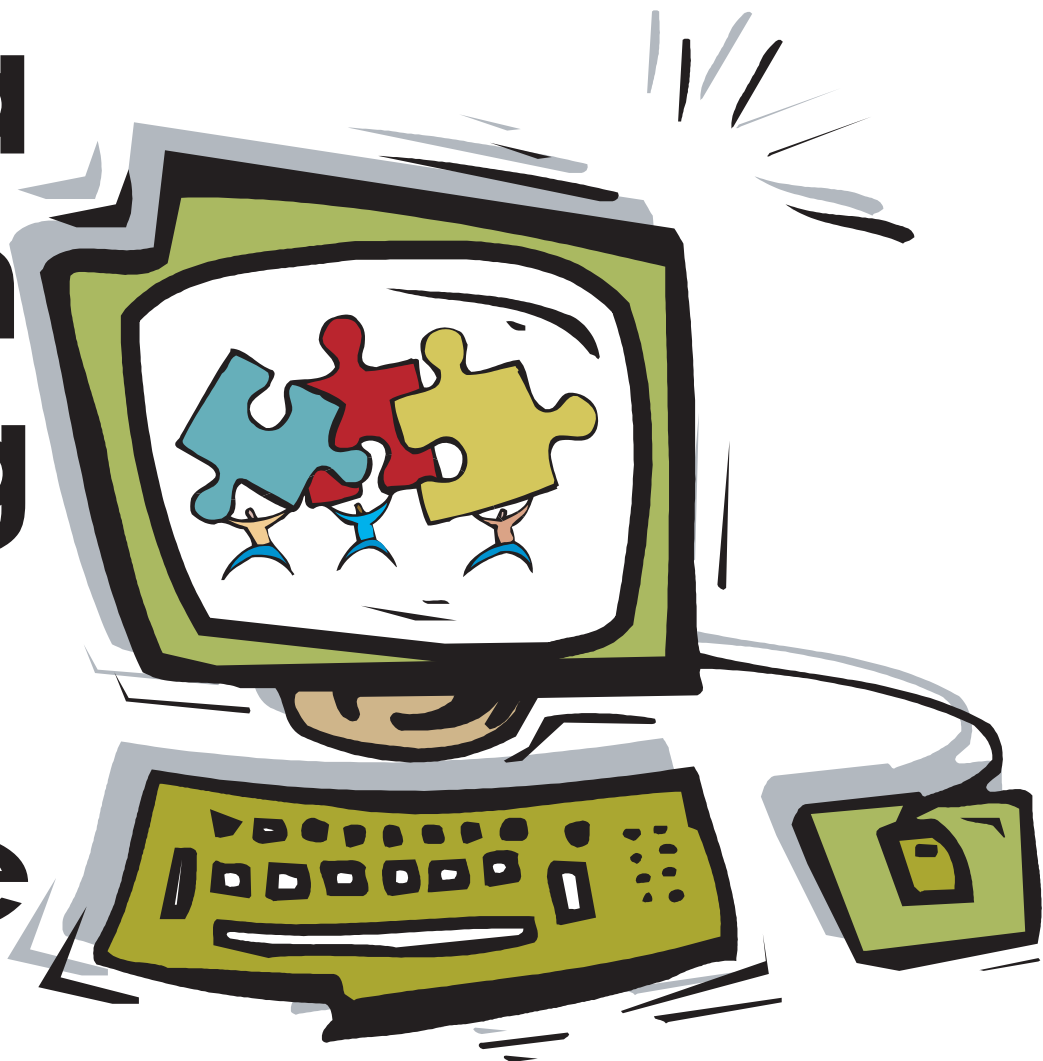


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# Loading Students

San Diego City Schools  
Version 1.0

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# **Part I:**

## **Preparing to Load the Exported Master Schedule**

## Master Builder - Exporting A Master Schedule

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Master schedules stored in the Master Builder are only working versions of schedules. When a suitable schedule is designed for the target future track you must export that schedule to the Master Schedule application. It will then become the 'active' master schedule for that track so that students can be scheduled, or 'loaded', into it using the various other scheduling applications.

### *Discussion:*

There is no tie between the master schedule you will be loading and the master schedule you just created using the Master Schedule Builder Assistant (other than the fact that you did export it from the Builder). Once it is exported, there is no tie between the two. Therefore, if you make a change in the master schedule and you think you might want to go back to the Builder, you must either:

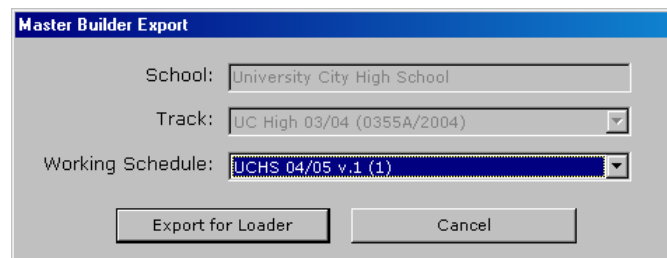
1. Make the same change in the Builder, or
2. Re-import the master you previously exported.

In a high school setting, you might consider building the master schedule via the Master Schedule Builder Assistant without faculty or rooms. This would assure that you built the schedule based on conflict resolution and balance. You would export the master, load and evaluate the results, make changes in the Builder Assistant, re-export, etc. you would stay in this cycle until you felt you had the best possible master schedule. You would then have the department heads staff the schedule. You would use the Builder Assistant to enter teachers and room (much faster than Master Schedule Editor), re-export, and reload as your final load.

### *Export Steps:*

When you export a master schedule from the Builder Assistant into the Master Schedule Editor, the old master schedule and all associated student schedules will be deleted. Therefore, make sure you are exporting into the proper track. The Export application will not delete a schedule where student attendance has been taken.

