher teams. In an ideal case, the individual time requests and especially the *blocked periods* for teachers in a teacher team should overlap as much as possible.

The following figure shows a single teacher team. Please note the blocked periods (time requests '-3').

1 Teacher team

Name	Mo 1	2	3	4	5	6	7	8	Tu 1	2	3	4	5	6	7	8	We 1	2	3	4	5	6	7	8	Th 1	2	3	4	5	6	7	8	Fr 1	2	3	4	5	6	7	8	Sa 1	2	3	4	5
Callas																																	-3	-3	-3	-3	-3	-3	-3	-3					
Gauss																																													
Ander	-2	-2	-2	-2	-2	-2	-2	-2																																					
Rub																																													
Hugo							-3	-3	-3	-3	-3	-3	-3	-3	-3	-3														+3	+3	+3													
Nobel																	+2	+2	+2	+2	+2	+2	+2	+2						-3	-3	-3	+2	+2	+2	+2	+2	+2	+2	+2	-2	-2	-2	-2	-2
?-1																																													

6: 1 / CH, MA, EN, DE,

As a result of various time requests, team teachers are blocked on Monday, Tuesday, Wednesday and Saturday. Let us assume that this teacher team is scheduled for a lesson with three single periods per week. Two of the three periods could be scheduled on Thursday and Friday, but the third period could only be scheduled by violating the *blocked period* (time request '-3') of a teacher (something Untis will never do) or by violating the condition that the subject should take place no more than once a day (depending on your *weighting settings* , Untis may violate this rule; please see the chapter ' Weighting').

6.8.2 Class couplings

The above rule for teacher teams also applies to class couplings, i.e. lesson couplings across classes should, if possible, always involve the same classes.

Head group A				Head group B			
Group 1		Group 2		Group 3		Group 4	
1a	1b	1c	1d	1e	1f	1g	1h

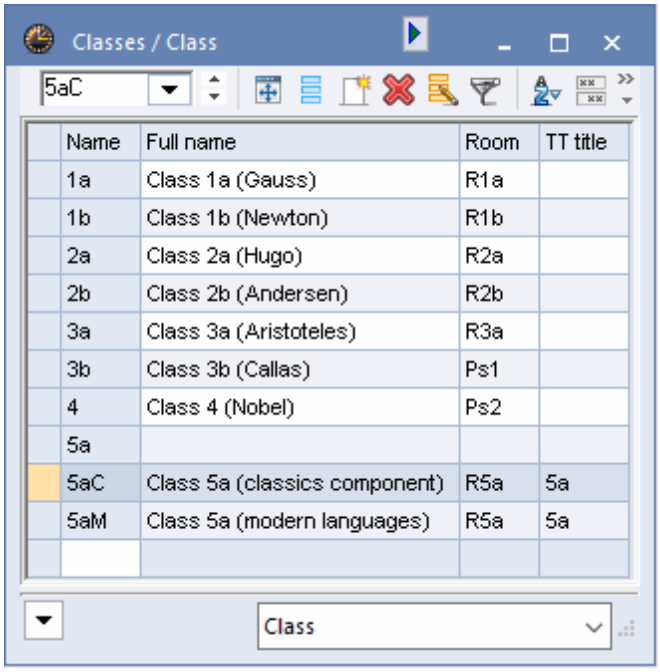
In the example above, class 1a in a two-class coupling should only be coupled with class 1b; in a four-class coupling only with classes 1b, 1c and 1d.

6.9 Type-separated class components

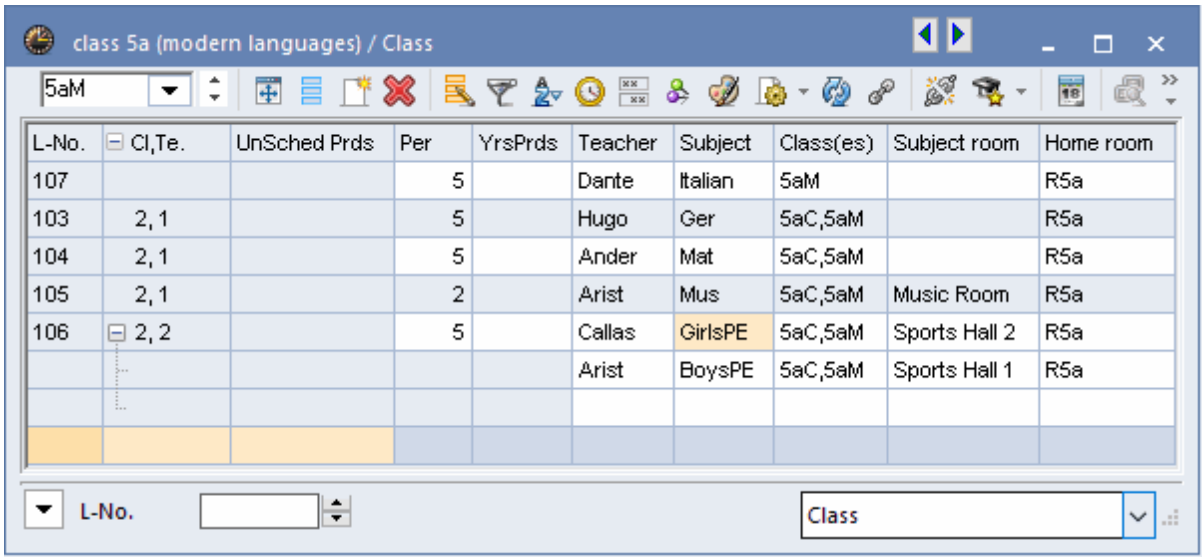
For organisational reasons, one class sometimes consists of two type-separated class components.

For example, class *5a* could consist of a Modern Languages and a Classics component. While the former component has an Italian lesson scheduled, the latter component could have a Greek lesson. Proceed as follows in this case:

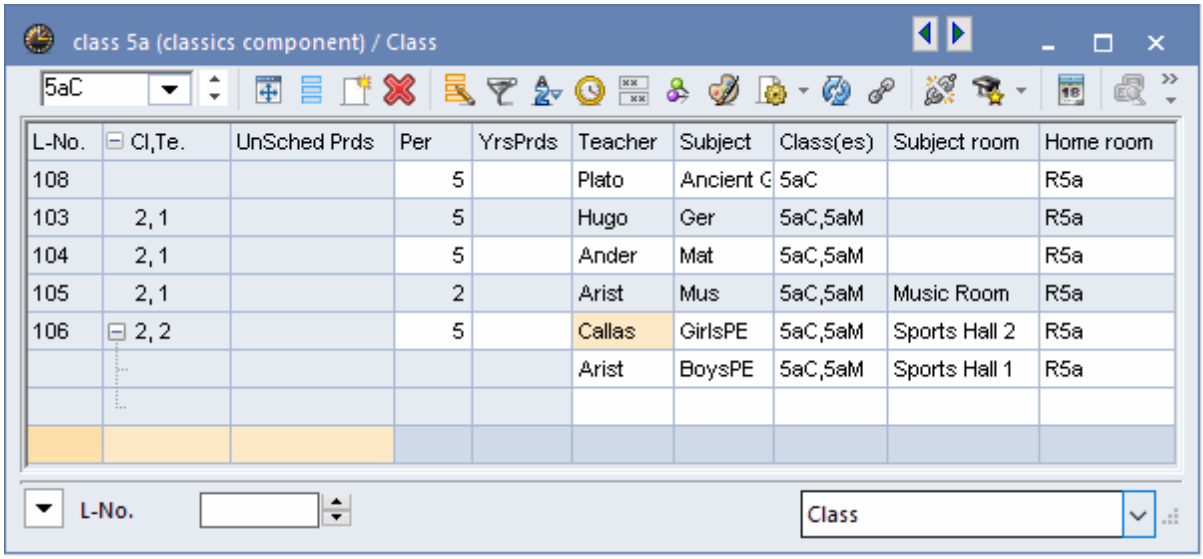
- Define two classes - 5aC for the Classics component and 5aM for the Modern Languages component. You need to define class 5a for correct display in WebUntis, even if no lessons will take place in this class.



- Enter the name '5a' in the *Master class* field under master data of both classes
- Couple the two class components for all lessons attended by the students of both groups.



L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room
107			5		Dante	Italian	5aM		R5a
103	2, 1		5		Hugo	Ger	5aC,5aM		R5a
104	2, 1		5		Ander	Mat	5aC,5aM		R5a
105	2, 1		2		Arist	Mus	5aC,5aM	Music Room	R5a
106	2, 2		5		Callas	GirlsPE	5aC,5aM	Sports Hall 2	R5a
					Arist	BoysPE	5aC,5aM	Sports Hall 1	R5a



L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room
108			5		Plato	Ancient G	5aC		R5a
103	2, 1		5		Hugo	Ger	5aC,5aM		R5a
104	2, 1		5		Ander	Mat	5aC,5aM		R5a
105	2, 1		2		Arist	Mus	5aC,5aM	Music Room	R5a
106	2, 2		5		Callas	GirlsPE	5aC,5aM	Sports Hall 2	R5a
					Arist	BoysPE	5aC,5aM	Sports Hall 1	R5a

- The timetable of both class components can then be combined in a single view.

5a Class 5a

	Mo	Tu	We	Th	Fr	Sa
1	MA.	DE.	A I	DE.	A I	
2	DE.	MU.	MA.	A I	MA.	
3	PEG.	MA.	MU.	MA.	DE.	
4	A I	A I	PEG.	PEG.		
5		PEG.				
6						
7						
8						

Note:
You can deactivate this behaviour for individual timetable formats by checking the box 'Display master classes separately' on the 'Layout 2' tab under <Timetable settings>.

6.10 Class groups

By default, the Untis standard software package optimises school timetables for schools based on class structure, i.e. where each student is assigned to one particular class and the lessons scheduled for the student are determined completely by his or her class.

The other extreme is a system in which students can *choose their courses freely* by setting up their own individual timetable (within certain legal frameworks) and classes do not exist anymore.This type of school system allows students to choose his or her own courses, which means it is no longer the class that is the focal point of the timetabling efforts, but the student. This scheduling situation is addressed by the Untis *Course Scheduling* module.

Some school systems, such as some German Realschulen, Austrian colleges of higher education and British secondary schools, use a combination of the two extremes described above. In these schools, some lessons are attended by the entire class (*core lessons, main subjects*) while others represent so-called differentiation subjects (*intensive lessons, minor subjects, options*) that are attended by a fixed group of students from different classes. Each student's lessons are therefore determined by the student's choice of main and minor subjects. The following section describes how to deal with this timetabling situation using class groups.

The following example demonstrates the general principles of class groups.

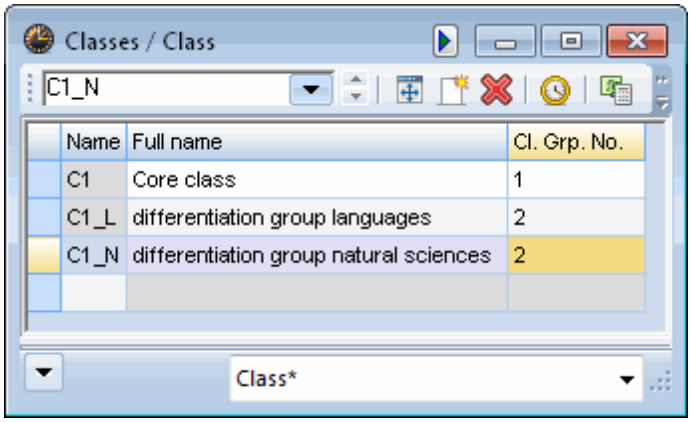
Class C1 consists of 20 students subdivided into two groups of 10 students each One group consists of students with an interest in modern languages, the other of the students with an interest in science. All 20 students attend the *same* lessons for English, PE, History and Geography. However, while one group attends German, French and Italian lessons, the other group has Physics, Chemistry and Maths, instead.

This means that German can be scheduled at the same time as Chemistry or Maths since Modern Languages students do not attend Science classes. On the other hand, German, Chemistry and Maths must not be scheduled at the same time as English or PE since these are core subjects attended by *all* the students of the class.

You can use Untis to solve this problem as follows:

6.10.1 Defining core lessons and options

Under 'Classes | Master Data', define a core class *10a* and two different class groups *10a_M* (Modern Languages) and *10a_S* (Sciences).



Enter the information that 10a_M and 10a_S are actually all students of core class 10a in the column 'Cl.Group': '1' meaning that this is the core class, any higher number (2-9) refers to different class groups.

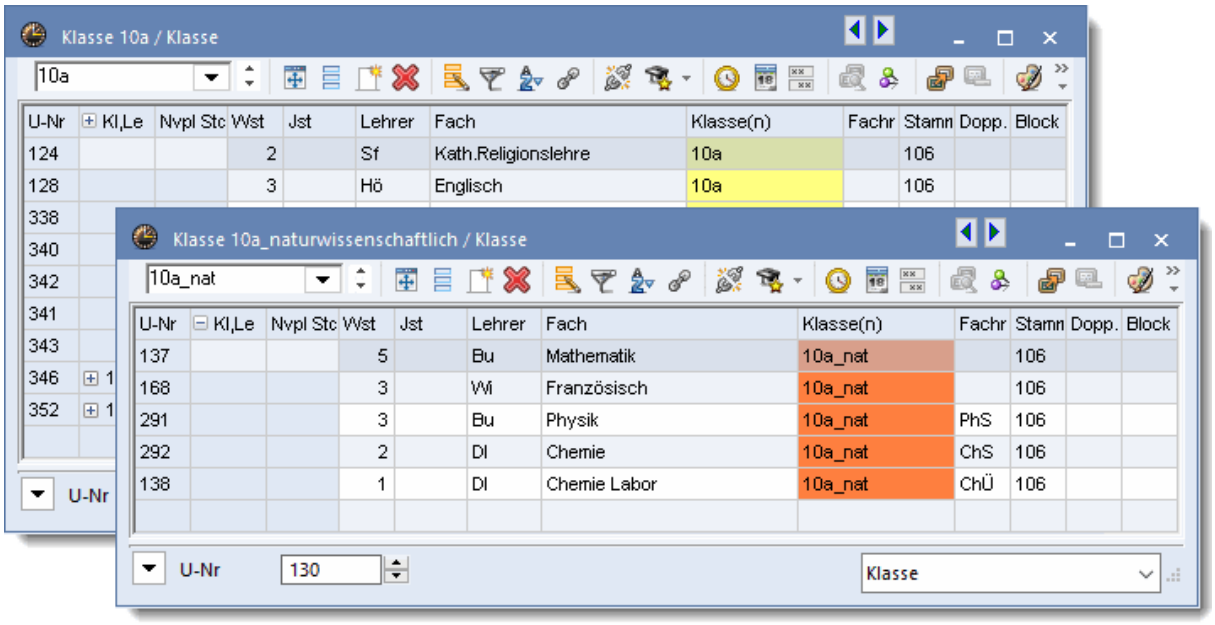
Warning: Order
Please note that when you use class groups the order of the classes under 'Classes | Master data' is not arbitrary. Core and differentiation classes need to be listed directly below each other. If the recorded CG code is smaller than the one of the class above, a new sequence starts, independent of prior entries.

Please also note that the same class group code must be entered for both class groups 10a1_M and 10a_S. Use higher code numbers only when the students in your school can choose more than one elective course group.

Entering the correct class group codes instructs Untis to schedule lessons for class groups 10a_M and 10a_S only when class 10a (i.e. the core class) is not scheduled to have lessons. The same also applies to class 10a_S.

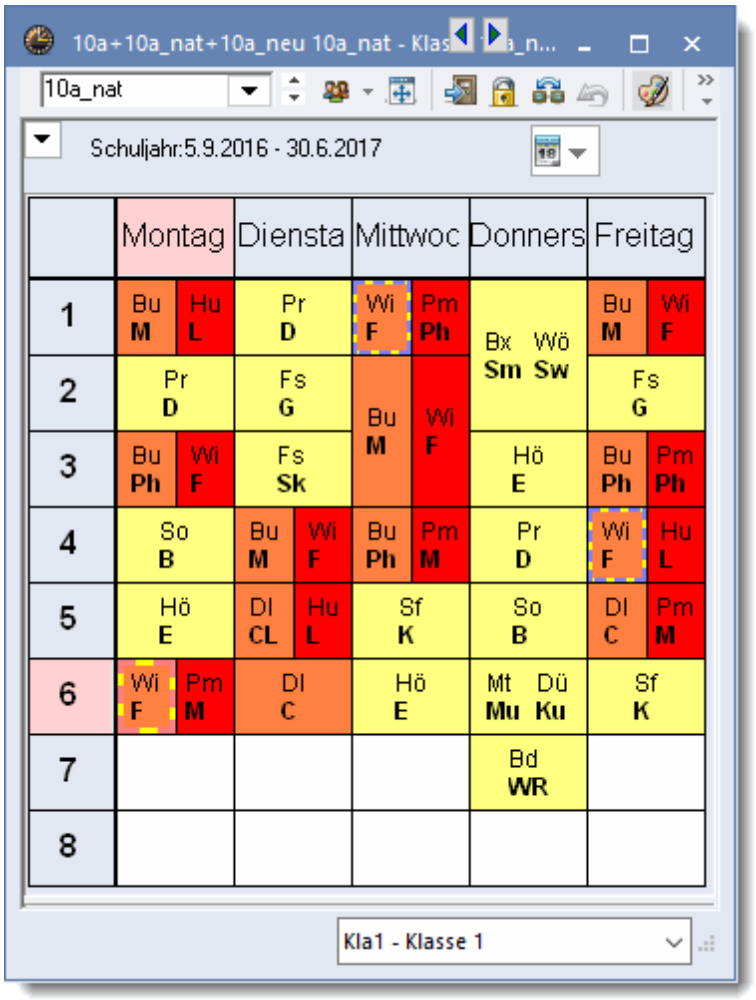
Entering of lessons

Enter the lessons of core class 10a which involves **all of the students** of the class; enter the lessons according to the different elective groups in the respective class groups.