1. Log on to the school and track that is to receive the new schedule.
2. Launch the Master Builder and click on the Export Master Schedule link on the main menu.
3. In the Master Builder Export dialog that appears, select the name of the working schedule to export.



4. Execute the export by clicking on the Export for Loader command button (or Cancel to abort)
5. The exporting will take a minute or so followed by a confirmation message when it is finished.

Click OK on the confirmation message to conclude the export process.

## Loader Rules

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Loader Rules are course scheduling constraints and course load balancing constraints for the Student Loader program. The Student Loader accesses data entered in this application when certain options are selected. You may or may not want to use Loader Rules when running the Loader. If you do, you will use the Loader Rules application to define those Rules.

It is important when creating Rules that you do not cause any conflicts with any Team Definition or Section Links that you may have also created. If your Team set-up tells the Loader to do one thing, but your Rules tell it to do another, it will simply do neither.

### *Hard vs. Soft Rules*

As Rules are defined, you have the choice to make them either "Hard" or "Soft". Hard Rules are rules that the Loader MUST follow or it can not schedule the class (or classes) that are tied to that Rule. Soft Rules are Rules that the Loader will try to follow, but if it can't it will schedule the student into the class (or classes) anyway, in violation of the Rule.

### *Class Rules*

Class Rules defines relationships between TWO DIFFERENT COURSES and how the Loader will schedule them, based on those relationships.

There are two types of Class Rules:

1. 'Before/After Rules', where you might instruct the Loader to, for example, schedule Biology before Biology Lab.
2. 'Same or Different Rules', where you might instruct the Loader to, for example, schedule a student into section 2 of Biology Lab if that student is scheduled into Section 2 of Biology; or schedule the student with any Faculty Member besides Mr. Smith for Biology if the student is scheduled with Mr. Smith for Biology Lab.

### *Same or Different Rules*

After selecting the two courses, you can also use same or different Rules to tell the Loader what you want to do with them:

#### **Set Student Filter (optional)**

This will allow you to apply this rule to a specific grade level, gender, or service instead of to everybody.

Click 'Set Student Filter' and make any desired selections.

Some 'Same or Different' Examples:

1. Always schedule Class 1 with the same teacher as Class 2.
2. Try to schedule Class 1 with a different teacher than Class 2.
3. For students in the 12<sup>th</sup> grade, never schedule Class 1 in the same term as Class 2.
4. For students in the 9<sup>th</sup> grade, whose gender is Male, try to schedule Class 1 with the same section number as Class 2.

The next example is one that is popular in many Middle Schools. Students are in effect "grouped" together by the section number of the courses that they take by such a rule. This has a similar effect to using Teams or Linking, but no Team Definition or Requests are required and no Links have to be defined:

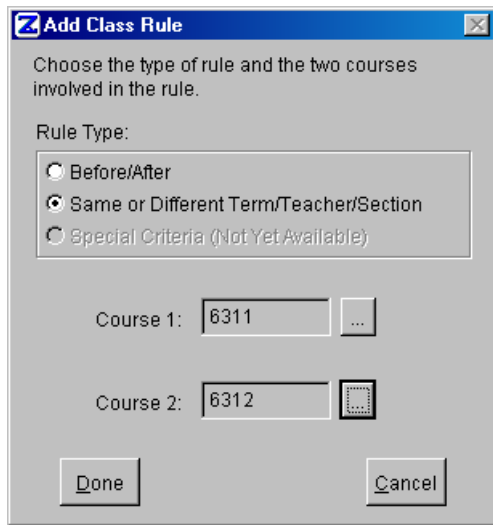
1. Schedule Math 7 with the same Section Number as English 7 Schedule English 7 with the same Section Number as Science 7.
2. Schedule Science 7 with the same Section Number as Social Science 7.
3. Schedule Social Science 7 with the same Section Number as Health 7.
4. Schedule Health 7 with the same Section Number as Exploratory Elective 7.
5. Schedule Exploratory Elective 7 with the same Section Number as Math 7.

**NOTE:** The last rule in the block above references back to the original rule because you never know which course the Loader is going to load first.

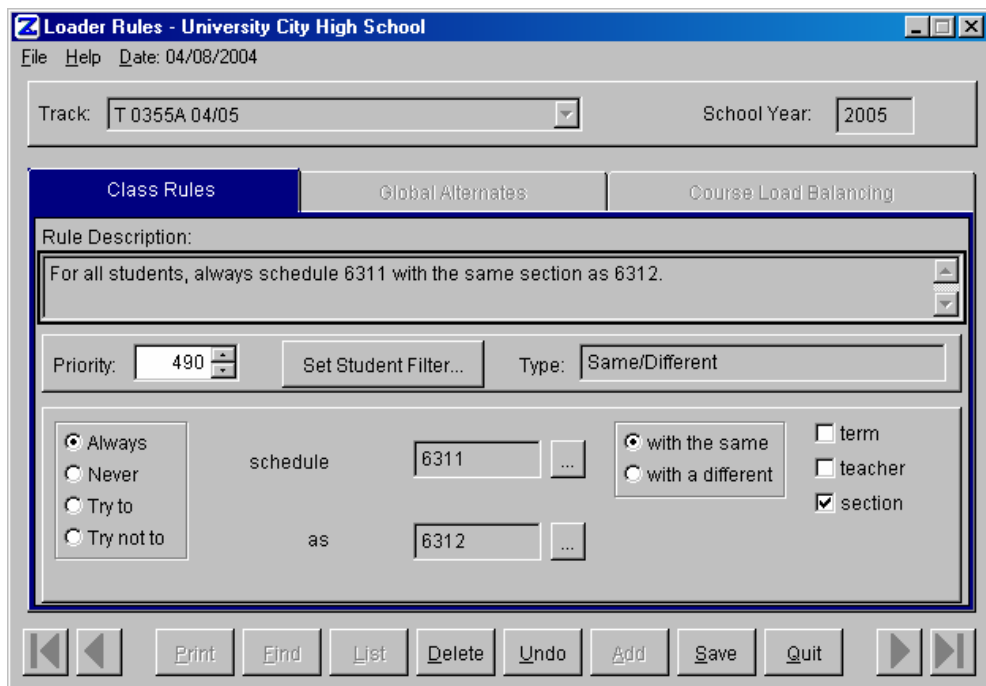
Again, in the creation of Rules, you may see that the same rule can be stated in different ways. Use the syntax that is most comfortable to you.

1. From the Loader Rules Screen select the Future Track, then click Add.

The screenshot shows the 'Loader Rules' application window for 'University City High School'. The interface includes a menu bar with 'File' and 'Help', and a date field showing 'Date: 04/08/2004'. Below this, there are input fields for 'Track' (set to 'T 0355A 04/05') and 'School Year' (set to '2005'). The main area has three tabs: 'Class Rules' (selected), 'Global Alternates', and 'Course Load Balancing'. Under 'Class Rules', a 'Rule Description' text area contains the text: 'For all students, always schedule 0231 with the same section as 0232.' Below the description, there are controls for 'Priority' (set to '1'), a 'Set Student Filter...' button, and 'Type' (set to 'Same/Different'). The rule configuration section includes radio buttons for 'Always' (selected), 'Never', 'Try to', and 'Try not to'. It also has radio buttons for 'with the same' (selected) and 'with a different'. Checkboxes for 'term', 'teacher', and 'section' are present, with 'section' checked. The rule is configured to 'schedule' '0231' 'as' '0232'. At the bottom, there is a toolbar with buttons for navigation and actions: 'Print', 'Find', 'List', 'Delete', 'Edit' (highlighted), 'Add', 'Save', and 'Quit'.



2. Select the syntax for the rule.



## Before/After Rules

**NOTE:** Before/After Rules deal with how the Loader should schedule courses across Terms. These Rules in no way tell the Loader to schedule Before/After Periods. They only deal with Terms.

After selecting the two courses, tell the Loader what you want to do with them. As you are defining Class Rules, you are building a 'sentence', so to speak, which is displayed toward the top of the screen. Make sure that that sentence is representative of what you are trying to accomplish by creating this Rule.

The screenshot shows the 'Loader Rules' application window for University City High School. The interface includes a menu bar (File, Help), a date field (04/08/2004), and input fields for 'Track' (T 0355A 04/05) and 'School Year' (2005). There are three tabs: 'Class Rules' (active), 'Global Alternates', and 'Course Load Balancing'. The 'Rule Description' field contains the text: 'For all students, always schedule 0191 to end before 0192 begins.' Below this, the 'Priority' is set to 1, and the 'Type' is 'Before/After'. A 'Set Student Filter...' button is present. The main configuration area has radio buttons for 'Always', 'Never', 'Try to', and 'Try not to'. For the first course (0191), 'Always' is selected, and 'to end' is chosen. For the second course (0192), 'before' is selected, and 'begins' is chosen. The bottom of the window features a toolbar with buttons for 'Print', 'Find', 'List', 'Delete', 'Undo', 'Add', 'Save', and 'Quit'.

### Set Student Filter

This will allow you to apply this rule to a specific grade level, gender, or service instead of to everybody.

Click 'Set Student Filter' and make any desired selections.

### Some 'Before and After' Examples:

1. Always schedule Class 1 to begin before Class 2 begins.
2. Never schedule Class 1 to begin before Class 2 begins.
3. For students in grade 10, try to schedule Class 1 to end before Class 2 begins.
4. For students in grade 10, whose gender is Female, never try to schedule Class 1 to begin after Class 2 begins.

You will notice that there may be more than one way to define Rules that mean the same thing. The settings can be mixed and matched to meet your needs. Use the wording logic that you are most comfortable with.

## Section Linking

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Using Section Linking is optional. Section Linking is used to associate Master Schedule course sections with one another. When a student is scheduled into a linked course, they are automatically scheduled into sections specified in the 'link tree'. When entering Course Requests, linking requires that you ONLY request the "Root" link in a link tree. **Linking is SECTION-specific, not course-specific.** You are linking Section 1 of English to Section 3 of Math, not linking English to Math. The list of available sections comes from the list of sections in the Master Schedule for the selected track. If the Master Schedule is not yet built, skip this step for now and go on to the other steps that lead up to building the Master Schedule. If the Master Schedule needs modifications after entering Course Requests, make those changes before creating your Links.

From the Main Menu click **Scheduling**, then **Section Linking**.

### *Applying Section Linking*

When using Section Linking, you only need to request the Root course of a link tree. In fact, you must **ONLY select the Root course**. If you select both the Root and its children, you will be creating a loop that will either cause the Loader to run for a very long time, or to fail altogether. However, it is a good idea to give students a course request for the linked courses; this will assure the linked sections appear in the master schedule. The "child" courses must be removed for a student's course request prior to running the loader.

The Loader will automatically schedule the root's children if it places that student into a section of the course that was Requested that has been defined as a Root and the Loader has chosen that Root section to schedule the student into. Since you can only request Courses, not Sections, you can not specify a link to schedule a student into. If you already knew the link to schedule the student into, you might as well pre-schedule that student because you already know exactly which sections you want that student in, defeating the purpose of running the Loader on the student. Linking would mostly be used in a situation where they, for instance, have 2 sections of the pre-Algebra, 2 sections of English Lit, 2 sections of Biology, 5 Sections of PE and 2 Sections of World History. You could build 2 separate links. The parent of each link would be Pre-Algebra.