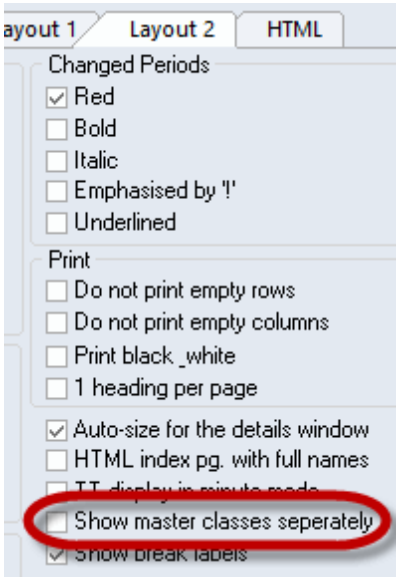


6.10.2 Display and print

If you want to print the lessons of the core and the differentiation classes in on timetable, you may use the master data field *Master class* .



If you do not want to combine the classes in a specific format then go to the timetable settings and check the box 'Show master classes separately' on the 'Layout 2' tab.



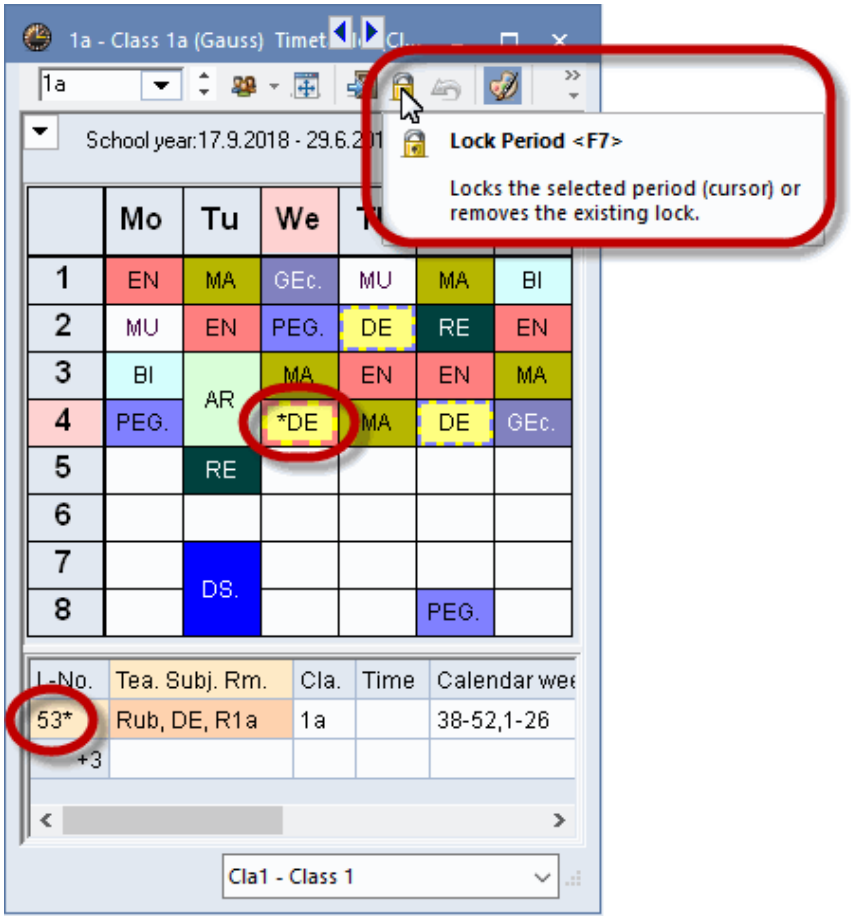
6.11 Locking

Before a timetable optimisation run can start, it is often necessary to *lock* certain periods , lessons or even entire master data elementssuch as teachers, classes or rooms in order to prevent Untis from making changes at the places in question.

6.11.1 Locking periods

When one or more periods have been manually set for a lesson they can be individually locked in the timetable by clicking on <Lock period>. This ensures that these periods will not be moved during optimisation. Locked periods are marked with an asterisk '*' in the timetable period window and in the period details window (see figure).

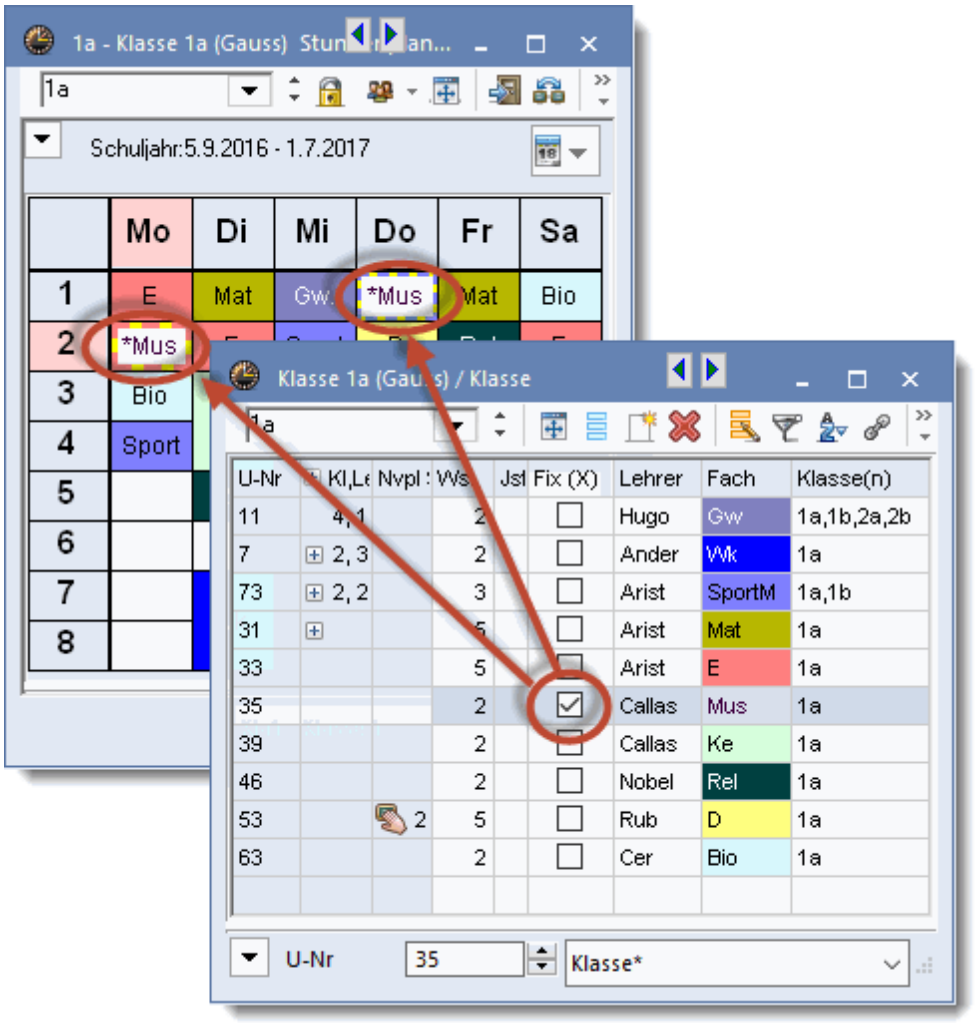
Deactivate the marking in the timetable period window by unchecking the option 'Label locked periods with a * mark' on the 'Layout 2' tab under <Timetable Settings>.



Note: Lock several periods
Hold the <Ctrl> key to highlight several periods in the timetable. Click on the lock icon and the selected periods are locked.

6.11.2 Locking lessons

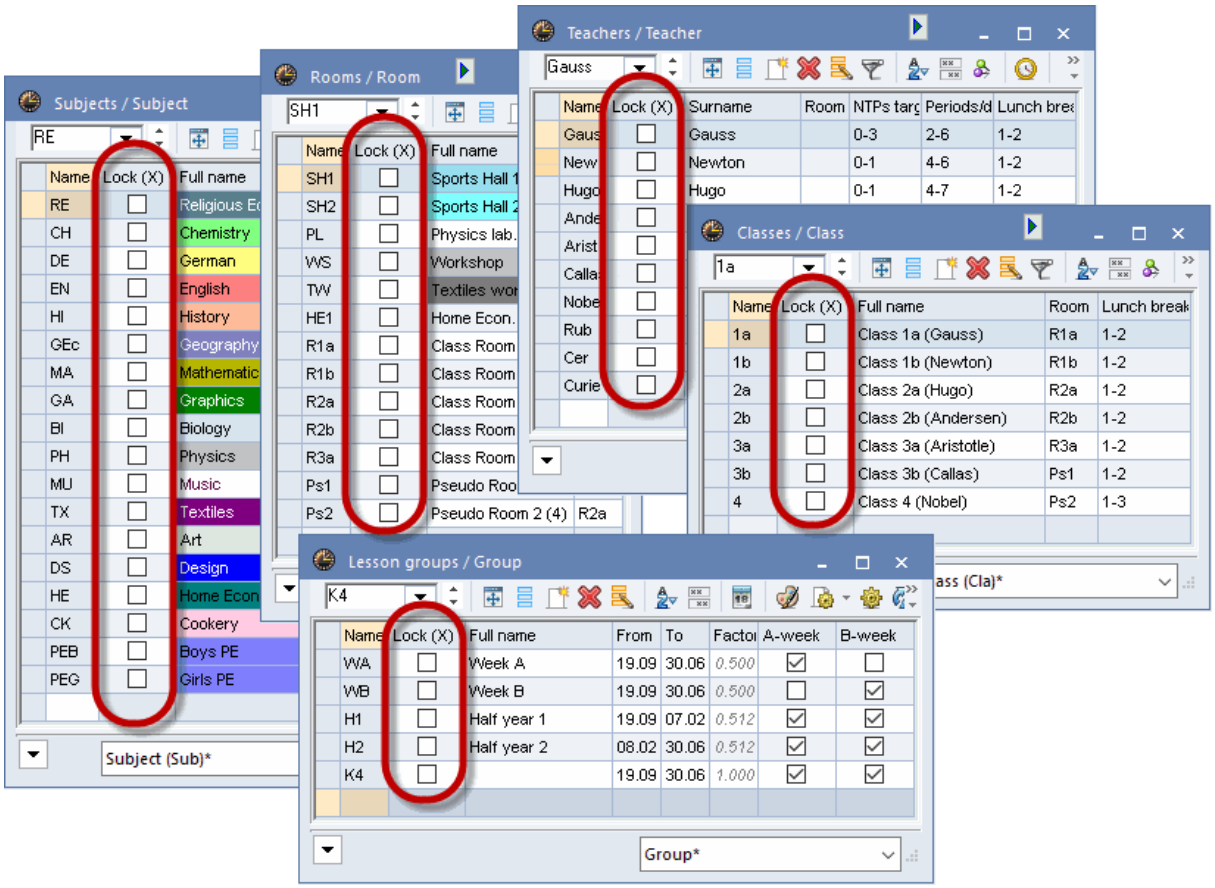
If all elements of a lesson are to be locked, activate 'Lock (X)' for the lesson in question. A locked lesson will also be marked with an asterisk '*' in the timetable. Please note that you cannot remove this lock by clicking on the <Lock period> button.



Warning:
If you lock a lesson for which all periods have not yet been scheduled, the missing periods will be set at the beginning of optimisation, but then they cannot be moved (switched) in the course of the algorithm. This results in significantly worse optimisation. For this reason, please only use this code for lessons that have been fully scheduled.

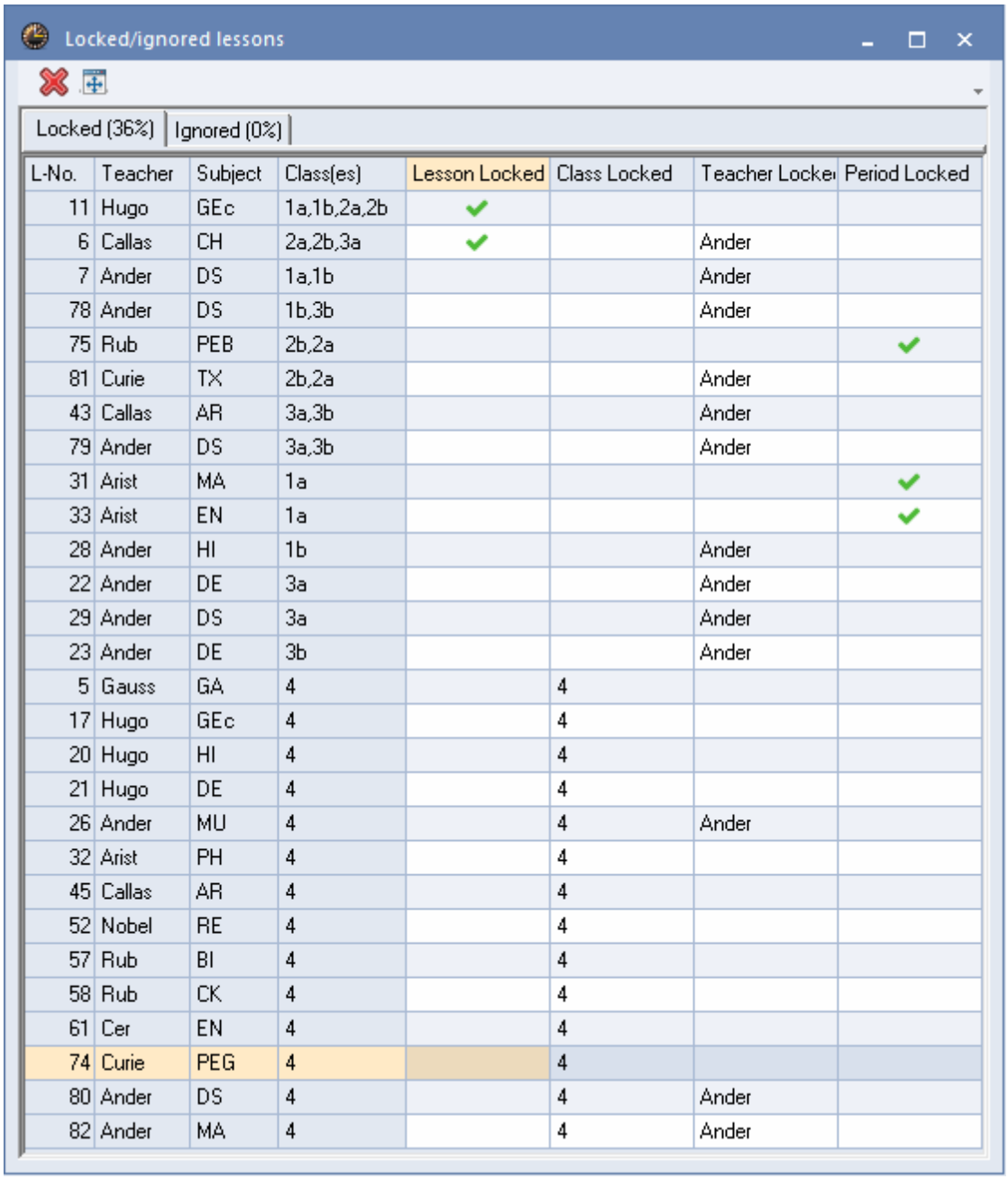
6.11.3 Locking master data

You can also lock certain master data elements if, for example, the limited number of periods of a part-time teacher are to be entered and locked manually. In this case, use the 'Lock (X)' field that is available in all master data windows. Again, it is not possible to remove the lock from periods locked in this way using the <Lock period> button.



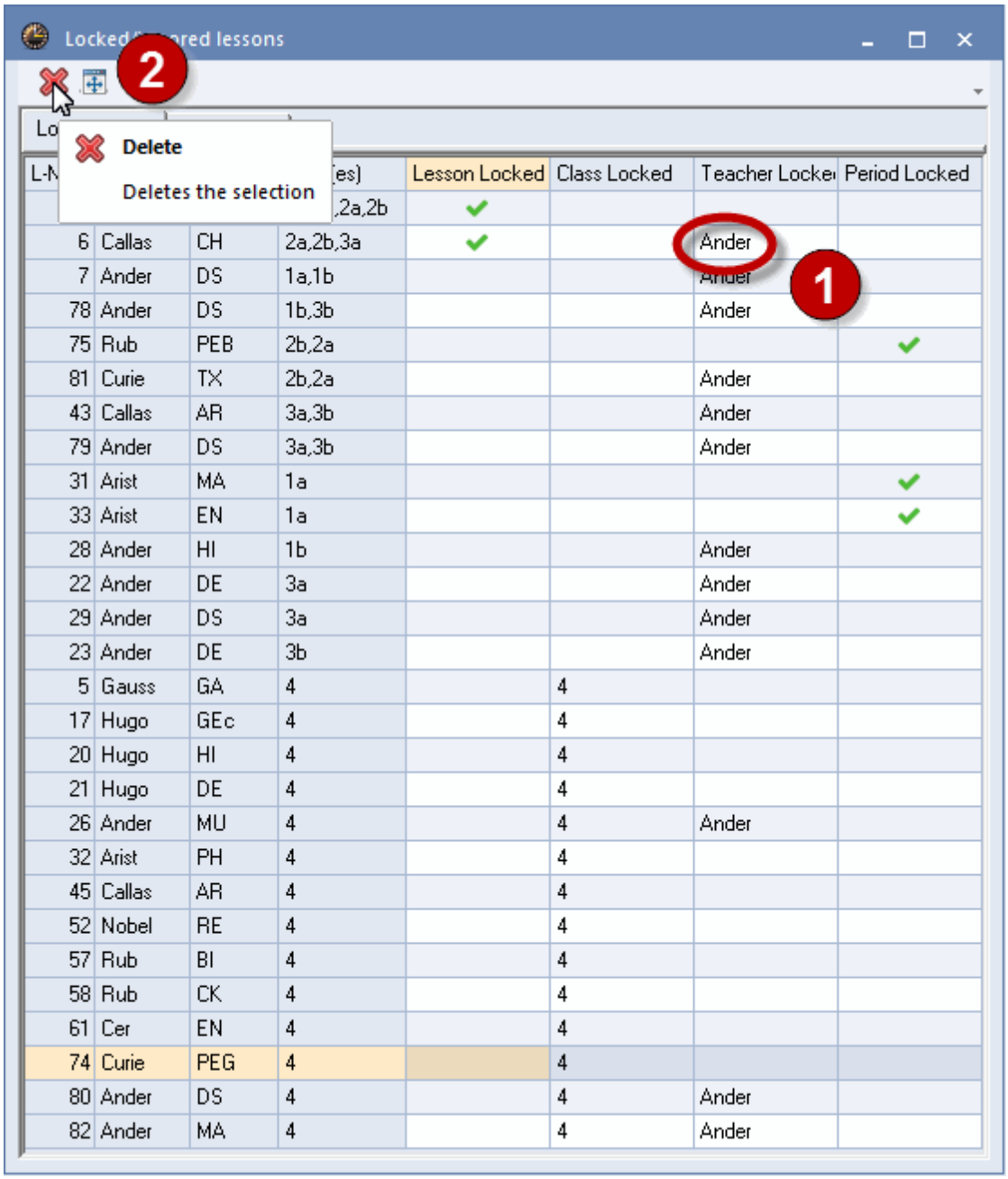
6.11.4 'Locked lessons' window

As explained in the preceding chapters, locks can be entered in different ways in Untis. You can obtain a summary of all lessons locked in the school data by opening the 'Locked/ignored lessons' window via the 'Scheduling' button. The list of rows contains all the lessons which are currently locked from being moved, which Untis (timetable optimisation) is not allowed to move. The columns indicate the level or the master data element causing the lock.