#### **Pre-Algebra Section 1- Request = 4035 Pre Algebra**

English Lit Section 1  
Biology Section 1  
World History Section 1  
PE Section 1

#### **Pre-Algebra Section 2 - Request = 4035 Pre Algebra**

English Lit Section 2  
Biology Section 2  
World History Section 2  
PE Section 2

Note that **the Root** in a related set of Links **is always the same course**. That way **you would only request Pre-Algebra** and the other classes would be scheduled automatically. If you

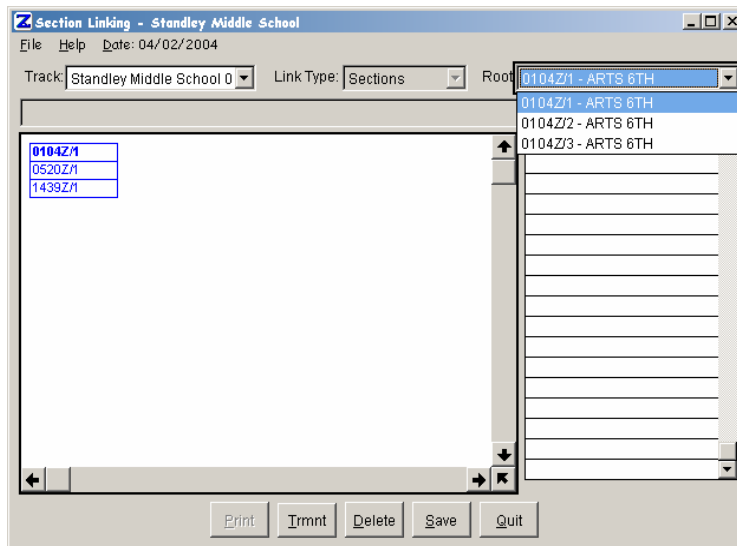
varied your Roots, you would have to request varying courses. That would then cause the Loader to get stuck in a loop. When creating Links, it is easy to forget to keep the Roots the same among similar link trees. It is often the case that the user attempts to create Links based on the period order of the sections. The period order of the sections has absolutely nothing to do with the way Links are set-up. They strictly deal with sections.

### *Maintaining Section Linking Data*

**Note:** when working in the Master Schedule and attempting to delete a section, the system will check to see if that section is involved in Section Linking before continuing. If the section you are trying to delete is used in Linked, a message will display informing you of that and you will not be allowed to delete it until you return here and remove it from any link tree that it is a part of.

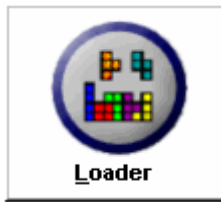
### *Excessive Course Requests*

If you have made the mistake of requesting “Excessive Course Requests”, requesting both the Root and Child courses, you should remove the excessive requests before running the Loader. Use the Course Request Editor or Mass Request Changes to remove excessive requests.



## Loader

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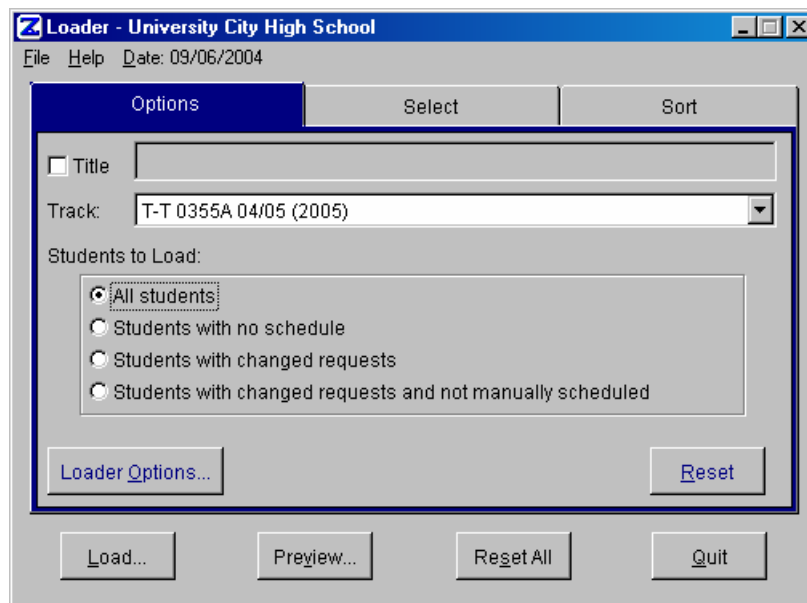
### *Running the Loader*

The Student Loader mass-schedules students into course sections in the Master Schedule, attempting to satisfy the maximum number of course requests with the minimum amount of scheduling conflicts. At the same time, it tries to comply with various user-defined scheduling parameters, rules, and options such as demographic distribution, course rules, Teams, class size, etc.

After the first session is run, various scheduling reports will be available for analysis. By analyzing the data reported from the first session, schedules can be further optimized through a series of adjustments and compromises and then re-running the Loader.

The eventual end product of the Student Loader process will be printed schedules for every student (Student Schedule Report) and a Class Roster for every course section.

From the **Scheduling** menu, select **Loader**.



The default Loader interface is essentially a Standard Zangle Report interface (after the Loader is run from here a report will automatically be issued itemizing the students that were processed). As such, this interface includes the standard Report tabs and a standard Report menu in the toolbar. Using the Report menu you can do such things as adjust your printer setup and save Settings for later use.

Select the students to Load from the initial screen, and from the 'Select' tab as needed.

<b>Track</b>	Select the track to Load schedules for. Remember that only tracks with a Master Schedule, Course Requests, NO attendance records, and NO mark records can be selected.
<b>Students to Load</b>	<p>Select students to Load. NOTE - the Loader will DELETE the schedules that currently exist for the track each time it is run, based on the students selected.</p> <p><b>ALL STUDENTS</b> - The Loader will attempt to schedule all students with Course Requests. Existing schedules will be deleted unless an Entry Code of Pre-Scheduled was selected.</p> <p><b>STUDENT WITH NO SCHEDULES</b> - The Loader will attempt to schedule only students who have Course Requests, but nothing in their schedule yet. An example might be if you want to run the Loader just before school starts to Load any late-registering students who have not been scheduled yet.</p> <p><b>STUDENTS WITH CHANGED REQUESTS</b> - The Loader will attempt to schedule only students who have Course Requests that have been modified since the last time the Loader was run. As the Loader schedules or attempts to schedule Requests, it changes their status to Scheduled, Attempted, etc. This option will look for students with Requests that have not been attempted yet.</p> <p><b>STUDENTS WITH CHANGED REQUESTS AND NOT MANUALLY SCHEDULED</b> - This narrows down the option above to only schedule students with changed requests, but who have not had any classes changed manually when those Requests were changed.</p> <p><b>If you PRE-SCHEDULED students into courses and their Entry Code into that course was 'Pre-Scheduled', those courses WILL NOT BE DELETED, no matter which selection you make on this screen. If you scheduled a student with any other Entry Code, that schedule record will be deleted.</b></p>

Also, go to the 'Select' tab if you want to select a particular grade level or a particular group, etc.

Or, do not narrow down the selection if you want the only criteria for selected students when running the Loader to be what was selected on the opening screen.

The 'Sort' tab DOES NOT sort the order that the Loader schedules students in. The sort order on that tab is for the report that can be printed after the Loader is run.

**Note:** The Loader, by default, will schedule students from the highest grade level down.

#### *Set Loader Options*

From the Options tab, click on the **Loader Options** button. The Loader Options screen will open. These options tell the Loader which parts of the Loader constraints to use, set priorities for the Loader constraints, set additional constraints, and define general time and scheduling attempt parameters for a Loader run.

Suggestions for initial Loader runs are included below.

## Loader Options

<b>Description</b>	The text entered in this field will appear as a subheading in the printout from the Loader. After saving and quitting, this name and all of its options will remain as the default selections the next time the program is opened.
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### Standard Options

These options tell the Loader which features and constraints to use during this Loader run.

<b>Use Student Alternates</b>	Check this field to use student's alternate course requests, as defined in the Course Requests Editor. This check box controls access to the <b>Set Maximum Alternates Used To</b> and <b>Set Minimum Primary Requests Used To</b> fields below. These two fields are then used to define upper and lower limits to the number of alternates that can be used. Alternate requests are used in this case only if the primary requests cannot be scheduled.
<b>Use Global Alternates</b>	(not yet available)
<b>Use Course Rules</b>	Check this on to tell the Loader to use the Class Rules you may have defined in the Loader Rules application.
<b>Use Demographic Balancing</b>	Check this on to tell the Loader to balance the students in courses based on the Demographic Balancing Priorities you set. This option will activate the <b>Demographic Balancing</b> button. Click on that button to define your

	demographic balancing priorities.
<b>Use Course Load Balancing</b>	Check this on to tell the Loader to use the Course Load Balancing Rules you may have defined in the Loader Rules application.
<b>Use Teacher Preferences</b>	Check this On if you want the Loader to use the Teacher Preferences and settings you may have defined for student Course Requests.
<b>Use Term Preferences</b>	Check this On if you want the Loader to use the Term Preferences and settings you may have defined for student Course Requests.
<b>Set Maximum Alternate Requests Used to</b>	If Use Alternates is turned on, this field will become activated. This option and the one below are mutually exclusive; they are a different way of saying the same thing. If you enable one of them, the other will become disabled. If you are using Alternates, select the maximum number of alternates that can be used in each student's schedule.
<b>Set Minimum Primary Requests Used to</b>	Select the minimum number of Primary Requests that the Loader can use when scheduling students.

### Optional Constraint Priorities

Specify the relative priorities of the various optional constraints. Optional constraints refer to "soft" rules found in the Loader Rules application and the Course Request Editor application, i.e., rules or preferences that are not mandatory in order for the course requests to be scheduled. In effect, the rule or preference will be relaxed or ignored if its conditions cannot be met during the first pass of the Loader's scheduling process. The priority values entered in the following fields will determine the order in which five optional constraints will be ignored. "1" is the highest priority. "5" is the lowest priority. Lower priority constraints will be ignored first.

The ability to set these priorities is based on whether or not the corresponding Standard Options are turned on.

### Advanced Options

These are slightly more advanced options that you may or may not want to use to further define what the Loader is allowed to do.