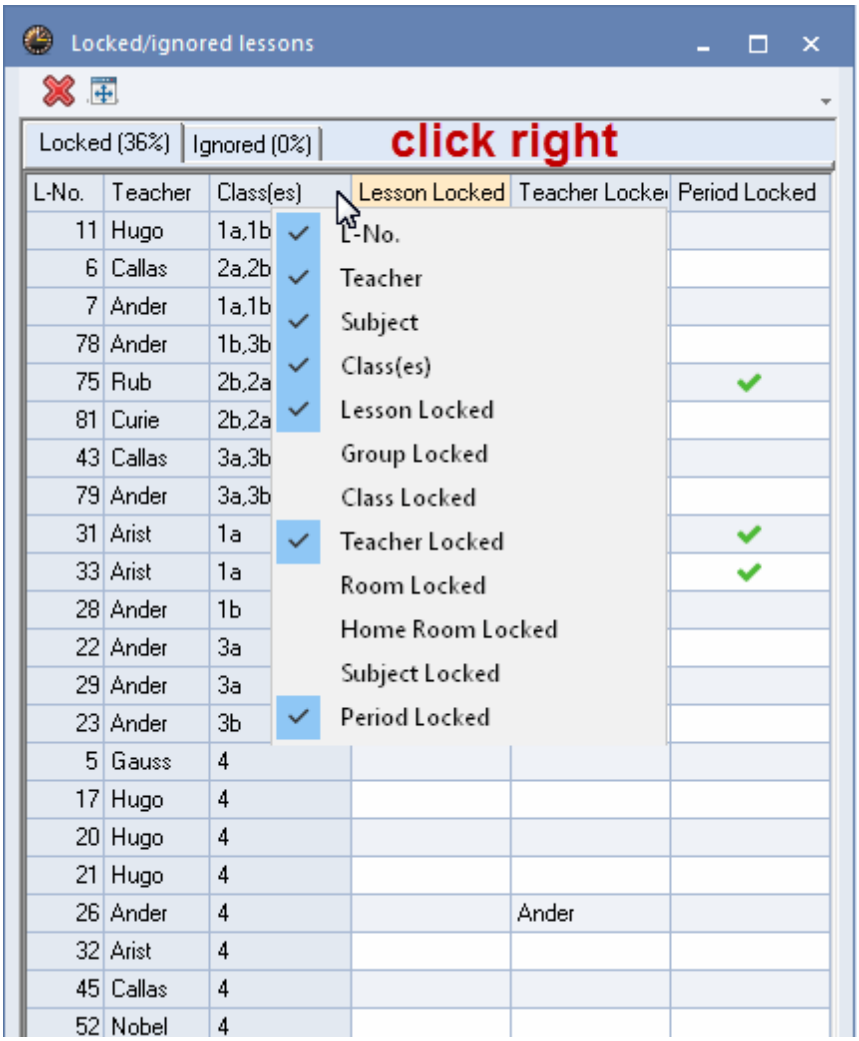
L-No.	Teacher	Subject	Class(es)	Lesson Locked	Class Locked	Teacher Locke	Period Locked
11	Hugo	GEc	1a,1b,2a,2b	✔			
6	Callas	CH	2a,2b,3a	✔		Ander	
7	Ander	DS	1a,1b			Ander	
78	Ander	DS	1b,3b			Ander	
75	Rub	PEB	2b,2a				✔
81	Curie	TX	2b,2a			Ander	
43	Callas	AR	3a,3b			Ander	
79	Ander	DS	3a,3b			Ander	
31	Arist	MA	1a				✔
33	Arist	EN	1a				✔
28	Ander	HI	1b			Ander	
22	Ander	DE	3a			Ander	
29	Ander	DS	3a			Ander	
23	Ander	DE	3b			Ander	
5	Gauss	GA	4		4		
17	Hugo	GEc	4		4		
20	Hugo	HI	4		4		
21	Hugo	DE	4		4		
26	Ander	MU	4		4	Ander	
32	Arist	PH	4		4		
45	Callas	AR	4		4		
52	Nobel	RE	4		4		
57	Rub	BI	4		4		
58	Rub	CK	4		4		
61	Cer	EN	4		4		
74	Curie	PEG	4		4		
80	Ander	DS	4		4	Ander	
82	Ander	MA	4		4	Ander	

You can use the <Delete> button to remove individual locks: first click on the respective field and then on the <Delete> button.



			,2a,2b	✔			
6	Callas	CH	2a,2b,3a	✔		Ander	
7	Ander	DS	1a,1b			Ander	
78	Ander	DS	1b,3b			Ander	
75	Rub	PEB	2b,2a				✔
81	Curie	TX	2b,2a			Ander	
43	Callas	AR	3a,3b			Ander	
79	Ander	DS	3a,3b			Ander	
31	Arist	MA	1a				✔
33	Arist	EN	1a				✔
28	Ander	HI	1b			Ander	
22	Ander	DE	3a			Ander	
29	Ander	DS	3a			Ander	
23	Ander	DE	3b			Ander	
5	Gauss	GA	4		4		
17	Hugo	GEc	4		4		
20	Hugo	HI	4		4		
21	Hugo	DE	4		4		
26	Ander	MU	4		4	Ander	
32	Arist	PH	4		4		
45	Callas	AR	4		4		
52	Nobel	RE	4		4		
57	Rub	BI	4		4		
58	Rub	CK	4		4		
61	Cer	EN	4		4		
74	Curie	PEG	4		4		
80	Ander	DS	4		4	Ander	
82	Ander	MA	4		4	Ander	

Please not that you can show or hide certain columns via the context menu of the right mouse button. The columns which at least have one entry are shown by default.



6.12 Room logic

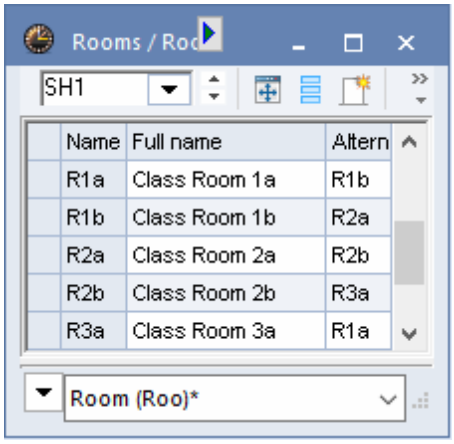
The following chapter is devoted to the treatment of rooms. Special attention will be placed on the difference between (subject) rooms and home rooms and how and why Untis assigns a particular room to a lesson during optimisation.
The following chapters are described:

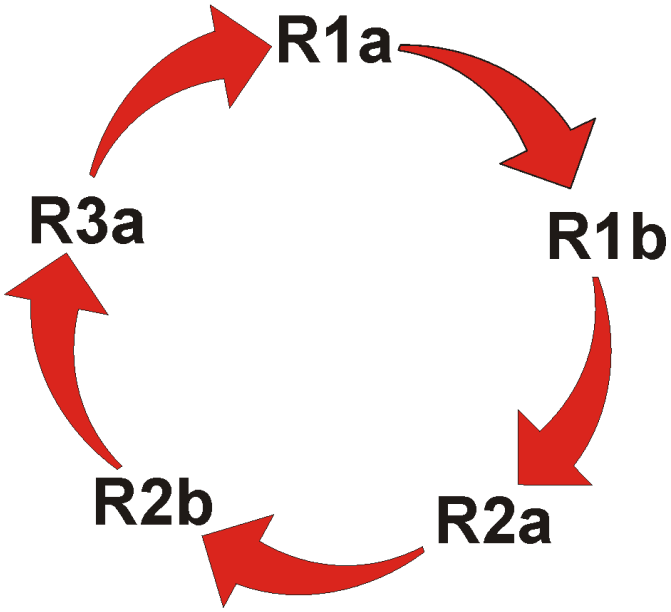
- Alternative rooms
- Room groups
- Room allocation
- Room capacity
- Room optimisation
- The role of subject rooms
- Off-site rooms

6.12.1 Alternative rooms

Since rooms are usually a scarce resource when it comes to timetable construction, Untis provides the additional option of assigning an alternative room.

Since each alternative room can have its own alternative room, you can create entire alternative room rings by entering the original home room as the alternative room of the last alternative room in the chain. The example below shows such an alternative room ring.





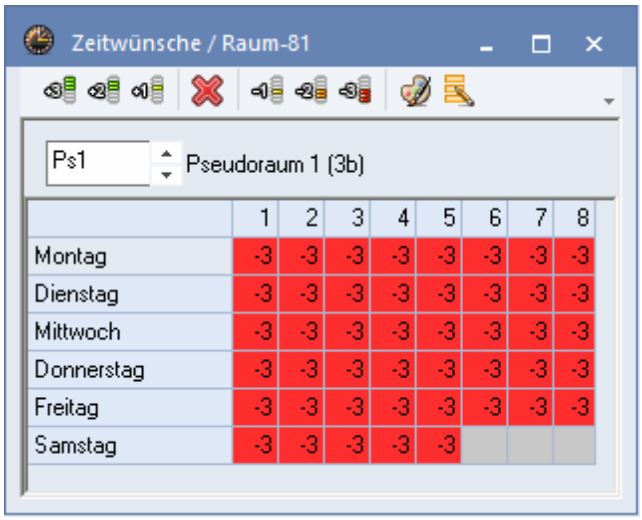
Untis can allocate either one of the five rooms, depending on which would improve the optimisation results most. Both the optimisation and the room optimisation tools take into consideration the order in which the rooms are entered – an important criteria in the following two scenarios.

You can either recreate 'geographic' aspects of your school by ensuring that the alternative room order reflects the relative locations of the rooms in the school. This would save teachers and students from wasting precious time when moving from room to room. In an alternative room ring, neighbouring rooms should therefore be listed in sequence.

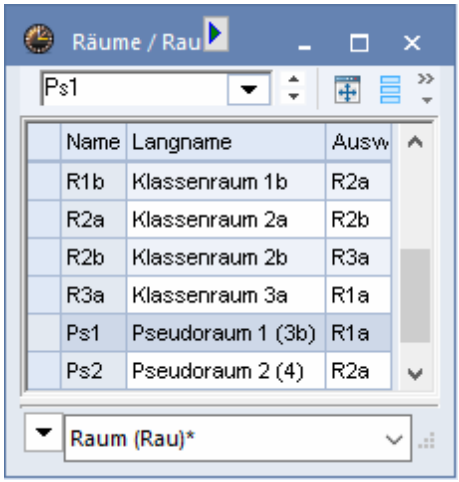
Another option is to use alternative room rings and chains to place the function of the rooms in context. When a room capacity has been defined for individual rooms under master data, you can list alternative rooms with approximately the same capacity in sequence (in an alternative room ring). Another aspect

that could influence the order of rooms in alternative room rings is the equipment provided in the individual rooms.

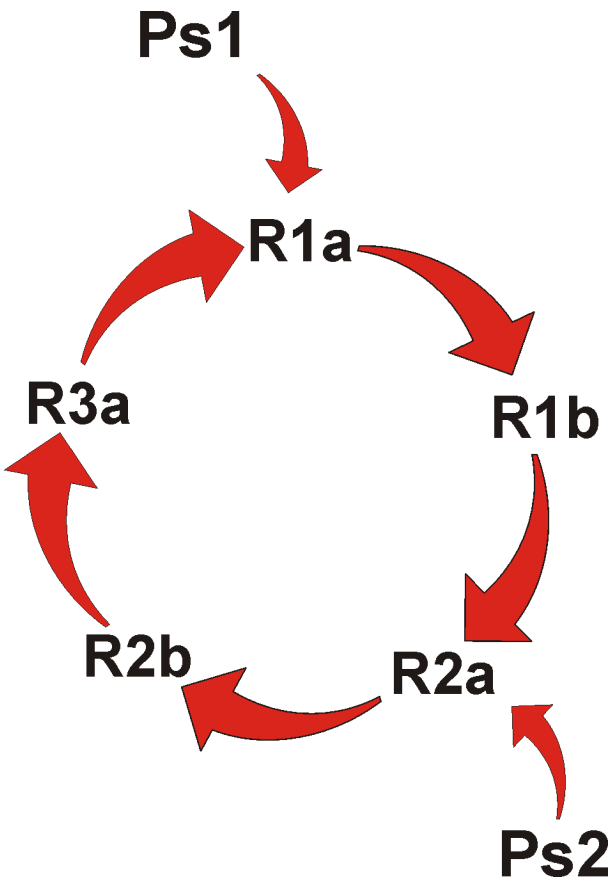
Classes without a designated room
If your school has classes *without designated rooms* you can use *pseudo rooms* by assigning a fictitious room to a class. You can do this by simply assigning a fictitious room, a pseudo room, to the class in question and blocking this room for every period of the week (using time request '-3').



Enter a room from the classroom ring as an alternative room for your pseudo room. Untis will now select a suitable classroom for the class (see figure).

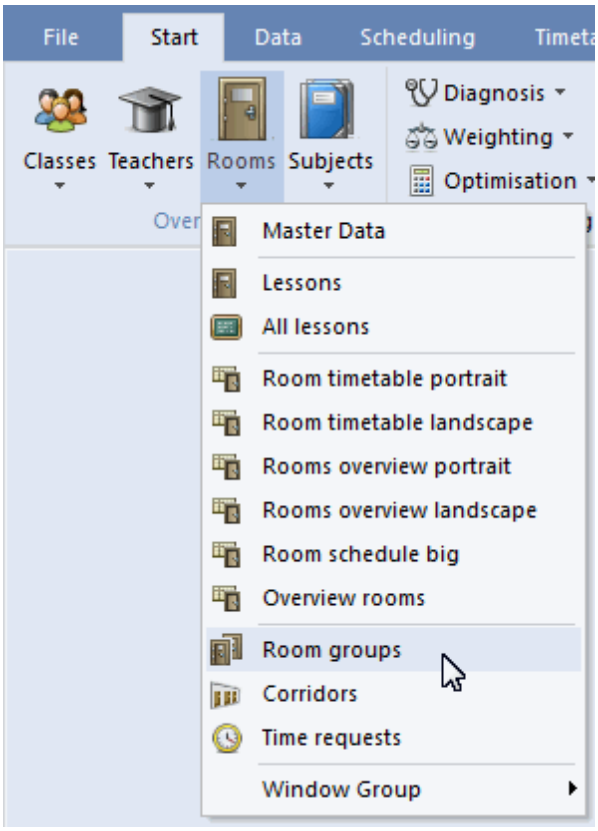


Including pseudo rooms in an alternative room ring.

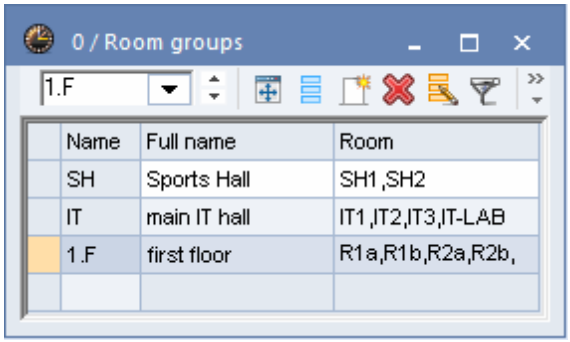


6.12.2 Room groups

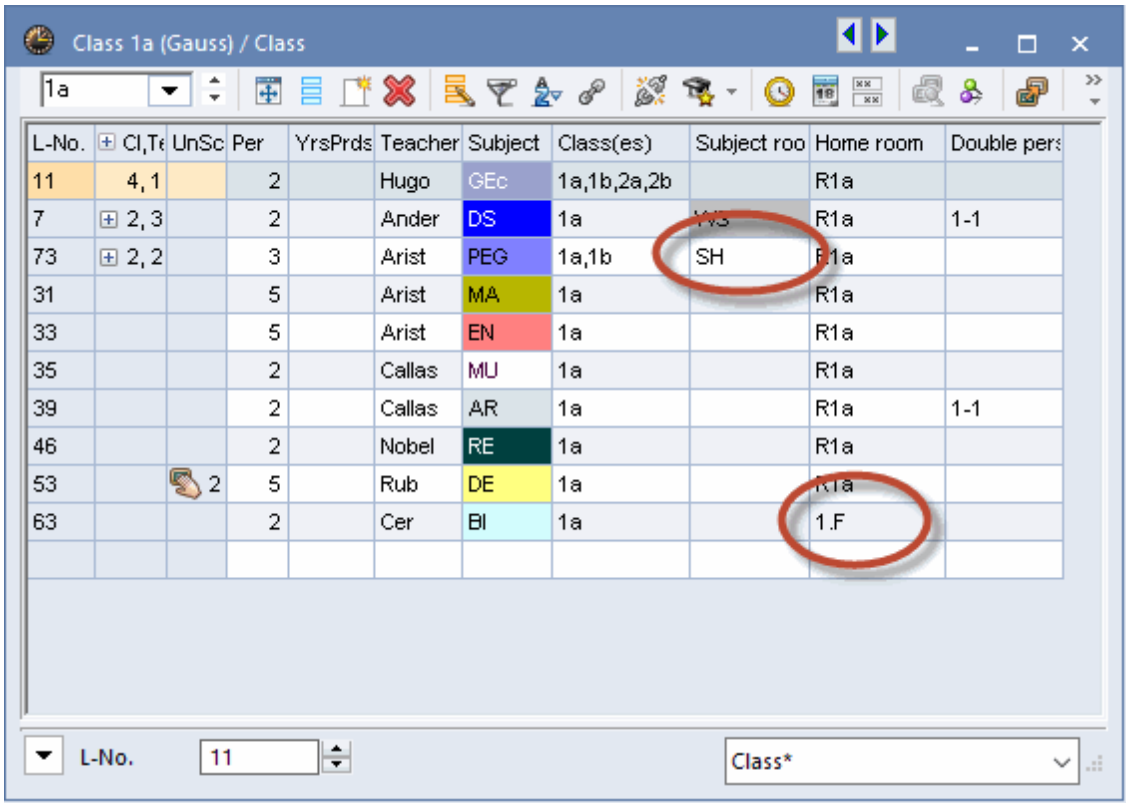
In addtion to the alternative room logic described in the chapter before, Untis provides you with the possibility to create room groups.