<b>Set Maximum Unscheduled Requests to</b>	Check this box to enable the spinner that controls the maximum number of requests that are allowed to be "dropped" before all attempts to find a schedule are terminated. Select a value.
<b>Set Overfill Percentage to</b>	Check this box to enable the spinner that controls the percentage that sections are allowed to be overfilled. This will allow the Loader to go beyond the maximum section size defined for sections in the Master Schedule Editor.
<b>Time Limit</b>	Enter the maximum hours the Loader is allowed to run before terminating. The default value of two hours is generally more than enough time for the Loader to complete its processing. The more constraints you put on the Loader however, the longer it will take to run. If needed, increase the time.
<b>Maximum</b>	Enter the maximum number of different schedule combinations that should be

<b>Patterns</b>	tried (times 1000) for each student before terminating the attempted scheduling for that student. Again, the default of 1000 * 1000 (1 million) attempts per student is generally enough.
<b>Consider Requests by Priority Only</b>	By default the Loader will attempt to schedule singletons first (courses with only one section offered), then doubletons (courses with only two sections offered), and so on. This is because courses with the fewest sections offered are harder and harder to schedule as the Loader process progresses. Within each of these status levels the Loader will refer to the Priority Values assigned to each course request for deciding which request to schedule first. However, when this option is checked the Loader will give preference to the course request Priority Values over the singleton/doubleton status when determining the order of processing.

<b>Use Rescheduling</b>	
This option allows for a great amount of control in keeping the sizes of different sections of a course very close. It is an extremely powerful tool that actually allows the Loader to re-schedule students if need be to keep section sizes similar. Generally, the default values are OK as they are.	
<b>% Full to Start Balancing</b>	When a course section has this percentage of students scheduled into it (based on the section capacity), the Loader starts to try scheduling students to other sections to maintain this percentage. Then it attempts to fill the other sections of this course to the same percentage. If it has to, it may actually reschedule a previously scheduled student into a different section to try to keep the class sizes balanced.
<b>Incremental %</b>	As the sections of that course are all up to the initial percentage, the Loader will then schedule across sections until they reach this next percentage of capacity.
<b>Maximum Students</b>	Enter the maximum number of students to attempt to reschedule. As students are moved into and out of courses, a record of how many students the Loader has attempted to reschedule from each course is kept. This is the maximum number of students the Loader will attempt to reschedule for a class before it accepts an imbalance.

When you are finished setting your Loader Options click Save. You will be returned to the opening screen of the Loader.

Suggested Settings for Running the Loader for the First Time:

- 1 Rename "Default Options" to 1st Run [optional]
- 2 Turn off "Use Student Alternates," unless you are use alternates
- 3 ~~Turn off "Use Global Alternates" function currently not available~~
- 4 If using Teacher Preferences, check it on
- 5 If using Term Preferences, check it on
- 6 Check "Set Maximum Unscheduled Requests"; Set spinner value to 1
- 7 Check "Set Overfill Percentage" and set spinner value to "100"
- 8 Un-check "Use Rescheduling"
- 9 Save the Loader options

These options put a great deal of constraint on the Loader. This is done to check the validity of your Master Schedule. Alternates are turned off so that you can see how successful the run will be at scheduling Primary Requests. The Maximum Unscheduled Requests setting of 1 will also tell you how good your Master Schedule is. If you have to use a lot of Alternate Requests or your students have a large amount of unscheduled requests, your Master Schedule is probably

not set up optimally.

The overfill percentage being set to 100% will actually allow the Loader to double the number of students that should be scheduled into a section. You could use the results of this to see where you might need to offer two sections of a class during the same period or where you might need to move another class around so that the Loader does not attempt to schedule everyone into the original section during that same period.

### *Suggested Settings for Running the Loader for the Second Time*

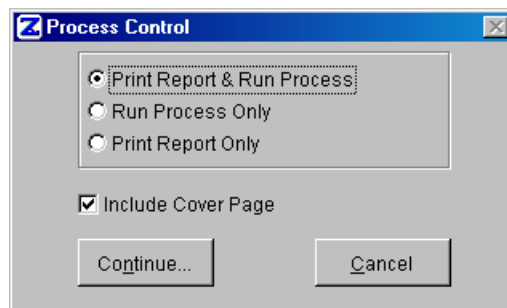
- 1 Select the students to Load from the initial screen, and from the 'Select' tab as needed.
- 2 Select "Loader Options"
- 3 Rename "1st Run" to 2nd Run [optional]
- 4 Un-check "Set Maximum Unscheduled Requests"
- 5 Un-check "Set Overfill Percentage" **RESET to 0% after your last Loader run**
- 6 Increase Maximum Patterns to 10 million (or other values as needed)
- 7 Check "Use Rescheduling", leave default values in spinners
- 8 Save the Loader options

After you've made changes to your Master Schedule and run the Loader a second time, see how the changes and these different options compare to your earlier Loader Run. Make any additional changes necessary.

### *Run the Loader*

When you are finally ready to run the Loader, click on the Load button.

Loader Process selection screen



### **Process Selections**

- 1 To run the Loader only, simply select Run Process Only.
- 2 To print out a listing of the student who will be scheduled by the Loader AND to run the process, select Print Report and Run Process.
- 3 To print the report only, simply select Print Report Only.

Click Continue after making your selection and the Loader process will begin.

## ***Loader Progress***

As the Loader progresses three different progress bars will be displayed.

The first bar indicates that the Loader is gathering the scheduling data. It is gathering the students, Course Requests, Master Schedule, Team, Links, and other data involved in the Loader Process.

The second bar indicates the progress of the Loader Scheduling itself.

The third bar takes the longest to reach completion, and it indicates the progress of actually writing the results of the Loader run to the database.

## **After a Loader Run**

There are several reports and applications that will be involved in analyzing and modifying data after a Loader run. The reports are covered in the next few sections of this document. The other applications are outlined below.

### ***Editing the Master Schedule***

After the first (or first several) run(s) of the Loader, it is likely that changes will need to be made to the Master Schedule. Or you may want to run it a second time with different options. Either way, to delete or move a section of a course, you will need to remove the students from that section of the course first. This can easily be done through the Assign Students application.

Select the Faculty Member, select the course section, and 'move' the students out of the section with the left-arrow button. You can also use the Mass Schedule changes application to unschedule students in bulk as well. Once students are removed from a section of a course, it can be deleted and/or rearranged in the Master Schedule Editor. Once changes have been made, run the Loader again.

You can also quickly reassign the section of a course to a different teacher, without unscheduling students, by editing that section in the Master Schedule Editor and selecting a different Faculty Member as the teacher of that section.

If your section counts look odd to you, perhaps you may want to check that the proper section sizes were defined in the Master Schedule Editor as well.

## **Edit Course Requests and other changes**

It is also very likely that you will need to correct or modify student Course Requests after a Loader Run. Use the Course Request Editor or Mass Request Changes to make any necessary corrections or additions.

## **Other Data Changes**

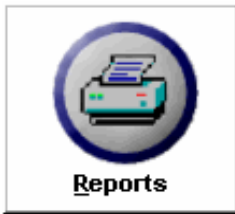
If the results of your Teams, Section Linking, or Rules do not appear correct, go back to the appropriate applications and verify that they were defined and used properly. Also check to make sure that there are no conflicts between the setup of any of these tools.

### *Subsequent Loader Runs*

Before running the Loader, and after making any data changes, it is **STRONGLY RECOMMENDED** that you run the Loader Checklist Report for each Loader Run. This is the best way to ensure that the Loader will not encounter difficulties in attempting to schedule your students.

# Master Scheduling Reports

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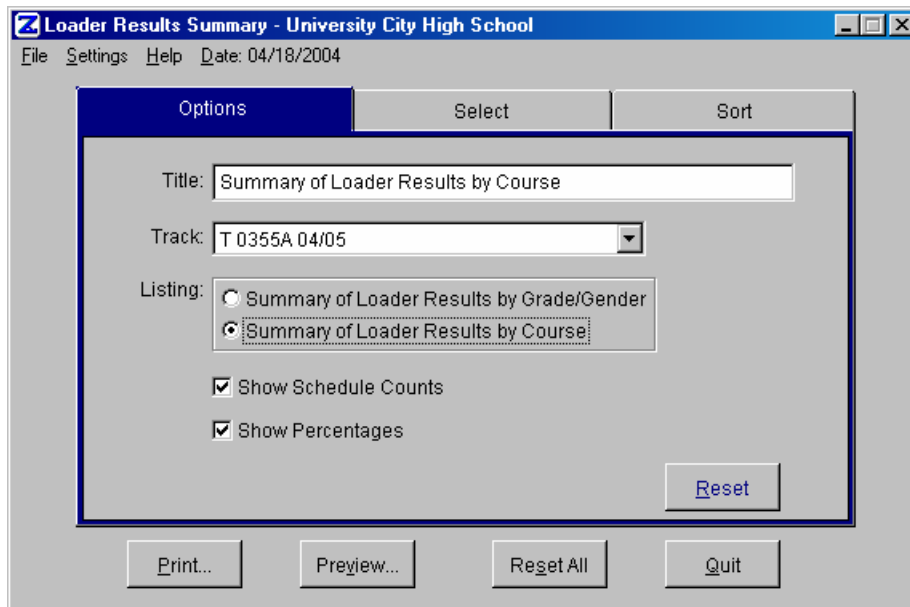
## *Summary of Loader Results*

This report consists of two matrix-style listings that will assist users in understanding the Schedule Loader results. There are two types of reports to choose from:

### Summary of Loader Results by Grade and Gender

- 1 This listing summarizes the results by student gender and/or grade, and lists the number of fully scheduled students.
- 2 **Summary of Loader Results by Course**  
This listing summarizes the results by course, showing the number of requests, scheduled requests, and unscheduled requests by status of the request.

From the **Scheduling** menu, go to the **Reports** menu and launch the **Summary of Loader Results** report.



**Loader Results Summary - University City High School**  
File Settings Help Date: 04/18/2004

Options Select Sort

Title: Summary of Loader Results by Course

Track: T 0355A 04/05

Listing:  
 Summary of Loader Results by Grade/Gender  
 Summary of Loader Results by Course

Show Schedule Counts  
 Show Percentages

Reset

Print... Preview... Reset All Quit

## Report Selections

<b>Title Track</b>	Select a track to report from within the logged on school.
<b>Summary of Loader Results by Grade and Gender</b>	This listing summarizes the Loader results by student gender and/or grade, and lists the number of fully scheduled students. Each row will consist of the gender and/or grade combination, and will list the three following items for the gender and/or grade combination: Number of Students, Number of Fully Scheduled Students, and Percentage of Fully Scheduled Students. (Remember that if you have excess requests for many students - more requests than can physically fit in their schedule - those students will not show as completely scheduled because they still have pending Course Requests.)
<b>Summary of Loader Results by Course</b>	This listing summarizes the Loader results by course, showing the number of requests, scheduled requests, and unscheduled requests by status of the request. If this option is "On", then the <b>Show</b> fields will be enabled. Select a method of displaying the results, as follows:
<b>Show Schedule Counts</b>	(This field is editable only when the <b>Summary of Loader Results by Course</b> option is selected above.) Put a check in this field to display the number of scheduled requests as a tally <i>count</i> .
<b>Show Percentages</b>	(This field is editable only when the <b>Summary of Loader Results by Course</b> option is selected above.) Put a check in this field to display the number of scheduled requests as a <i>percentage</i> .

### Select and Sort

Use the **Select** and **Sort** options as desired. The selections available on each of those tabs will be different based on the type of Summary Report you are running:

#### Summary of Loader Results by Grade/Gender -

The user will be able to sort by Grade and Gender via a standard Zangle Desktop report selection control. If either Grade or Gender is removed then the data will be summarized for the remaining category. In other words, if Gender is removed, then the report rows will be the totals summarized for the whole grade, including all Genders, subject to Selection Tab filters chosen by the user. Grade and Gender are the only sort options, and both are defaults. If both sort options are removed, the report will consist of only one detail line, representing all students, subject to the 'Selection' tab filters.