The entry of room groups is similar to entering usual master data: every room group has its own individual and unique short name plus a descriptive long name. In the column 'Room' you enter all rooms which should belong to the respective room group.



You now can use the room groups in the lessons windows in the columns 'Subject room' and 'Home room' just like rooms.



The example shows that optimisation will allocate one of the rooms of the IT room group to the IT lesson. The German lesson with teacher Cer will be scheduled to one of the rooms of group 1.F.

6.12.3 Room allocation

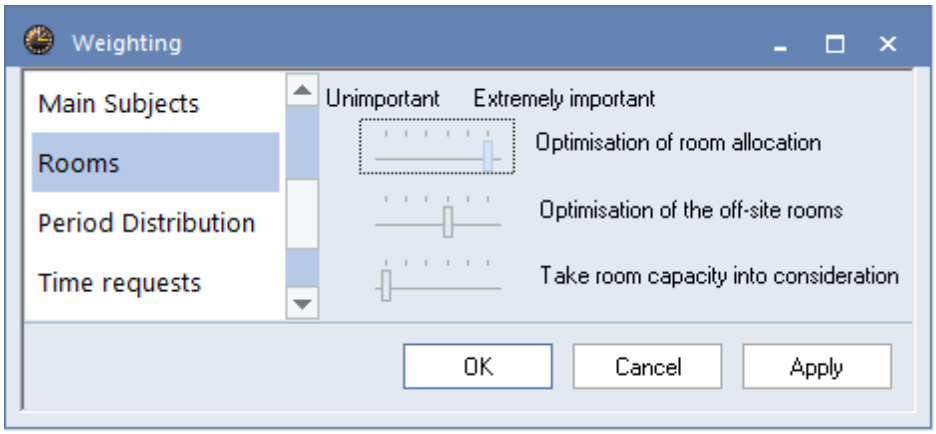
Untis provides three different methods of allocating rooms:

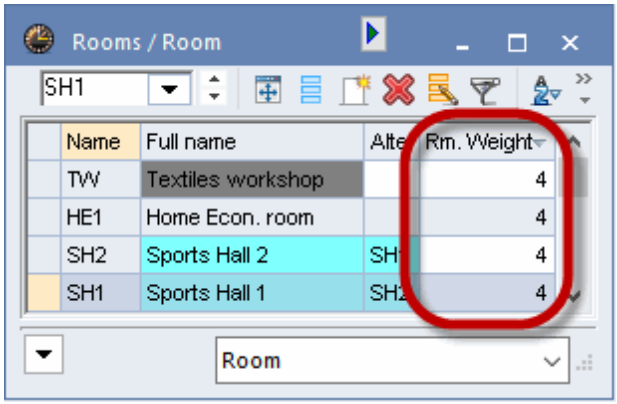
1. *Automated room* allocation during optimisation
2. *Optimised* room allocation during room optimisation (please refer to chapter Room optimisation)
3. *Manual room* allocation in the scheduling dialogue, on the scheduling timetable or on the timetable (see chapter ' Manual scheduling ')

Room allocation during Optimisation

The automated room allocation function during optimisation attempts to optimise timetables not just from the class or teacher perspective, but also from the room perspective.

Untis may even schedule a lesson for a period where a suitable room is unavailable. (The lesson is then displayed in the diagnosis window under 'Subject room missing'.) To suppress this behaviour, set the room weighting of the specialist subject room to '4' (under 'Master data') and the slider for 'Optimisation of room allocation' in the weighting dialogue ('Scheduling | Weighting') on the 'Rooms' tab to position 4 or 5 ('very important' or 'extremely important'). Periods for which the optimisation tool is unable to find a suitable room will then remain unscheduled.





Note:
Please note that deleting the home or subject room in the lessons window will consequently delete this room in the timetable. If you enter a subject or home room for this lesson immediately after deleting it, this room will only be re-scheduled, if it is not required for another lesson. If there is also no alternative room available, the period remains without a room.

6.12.4 Room capacity

When room sizes and/or class sizes at your school differ widely, set the optimisation and the room optimisation tools to consider the capacity of individual rooms in order to prevent situations where a small class occupies a room suitable for twice the number of students or a large class is crammed into a small room designed for a much smaller number of students.

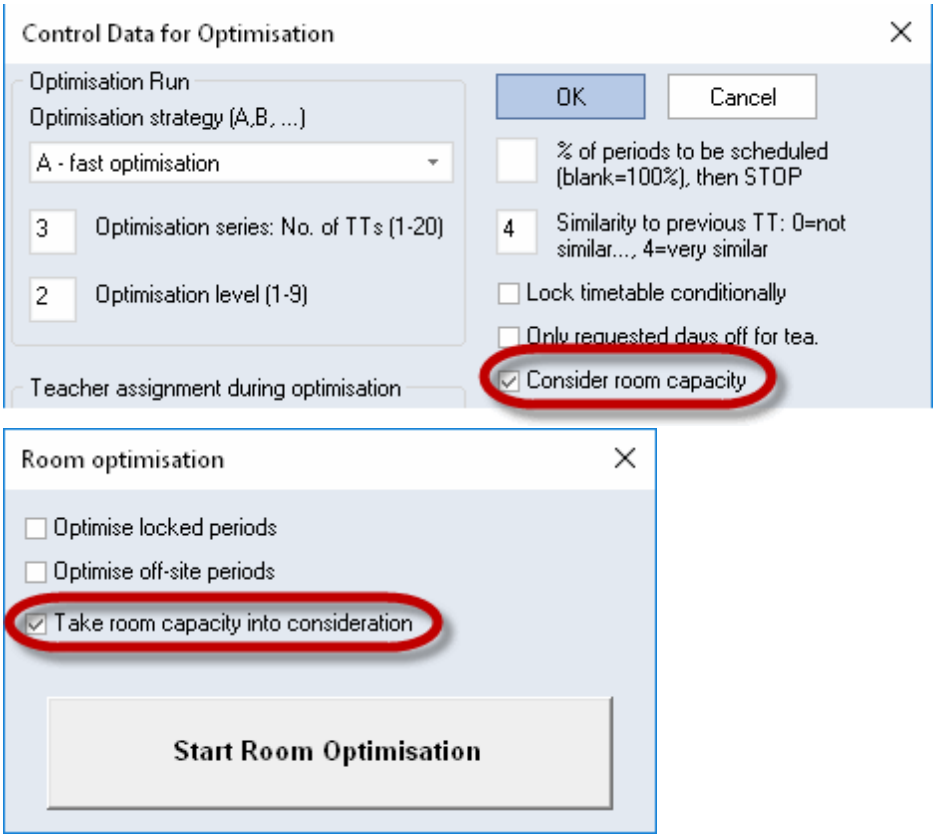
Preparation

To ensure that the room capacity function works correctly, enter the following details (see also chapters 'Master Data' and 'Lesson'):

- Under 'Rooms | Master data': capacity
- Under 'Classes | Master data ': students (male, female)
- For couplings under 'Lessons': students (male, female)

Optimisation

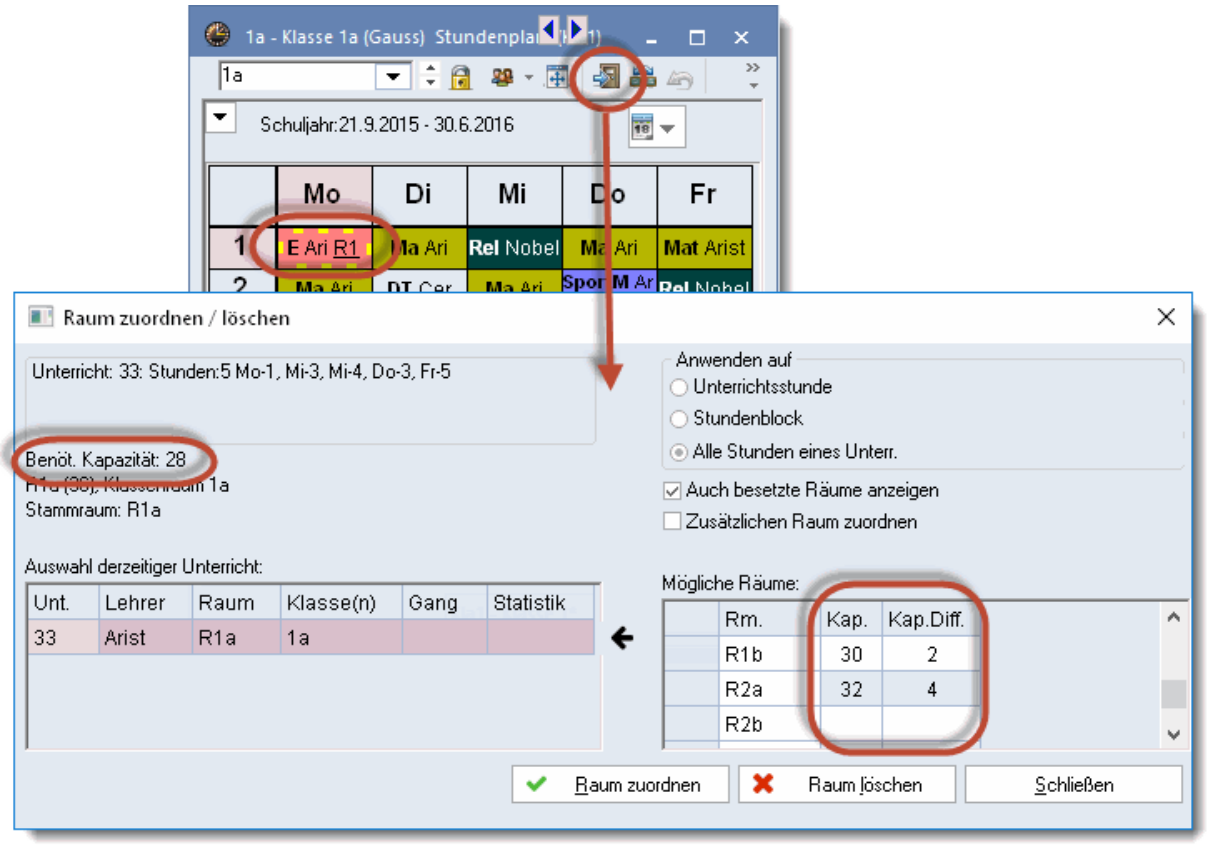
If you wish the room capacity to be taken into consideration, check the relevant box in the optimization or room optimisation dialogue before starting an optimisation or room optimisation run.



Specify the level of importance of the room capacity function by adjusting the weighting option ‘Take room capacity into consideration’ in the weighting dialogue (go to 'Scheduling' tab | 'Automatic scheduling' group | 'Weighting' button) in the 'Rooms' section.

Timetable

If you want to change or enter a room in the timetable, you see the required room capacity for this lesson in the room allocation dialogue and the capacities of the listed rooms as well as the difference in capacity, i.e. how much the listed room is too small or too large.



6.12.4.1 Alternative room chain

If you would like the room optimisation tool to consider the room capacity of alternative rooms, the alternative room ring must remain open, i.e. you need to create an alternative room chain, instead. The example below illustrates this.

The example shows that room R3a has a capacity for 22 persons. If this room is unavailable, the next suitable room for this lesson is the slightly larger room R2a. The next room in the chain is the even larger room R2b etc. The alternative room for R1a is R1b, and the chain ends here because R3a with its lower capacity is unsuitable as an alternative room for R1b.

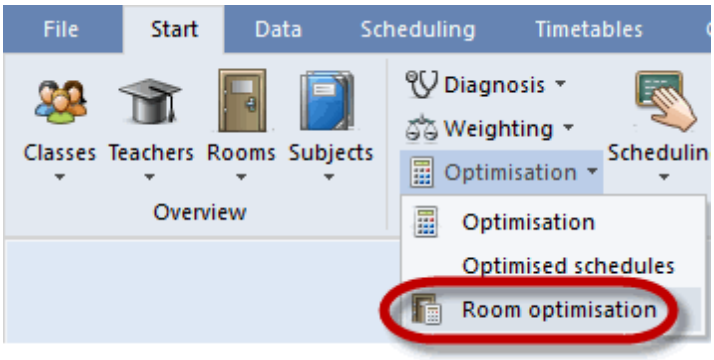
6.12.5 Room optimisation

The room optimisation tool attempts to optimize the already optimised timetable by finding the most suitable room available for each lesson. The software obeys the following rules:

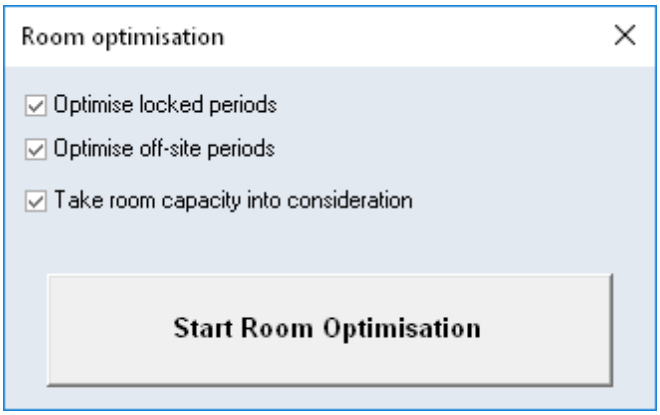
- Lesson periods will **not** be moved.
- Double periods (or period blocks) take place in the same room wherever possible.
- When the software is unable to schedule all of the periods of a subject in the designated subject room, Untis tries to ensure that all classes have the name number of lessons scheduled in the subject room (e.g. if the school has 34 classes and only one Physics lab, Untis tries to ensure that each class has at least one period in the specialist subject room).

- When the optimisation tool is unable to schedule a lesson in a designated alternative room, the room optimisation function ensures that the lesson takes place in the designated home room, instead.
- The software attempts to allocate the same room to a class (or teacher) for the duration of an entire half-day. This is of particular importance for classes without a designated room. These should be allocated with the aid of pseudo rooms.
- Preference is given to alternative rooms listed close to the designated room in the alternative room chain.
- The rooms specified in the 'Lessons' window take precedence over alternative rooms. This is of particular importance for classes without a designated room. A class without a designated room must never displace another class from its designated home room and can only be scheduled for a another room's home room if it is available.
- When a lesson is marked '(r) - All periods in the same room' (on the 'Codes' tab under 'Teachers | Lessons' or 'Classes | Lessons'), the room optimisation tool attempts to schedule all the periods of the lesson in the same room while at the same time taking the room capacity into account. Rooms that are not designated home rooms are allocated first, and preferentially to double periods and period blocks.

Go to the 'Start' or the 'Scheduling' button in order to access the 'Optimisation' menu. :



The room optimisation window provides with three additional setting options:



Tip: No optimsation of certain periods
If you do not want certain periods to be optimised, lock them by unchecking the 'Optimise locked

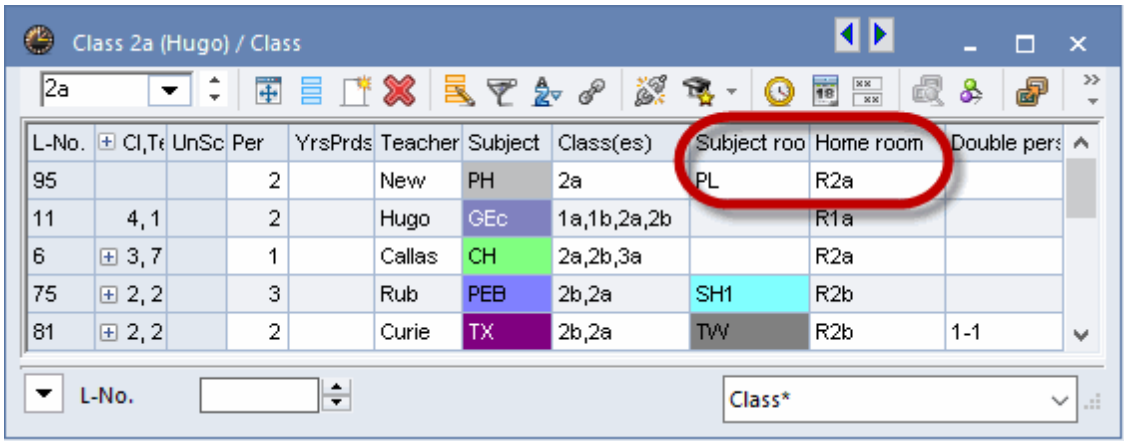
periods' box.

6.12.6 The role of subject rooms and home rooms

The entries for the *subject room* and *home room* fields are decisive for room allociation.

Let us assume in the following example that rooms have been entered in the *subject room* and *home room* fields.

Room optimisation would now attempt to schedule all periods for physics lesson number 95 in the specialist subject room physics laboratory.



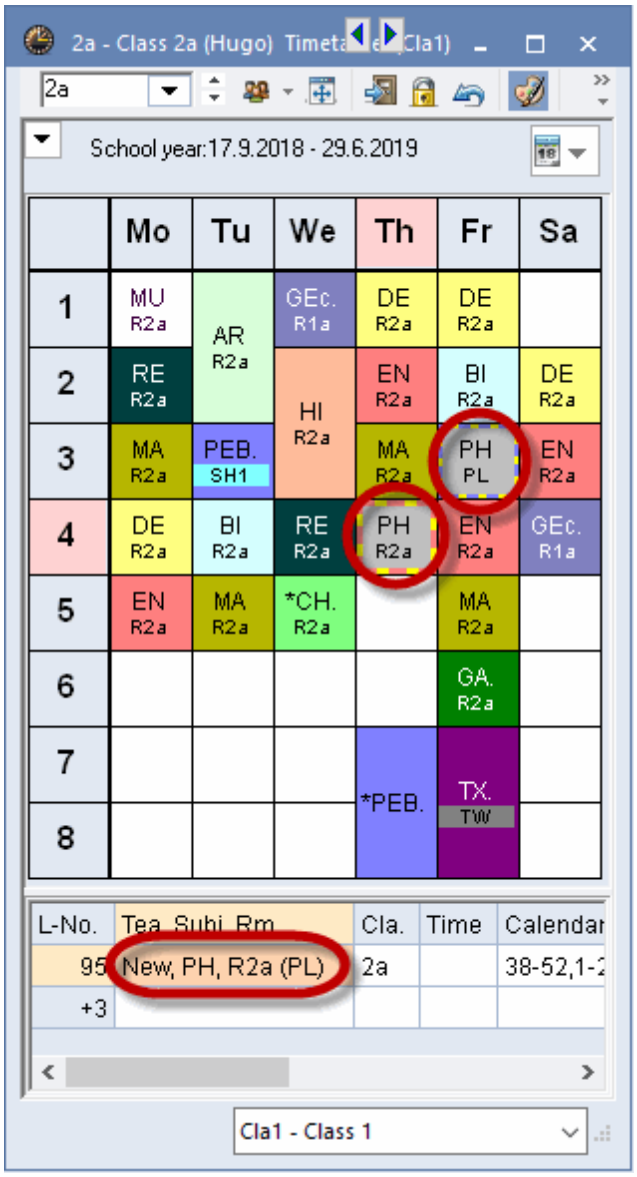
If this condition cannot be met, optimisation will attempt, as in the example, to share the physics laboratory equitably among all classes with a claim on it.

Let us assume that the physics laboratory is not free for one of the two periods in which optimisation attempts to schedule physics lessons. In this case, room optimisation would schedule these periods in the home room - R2a in our example.

The timetable periods detail window will then indicate that room *R2a* has been allocated instead of the desired *Phys* (in parentheses).

As a general rule, if the desired subject room is not free, room optimisation will ensure that the period in question is held in the home room

Please note that you could specify a (different) room to relocate lessons *for each individual lesson* if the desired subject room is not available.

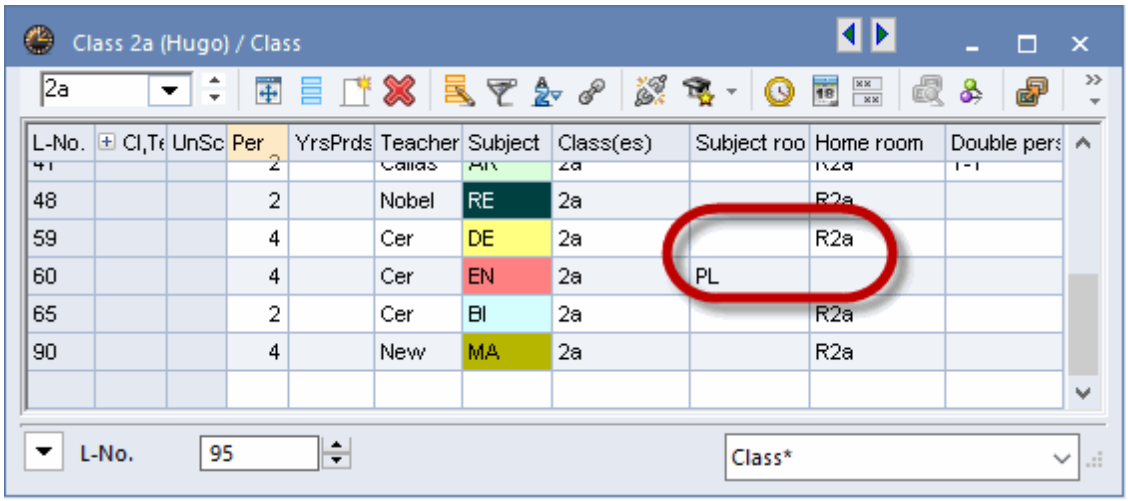


Tip:
If 3 periods of a 5-period lesson have to be held in a subject room (i.e. not in the home room), enter '3' in the field 'Periods in room'.

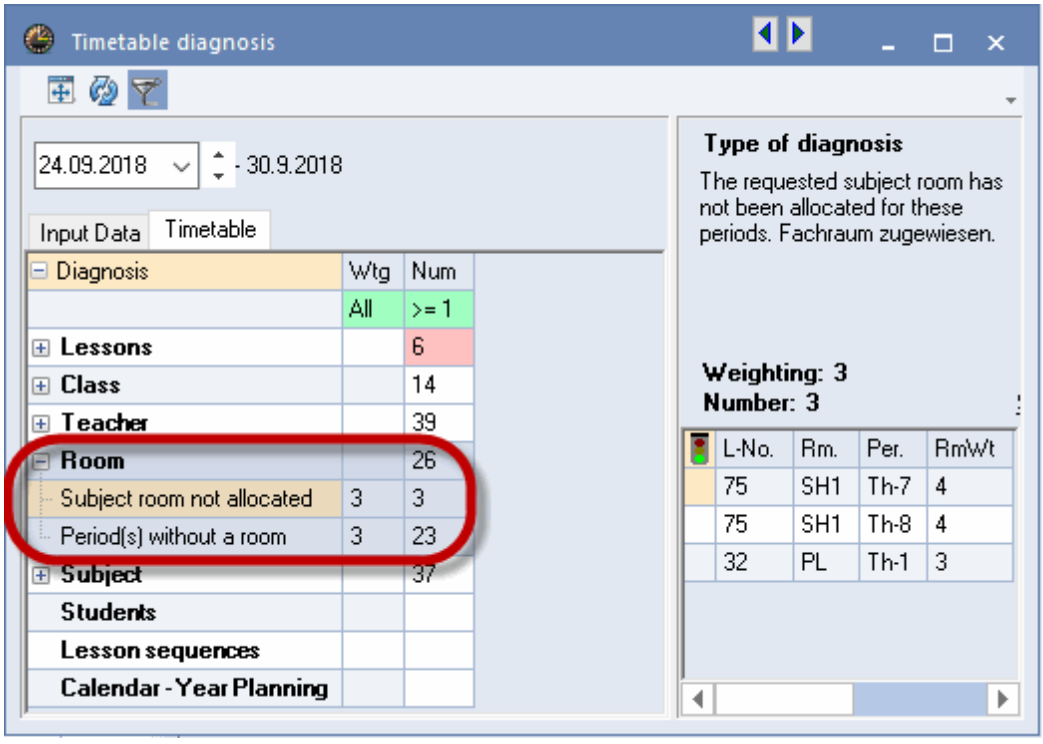
If it is absolutely necessary for lessons to be held in a specific (subject) room, you must do the following, :

1. Set the room weighting for the respective room to 4, and
2. Weight the parameter 'Optimisation of room allocation' on the 'Rooms' tab under 'Scheduling | Weighting' with 4 or 5.

Alternatively, you can delete the entry in the home room field for the respective lesson.



If you have only made an entry in either the *subject room* or in the *home room* fields (as in the above example for lessons 59 and 60), processing will as a rule be identical:
room optimisation first tries to allocate the desired room (or one of its alternative rooms) to the all periods of the lesson in question.



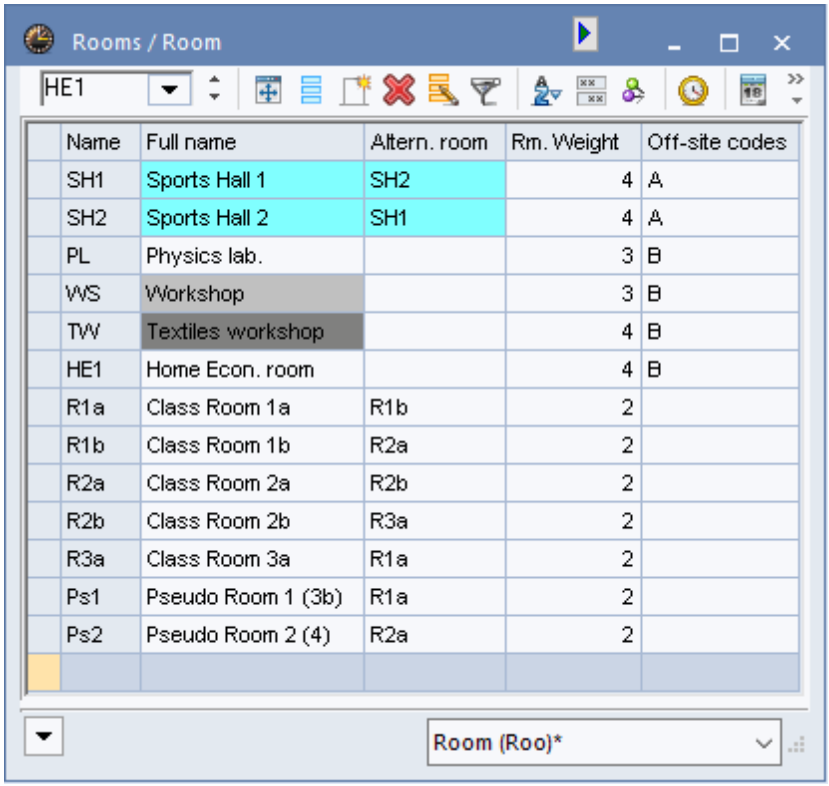
If this process is not successful the weighting settings on the 'Scheduling' tab, under 'Weighting' in the 'Rooms' section are decisive for what is going to happen next: The lesson periods remain either unscheduled or *no* room is allocated.

Periods without a room will always be displayed in the diagnosis.

6.12.7 Off-site rooms

Off-site rooms are specialist subject rooms and classrooms located at such a distance from the main school building that a whole period needs to be set aside to allow teachers and students to reach the *off-site* rooms. The automated *optimisation* function takes the length of the walking time into account when optimising the timetable.

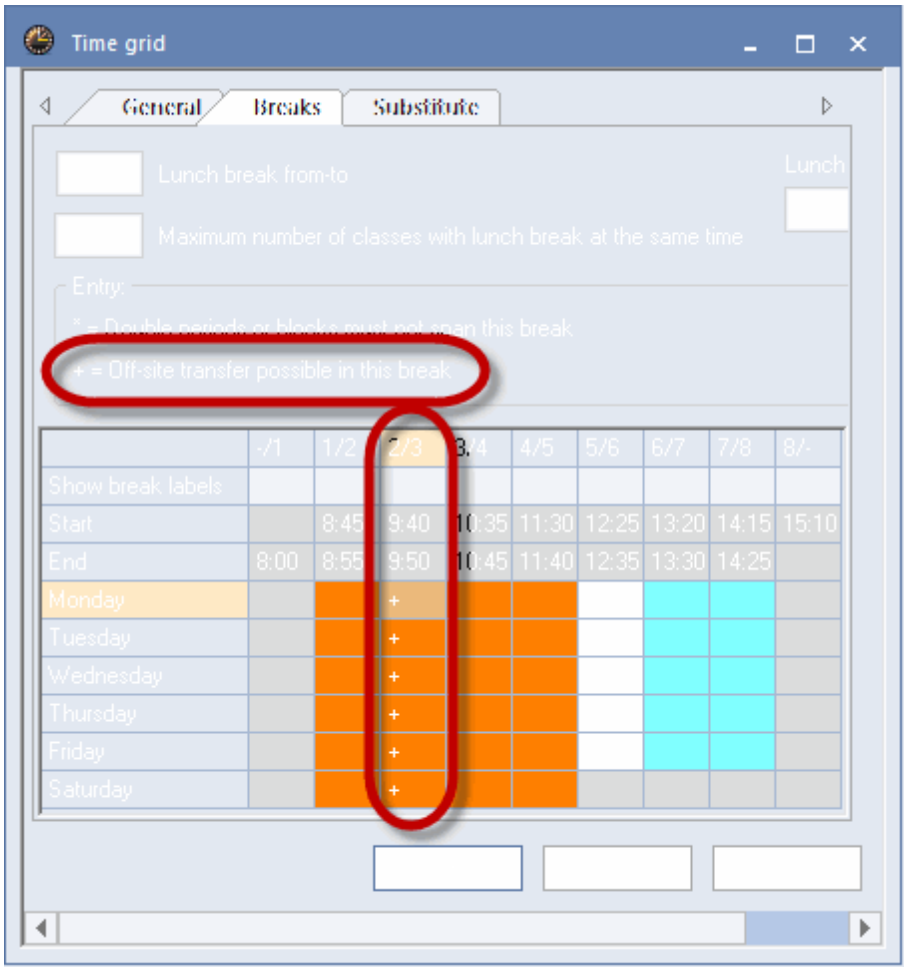
Off-site rooms are entered under 'Rooms | Master data' in the 'Off-site' column.



A PE teacher is scheduled to teach periods 1 and 5 in the main building and period 3 at the (off-site) sports track. The timetabling tool will ensure that periods 2 and 4 remain unscheduled for the teacher to allow him or her sufficient time to reach the sports track.

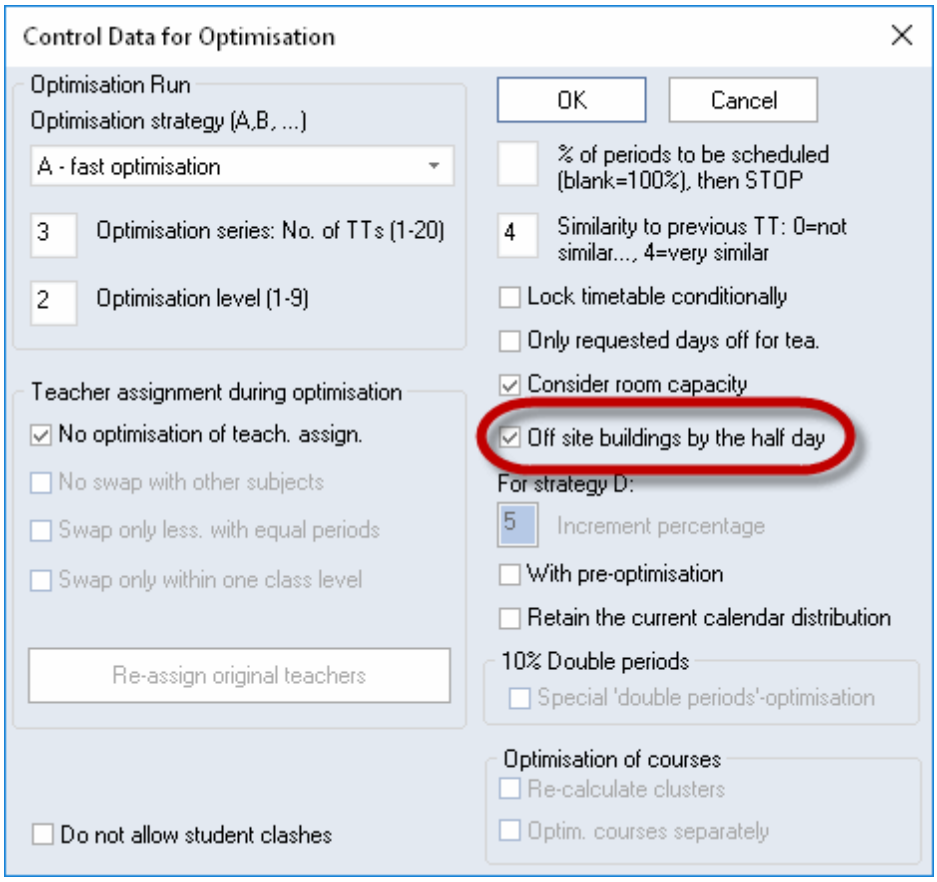
Breaks of different lengths

Many schools use timetables where some breaks are longer than others and where it is therefore possible to reach an off-site location during one of the longer breaks. Breaks of sufficient length to reach an off-site location can be marked '+' in the *time grid* under 'Breaks'.



The figure above shows that the break between periods 2 and 3 is sufficiently long enough to reach the off-site location. The PE teacher in the example above would therefore be able to teach period 2 in the main building and still manage to reach the sports track in time for period 3.

Half-day external site
With the 'Half-day external site' option it is possible to specify that teachers and students may not switch buildings for half a day, thus minimising the number of times they need to switch buildings.



You can use off-site rooms either without graduated lesson start or with graduated lesson start. The following chapters explain this function in more detail.

6.12.7.1 Without graduated lesson starts

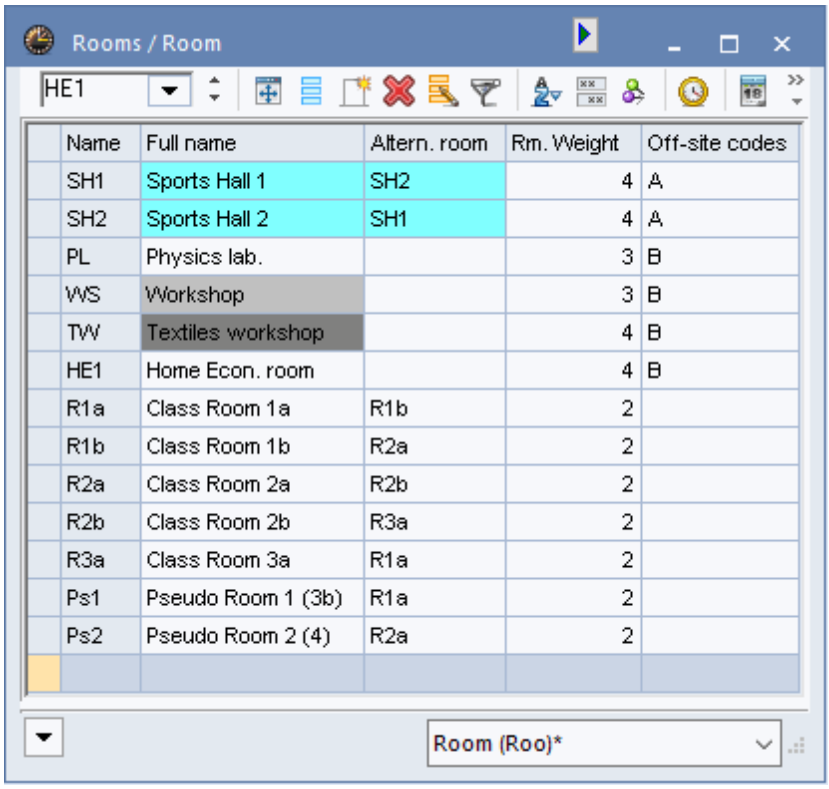
When the same time grid is used in the main building and in external locations, you need to schedule one free period each for the walk to and from the off-site location for teachers and students.

To achieve this use the off-site codes A – E for the relevant off-site rooms at your external locations.

To ensure the correct treatment of off-site rooms during optimisation, enter the following details:

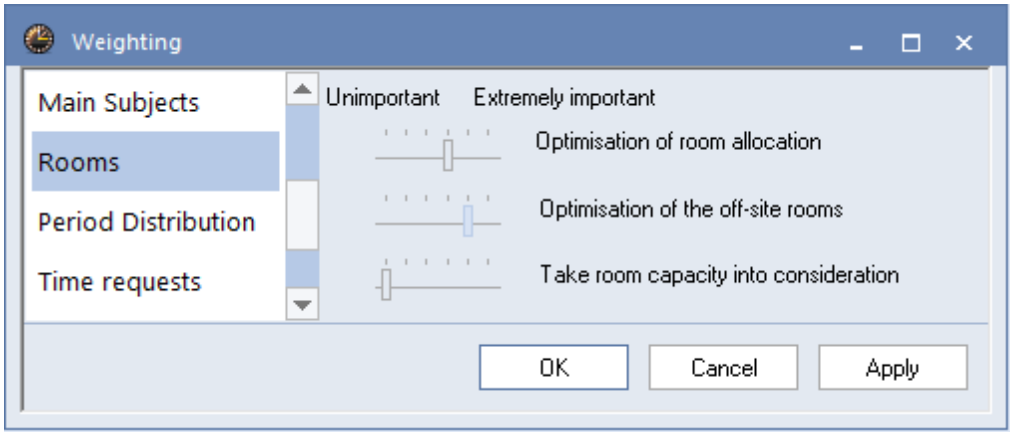
'Rooms | Master Data'

- **Off-site code**
- **Room weighting**



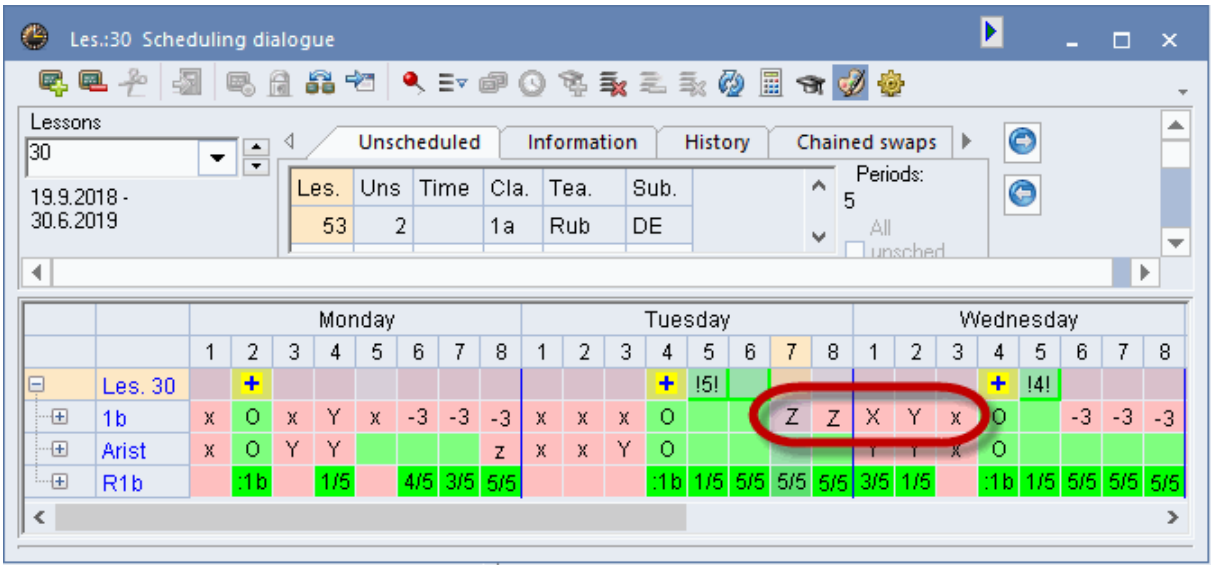
'Scheduling | Weighting | Rooms'

- **Optimisation of room allocation**
- **Optimisation of the off-site rooms**



Scheduling dialogue

Periods scheduled for rooms with off-site code 'a' (or '1') are marked 'y' and 'Y' in the scheduling dialogue. Periods scheduled for rooms with other off-site codes are marked 'z' and 'Z' (upper case letters denote couplings).



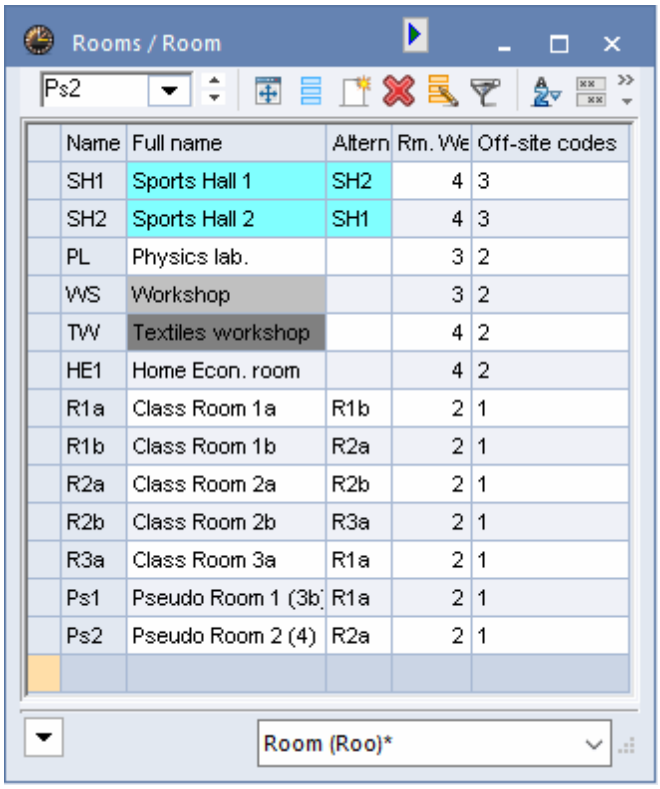
6.12.7.2 With graduated lesson starts

Instead of wasting an entire period to reach an off-site location, the start time of certain lessons can be adjusted slightly to suit the situation.

Beginnzeiten - Hauptgebäude		Beginnzeiten - Außenstelle
	Wegzeit: 15 Minuten	
1. Stunde: **8:00**		1. Stunde: **8:15**
2. Stunde: **9:00**		2. Stunde: **9:15**
3. Stunde: **10:00**		3. Stunde: **10:15**
usw.		usw.

Using this method, the PE teacher from our example at the beginning of this chapter can be scheduled to teach periods 1, 2 and 5 in the main building and period 3 at the off-site sports track. The software schedules a free period for period 4 to allow the teacher sufficient time to return to the main building after period 3.

For off-site rooms with *graduated lesson start* enter the same (numerical) off-site code for all the rooms at an off-site location. Permitted values are between 1 and 9.



Two off-site locations

Let's assume that your school has two off-sitelocations. The first is a 15-minute walk away from the main building, the second a 10-minute walk away from the first off-site location. Enter a value for each off-site room as described above to enable Untis to schedule the teacher as follows:
Period 1 *main building* - Period 2 *off-site location1* - Period 3 *off-site location 2* .

		Hauptgebäude	Weg zeit	Außenstelle 1	Weg zeit	Außenstelle 2
			15 Minuten		10 Minuten	
Disloz.-kennz.		keines		1		2
Beginnzeit	1. Std	08:00		08:15		08:25
	2. Std	09:00		09:15		09:25
	3. Std	10:00		10:15		10:25
	4. Std	11:00		11:15		11:25

Period 1 *main building* - Period 2 *off-site location1* - Period 3 *off-site location 2* .

Untis allocates one free period for the return from one of the off-site buildings to the main building or from off-site location 2 to off-site location 1.

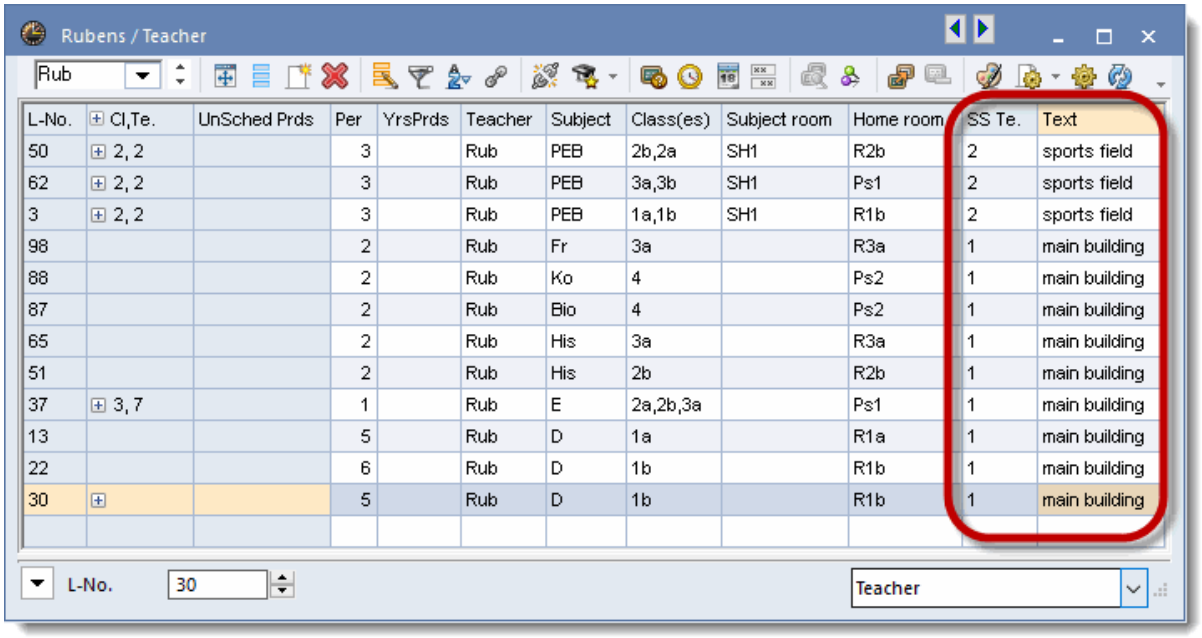
Untis takes into account:

- The walking times for teachers and students to off-site subject rooms and classrooms
- The walking times for teachers and students from off-site subject rooms and classrooms back to the main building

Support by subject sequence for teachers

It is advisable to reduce the number of times teachers and students are obliged to move between main and off-site buildings to an absolute minimum. The following example shows how to do this:

For teachers who teach both in the main building and at off-site locations, enter the number '1' under *Subject sequence - Teachers* for lessons that take place in the main building, and the number '2' for lessons that take place in the off-site building.



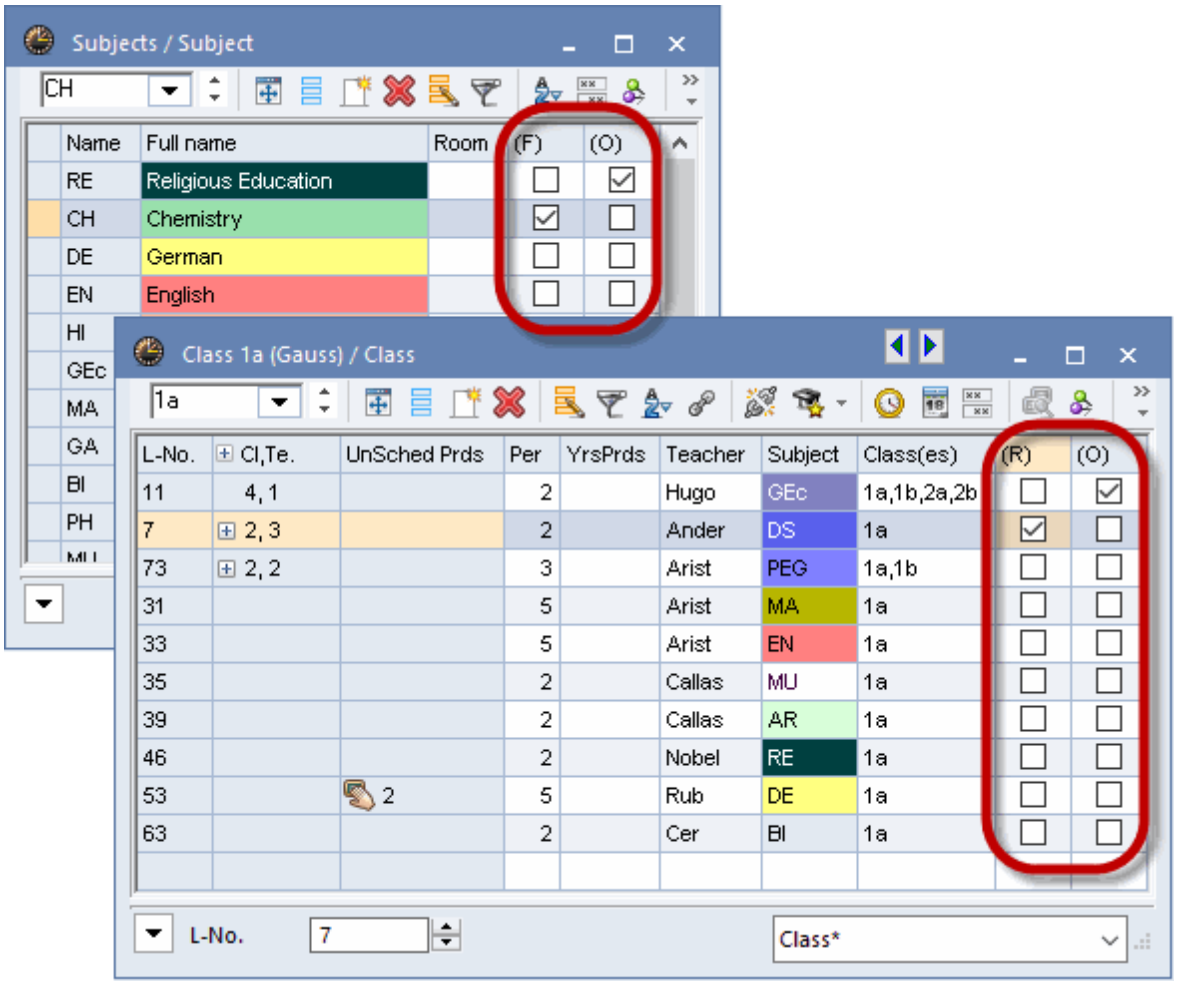
L-No.	Cl,Te.	UnSched Prds	Per	YrsPrds	Teacher	Subject	Class(es)	Subject room	Home room	SS Te.	Text
50	2, 2		3		Rub	PEB	2b,2a	SH1	R2b	2	sports field
62	2, 2		3		Rub	PEB	3a,3b	SH1	Ps1	2	sports field
3	2, 2		3		Rub	PEB	1a,1b	SH1	R1b	2	sports field
98			2		Rub	Fr	3a		R3a	1	main building
88			2		Rub	Ko	4		Ps2	1	main building
87			2		Rub	Bio	4		Ps2	1	main building
65			2		Rub	His	3a		R3a	1	main building
51			2		Rub	His	2b		R2b	1	main building
37	3, 7		1		Rub	E	2a,2b,3a		Ps1	1	main building
13			5		Rub	D	1a		R1a	1	main building
22			6		Rub	D	1b		R1b	1	main building
30			5		Rub	D	1b		R1b	1	main building

Untis will then attempt to schedule as many periods as possible in the same building for the teacher.

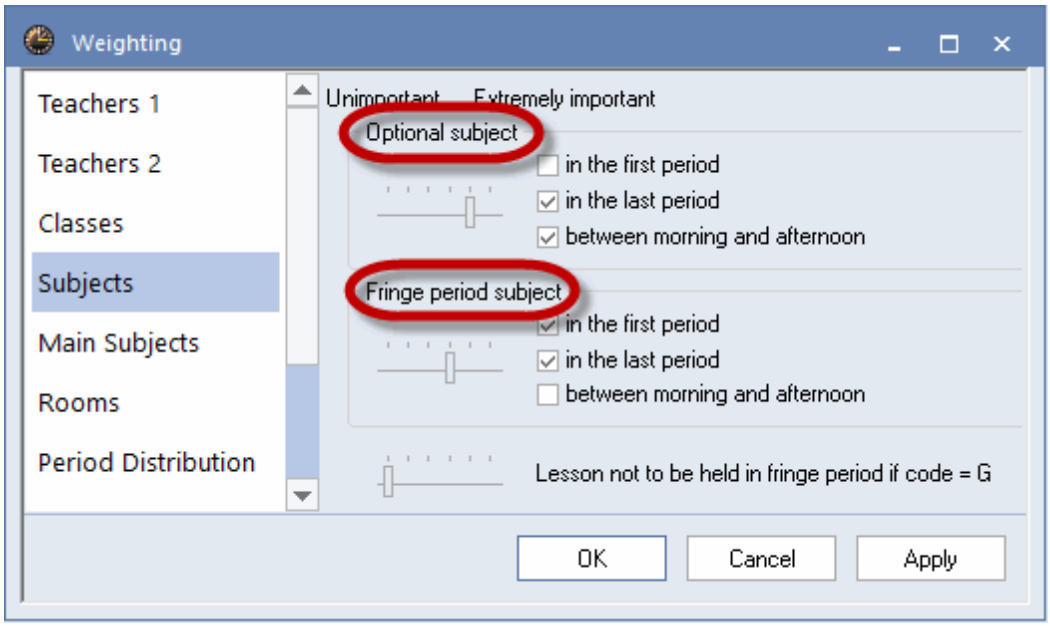
6.13 Optional subjects and fringe periods

Not every subject is attended by every student of a class. When this is the case, it may be desirable to schedule such subjects at the beginning or the end of a half-day (in the so-called *fringe periods,*) to enable students who do not take part in the subject either to come to school later, to leave school early or to have a longer lunch break

To enable the software to schedule subjects in fringe periods, mark the subject with the code *Optional subject* or *Fringe period* (under 'Master Data | Subjects'). In principle, the two codes influence optimisation in the same way but real differences can be made by setting different weighting factors.



The following weighting settings instruct the software to schedule optional subjects preferentially in the *last* periods of a half-day, i.e. either in the last period of the morning or afternoon, while fringe period subjects should be scheduled either in the first or the last periods of the *day* .



Code G has the opposite effect. Subjects marked ' *(G) Not a fringe period* ' are scheduled *outside* fringe periods.

6.14 Main subjects

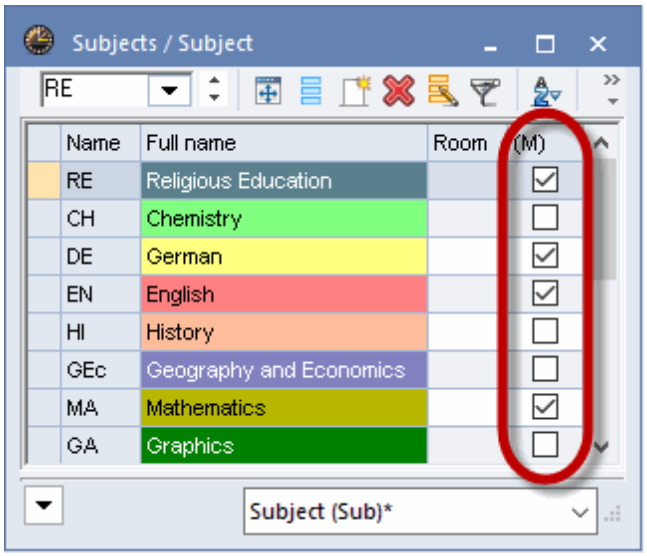
Subjects that are considered particularly strenuous or important for students can be marked with the *main subject* code. This allows the optimisation tool to observe the following restrictions:

- Maximum number of main subjects that may be scheduled for a class per day
- Maximum number of main subjects that may be scheduled in sequence for a class
- Maximum number of main subjects that may be scheduled to take place after a defined boundary period.

To ensure the correct treatment of main subjects during optimisation, enter the following details:

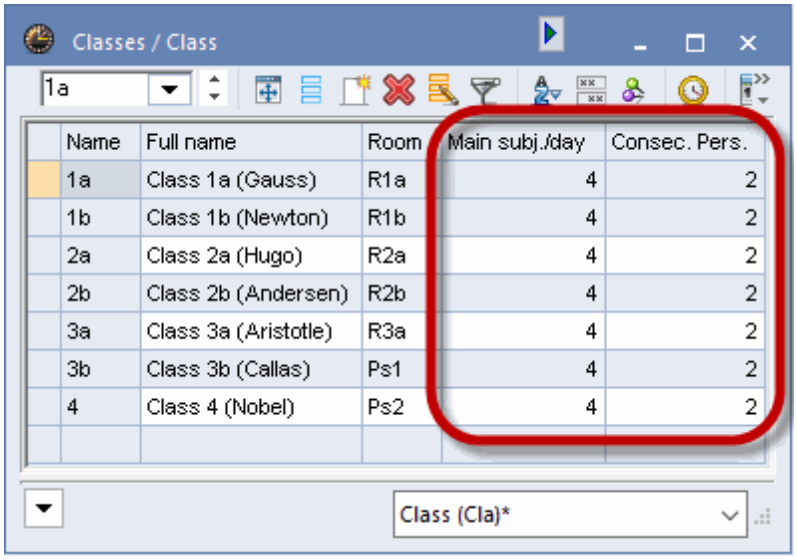
'Subjects | Master Data'

- Code (M) Main subject



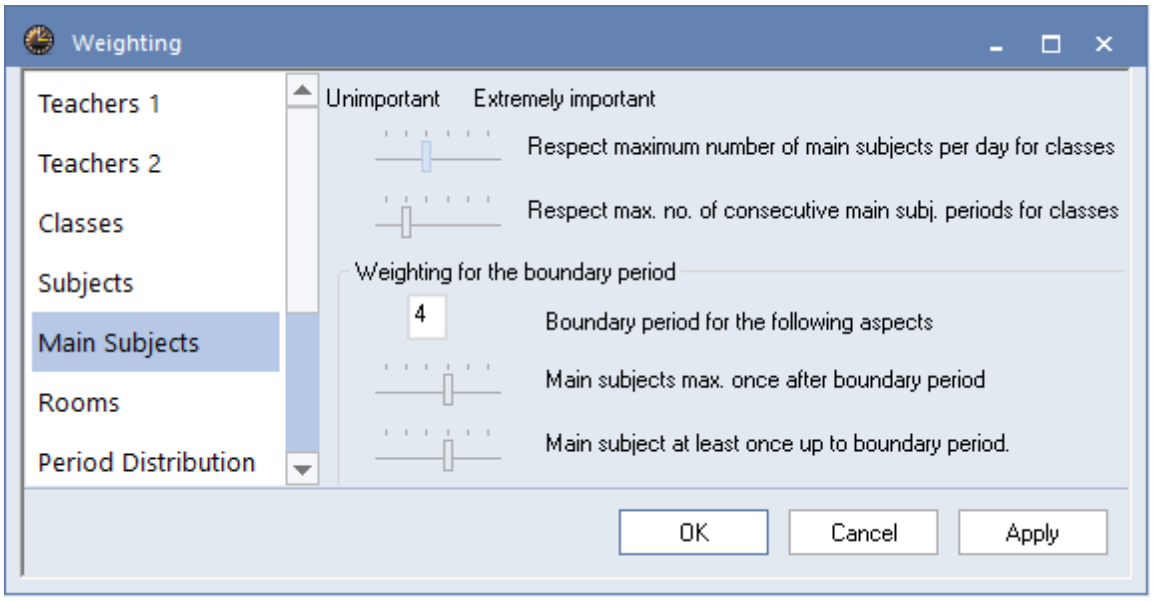
'Master Data | Classes'

- **Max. main subjects per day**
- **Max. consecutive main subjects per day**



'Weighting | Main subjects'

- Respect max. number of main subjects per day for classes
- Respect max. number of consecutive main subjects for classes
- Boundary period
- Main subjects max. once after boundary period
- Main subject at least once up to boundary period



For a more detailed description of the boundary period function plesase refer to ' Optimisation - Weighting parameters'.

6.15 Subject sequences

Subject sequence codes can be entered for subjects and lessons. Subject sequence codes entered for subjects apply to the entire school; codes entered for lessons only apply to the classes (teachers) involved in the lesson.

Note:
Subject sequences are 'soft' conditions for the algorithm, i.e. they may be ignored in extreme cases. A weighting slide control can be used to control the importance attached to these fields. Use fixed subject sequences if the subject sequence must be respected (see chapter ')Subject sequences)')

There are two different types of subject sequnces:

- Positive subject sequnces
- Negative subject sequnces

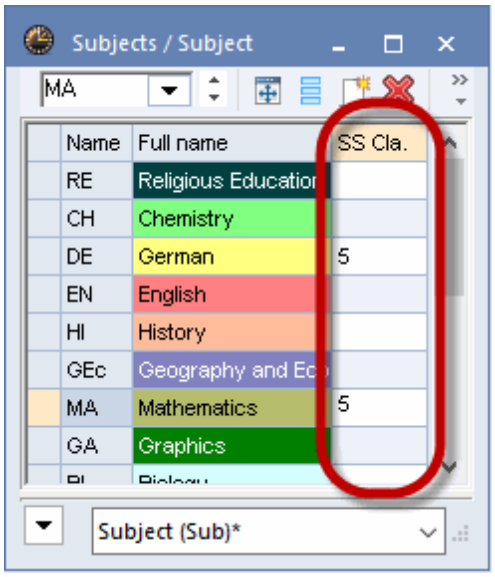
6.15.1 Positive subject sequence

Classes

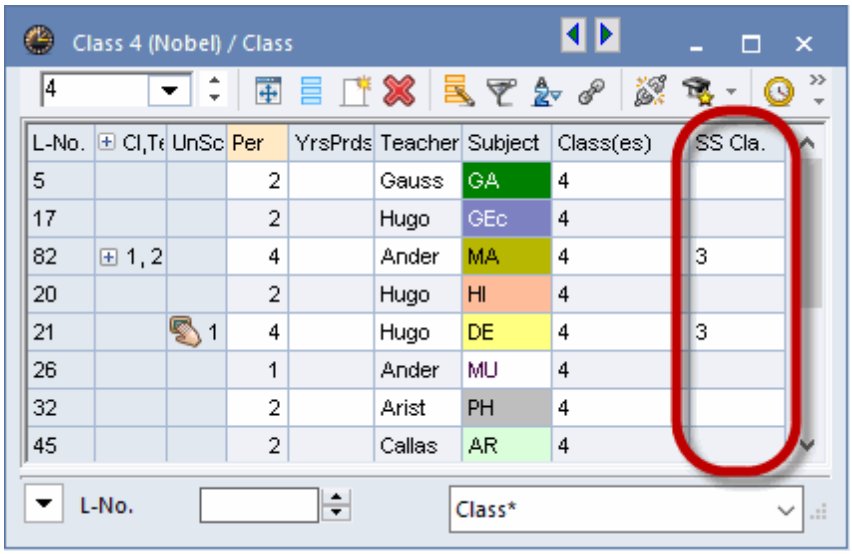
It may be desirable for pedagogical or organisational reasons to schedule certain subjects in sequence.

For example, to allow time for a two-period written exam, you want to schedule the subjects German (DE) and Math (MA) in sequence. It is irrelevant in this case if the sequence is DE-MA or MA-DE.

Applies to the entire school
Enter the same numerical subject sequence code (under 'Subjects | Master Data') for both subjects, e.g. '5' (see example below).



Applies to a particular class
Enter a numerical subject sequence code (under 'Classes | Lesons') in the relevant lesson rows for class 4, e.g. '3'.

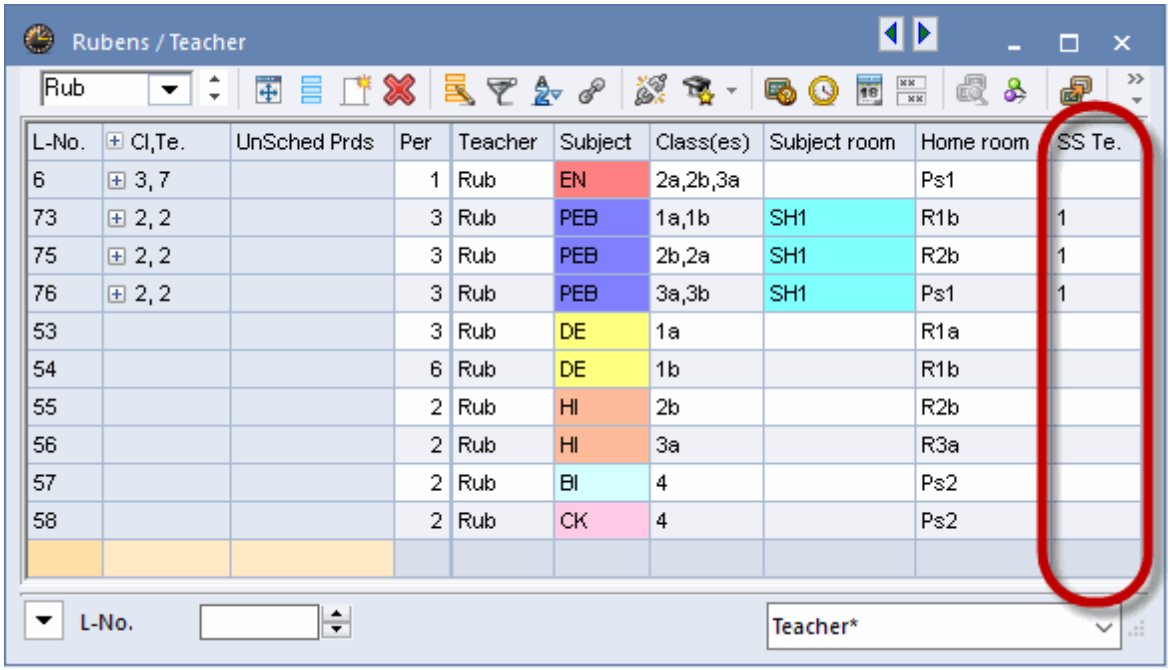


Teachers

You can also enter subject sequence requests for teachers. This is a useful function for subjects that require elaborate experiments to be set up. For example, a teacher who teaches Physics to three different classes of the same year may request to have these lessons scheduled in sequence to allow him to show the same experiment several times in a row.

Another example involves teachers who teach PE plus another subject. The PE lessons should, if possible, be scheduled in sequence so that the teacher is not obliged to change into PE clothes several times a day.

In this case enter the same numerical subject sequence code for the lessons you want to schedule in sequence (under *Subject sequence - Teachers*).



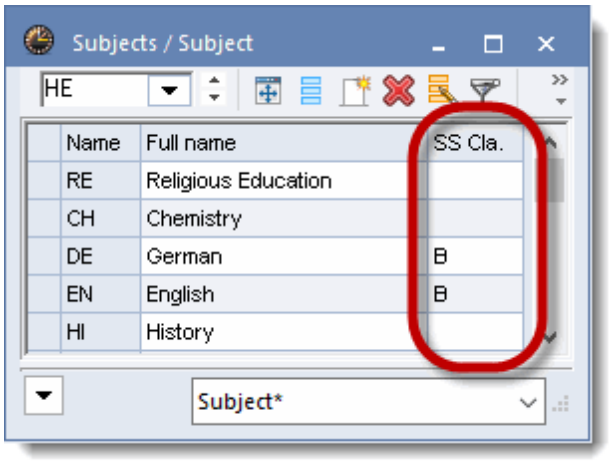
Note: Off-site rooms
You can use positive subject sequences also to assist you with off-site rooms .

6.15.2 Negative subject sequence

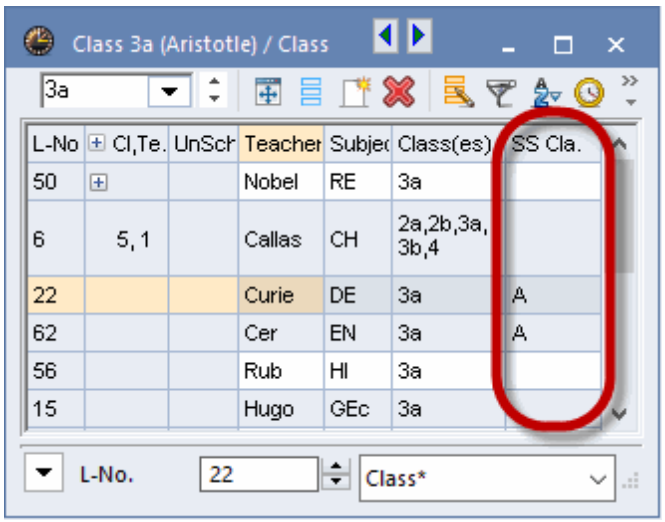
On the other hand, it may be desirable to prevent specific subject sequences. If this is the case, simply enter an alphabetic subject sequence code (letter from A to F). The optimisation tool will take into account that lessons with the same alphabetic subject sequence code should not be scheduled in sequence.

You can enter this code either under Subjects | Master data (for the entire school) or in the lessons window either for classes or for teachers (only for a single class or single teachers).

Entire school
Italian and Latin shall not be scheduled in sequence



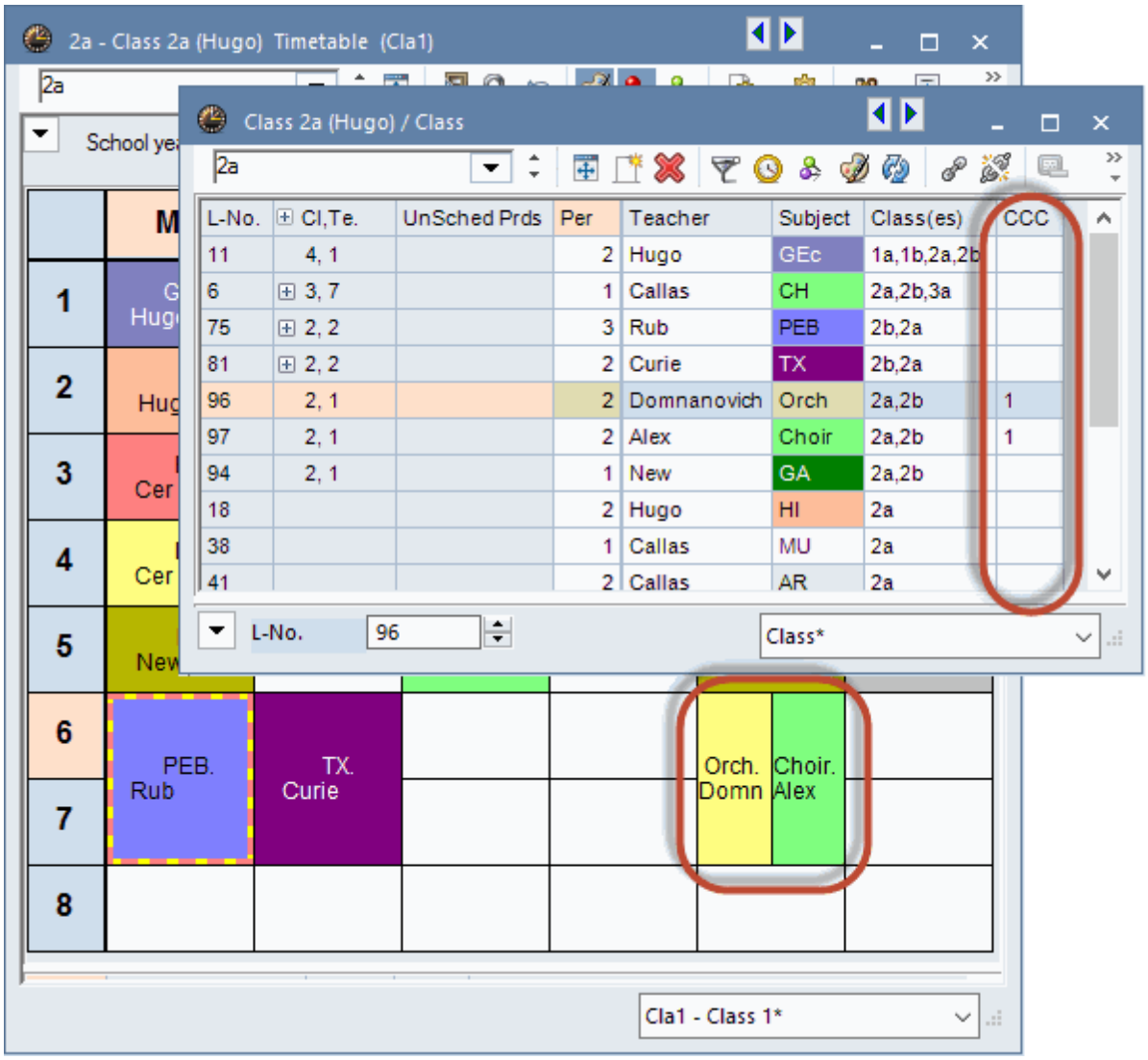
Single class
For pedagogical reasons the subjects English (E) and French (F) should not be scheduled in sequence for class 3a.



6.16 Class Clash Code (CCC)

Teachers, classes and rooms may never be double booked by the Untis optimisation algorithm. However, exceptions may make sense when it is certain that lessons of the class in question are attended by different students.

The students of class 2a attend *either* Choir *or* Orchestra, but none of the students attend both. Enter the same *numerical* CCC for both lessons (permitted values 1 - 9), e.g. '1' to instruct the Untis optimisation algorithm that the lessons Choir and Orchestra may be scheduled at the same time, but that this is not compulsory (see example).



CCC for lesson groups

Let us assume that there are three subject groups. Each student chooses one of the groups and attends all the lessons offered within this group. Conflicts between the individual groups are therefore permissible. Assign *the same* CCC *letter* to all lessons that must not be in conflict with other lessons. Assign a different CCC letter to all lessons where conflicts are permissible..

	CCC	group 1
French and Italian	A	group 2
Chemistry and Physics	B	group 3
Literature and Drama	C	

Please note that entering a CCC *permits* , but does not *enforce* the creation of a conflict between lessons. Consequently, the diagnosis tool will not display an **NTP** (non-teaching period) for classes when the lessons marked with the CCC A, B and C are **not scheduled at the same time** .

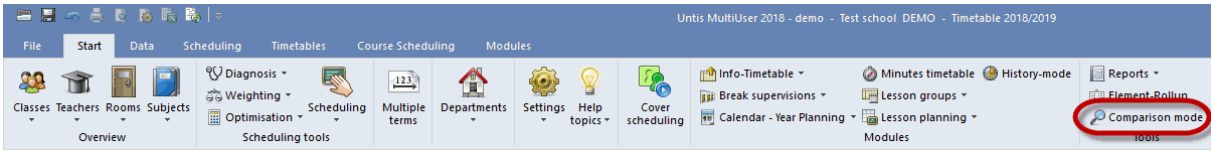
6.17 Comparison mode

The comparison mode enables you to compare and analyse your current data with others. You, e.g. quickly find out which colleagues are effected by a timetable change and can publish the respective information.

You can compare timetables , as well as master data and lessons . You additionally have many different settings for displaying the differences between the two sets of data.

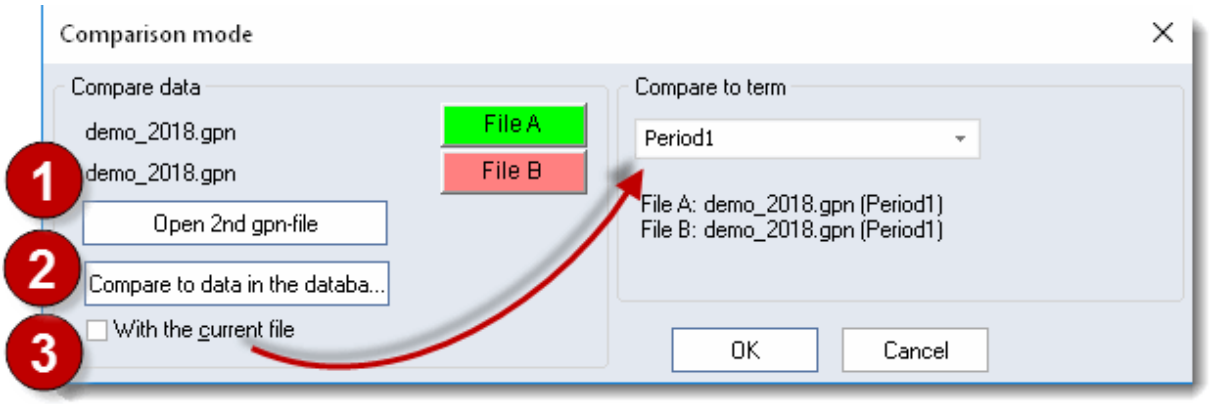
Open comparison mode

Go to the 'Start' tab; click on the ‘Comparison mode’ button to open it.



The current data will be compared to data you need to select. You have three different possibilities to compare your current data:

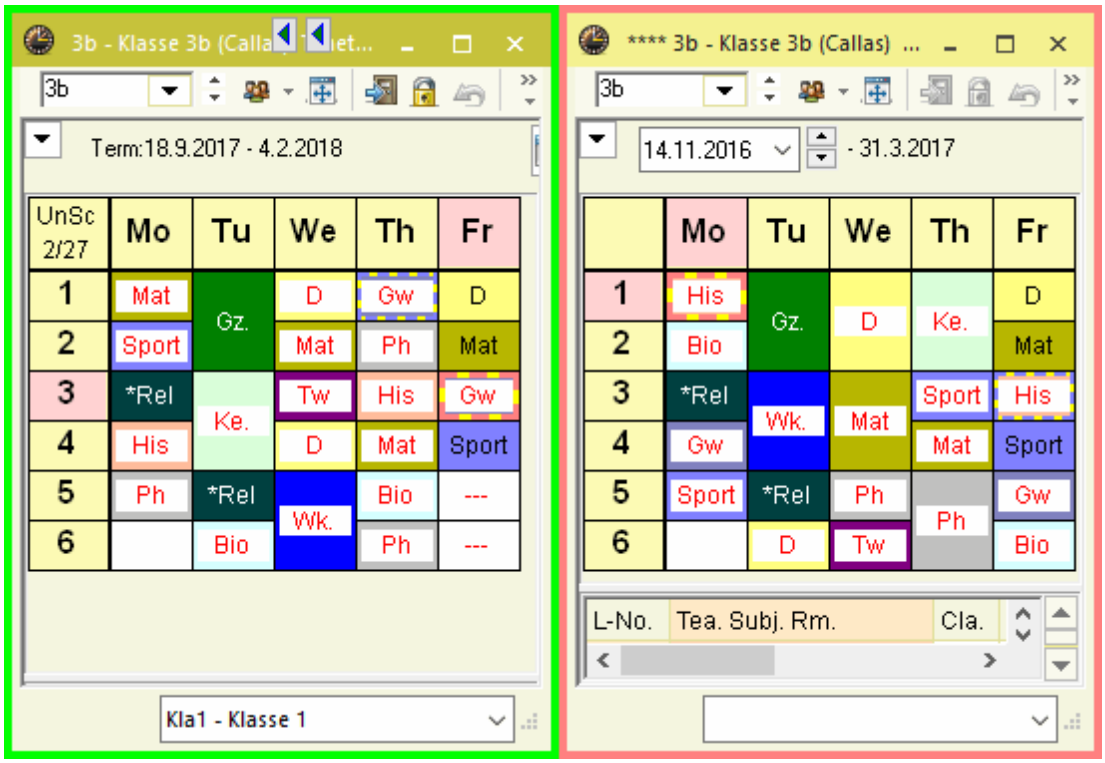
1. with another file.
2. with another version or another school year in Untis MultiUser.
3. with another term of the same file.



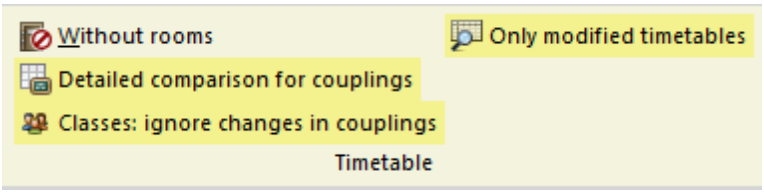
The current data are shown in green, the data you want to compare it to are shown in red. >

6.17.1 Timetable comparison

When you activate the comparison mode and open a timetable, it will be opened twice, once with a green frame, i.e. current data, and once with a red frame, i.e. data you want to compare.



You can customise some settings in order to help you find out the differences of the two sets of data much faster.



Only modified timetables
This option selects only those timetables which hold differences. The selection list and any printout options will only show these timetables.

Other sub-functions:

Without rooms
Room changes are often not so dramatic for the people involved as shifting a period. Therefore, you can define here that only the changed timetables should be shown excluding the timetables in which only rooms have been changed.

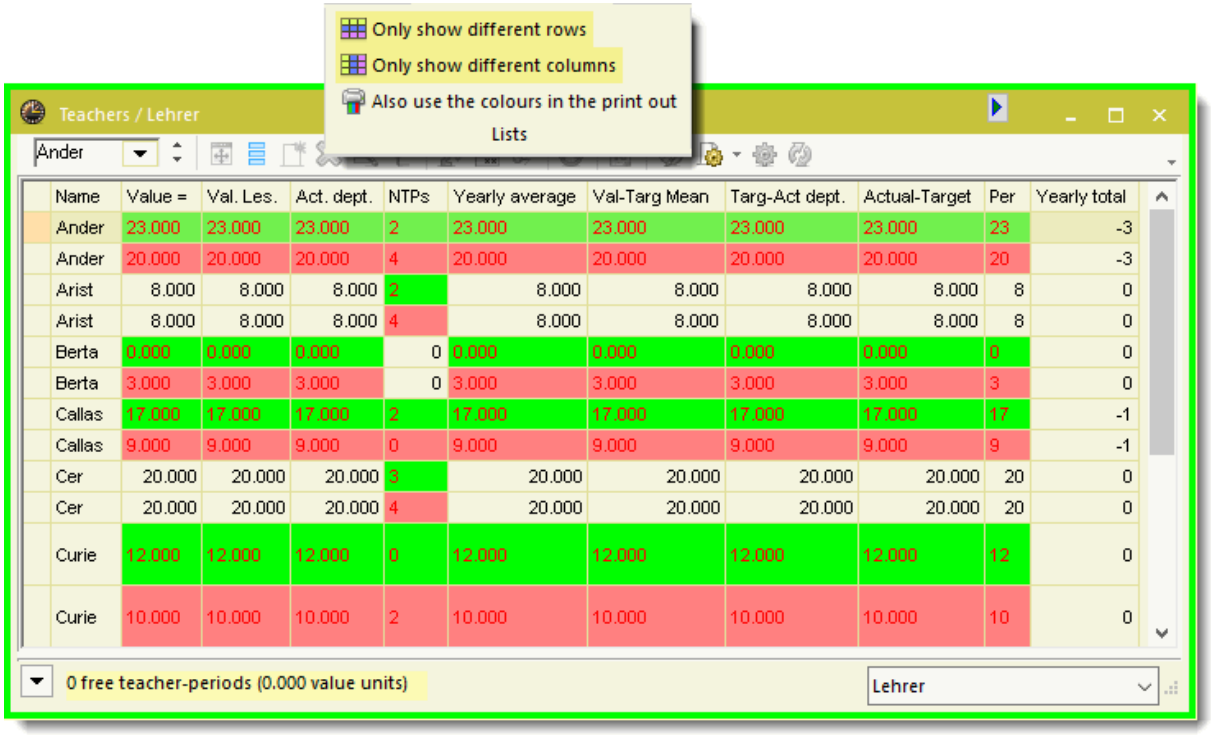
Detailed comparisons for couplings
If you select this option then periods are marked as changed where only a different coupling line was changed and not the current coupling line.

6.17.2 Master data and lesson comparison

If you open a master data or lesson window in the comparison mode then it will be opened only once.

If there are differences in an element or a lesson, two lines will be shown and the differences will be

displayed in the respective colours.



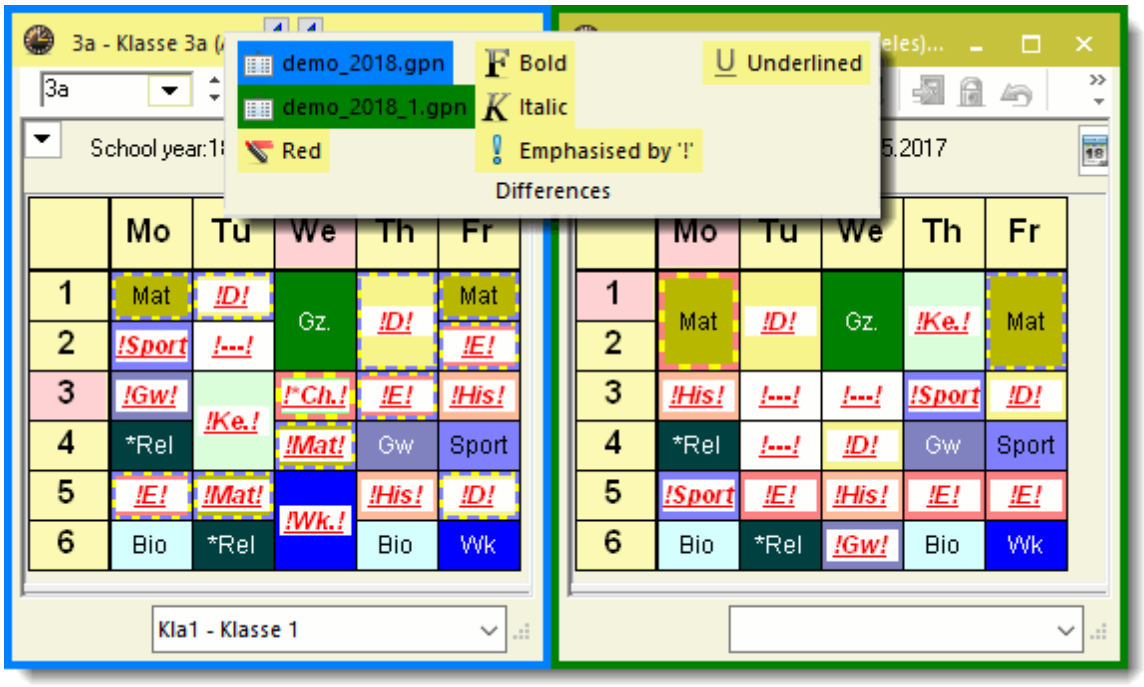
There are two additional options which make it easier for you to find out any differences:

Only show different rows
All lines of elements or lessons will be hidden which do not show any differences.

Only show different colours
All columns are hidden which do not show any differences.

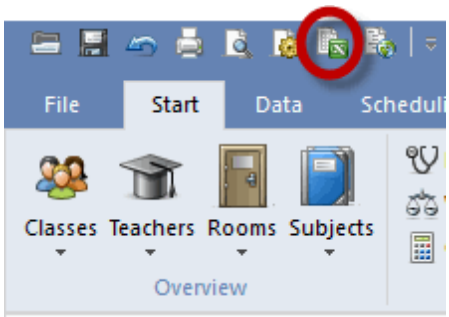
6.17.3 Display options

On the right side of the 'Comparison mode' tab there are different display options you can choose.In our example all options are activated and we also changed the colours of the frames.



6.18 Export to Microsoft Excel

Untis allows you to export most reports and the content of many maste data and lesson fields to MS Excel. The respective button is active on the Quick Access Toolbar whenever it is possible to export data from a window to Excel .



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