#### Summary of Loader Results by Course -

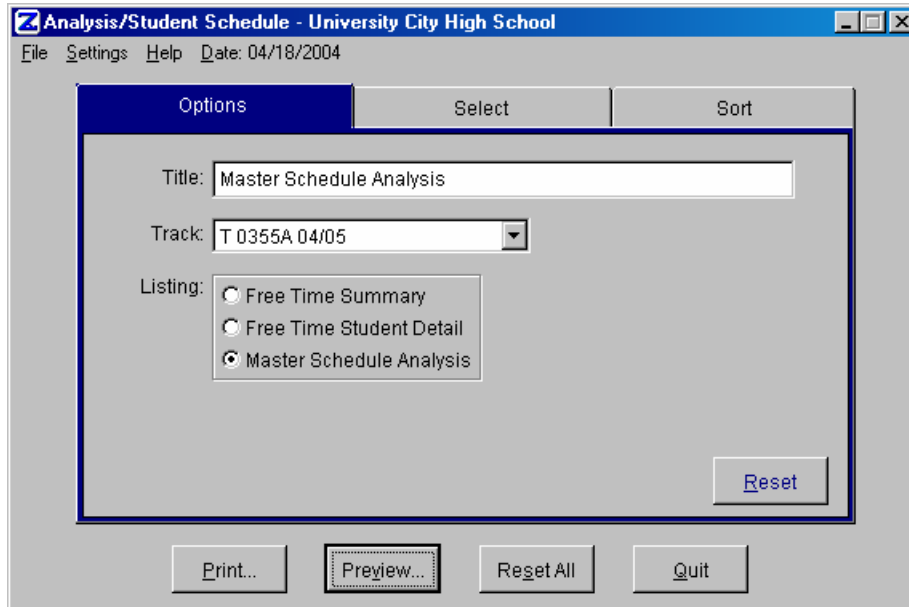
The user will be able to select Course (Course Code) or Course Name via a standard Zangle Desktop report selection control. The default will be Course Descript, and Course Code will be available via the 'Sort' tab's **Add** button.

## Analysis/Student Schedule Report

This scheduling report provides three types of listings:

- 1 A summary of students with free time
- 2 A listing of students not scheduled
- 3 A Master Schedule Analysis, taking a count of how many students have requests in each Period/Cycle by using a statistical averaging approach

From the **Scheduling** menu, go to the **Reports** menu and launch the **Student Schedule Analysis** report.



Analysis/Student Schedule Report options

### Report Selections

<b>Title</b>	The default title may be edited by the user.
<b>Track</b>	Select a track to report from within the logged on school.
<b>Free Time Summary</b>	Lists the total number of students with free time (students who are not scheduled) per period in the selected track. The summary report is organized by Term and Grade Level (in the page header) with totals printed in a matrix for each Period/Cycle Day combination. If the selected track has only one cycle day, the list is organized by Term only and the matrix is by Period and Grade Level.
<b>Students Not Scheduled</b>	This report has two parts; a summary and detail of students with free time. The free time information is calculated based on an inverse analysis of student schedule records.
<b>Master Schedule Analysis</b>	This report takes student requests for courses and allocates the student request counts to actual meeting times using a statistical averaging approach.

## Select and Sort

Use the **Select** and **Sort** options as desired. The sort criteria entities do multiple duty by indicating Sort Order, Major Grouping (page breaks), and Level of Detail.

## Report Assumptions

Since the report information is presented in a grid or matrix, each page detail consists of the bottom-most two entities or dimensions from the Sort Criteria, such as Period and Cycle. The remaining entities in the Sort Order determine the grouping of the data, and result in page breaks on the report, and will be referred to as the "page break grouping."

If there are four criteria, the top two will be used as the page break grouping. Since we need two sort entities for the matrix, and at least one entity for the page break grouping, the sort criteria must have at least three entries.

The Students Not Scheduled report option is a detail report, and assumes Student as another sort criterion. Student will not appear in the sort criteria, but will be inserted programmatically as the 2nd most minor sort, causing Student detail to be the rows on the report.

One of our design assumptions is that schedule analysis groupings will default to Term, Grade, Period, and Cycle Day. Gender will be a non-default option. The sort list can be edited, added to, or deleted from as desired. Since there must be a minimum of three sort criteria (one for the page break grouping, and two for the matrix), the user will not be allowed to delete items so that there are less than three on a summary report and two on the detail report (as Student is automatically inserted as the row sort criterion on the detail report).

If the track has only one cycle day, Cycle Day should be removed from the sort criteria (i.e. it can't be selected as a sort field). In this case, the default should be Grade and Period in the matrix (Grade as the column) with page breaks by Term.

## Term, Period, and Cycle Day Groupings: Free Time Summary and Students Not Scheduled

Another design assumption has to do with the semantics of the sort orders and page groupings as applied to Term, Period, and Cycle Day. If one of these three categories is not included in the sort order, the report summarizes the information for that category. The design assumption is that, if the category is not included in the groupings, and the student has a schedule record for any item in that category, then the student is not free for the whole category.

It is imperative that the user understands the semantics of what we mean by "free time" as coded into the free time reports.

For example, if the user removes Term from the sort order, and the student has a schedule record for any Term for a particular Period and Cycle Day bucket, they are not free for that Period and Cycle Day bucket. Or, if the user removes Cycle Day from the sort order/groupings, and the student has a schedule record for any Cycle Day for a particular Term and Period bucket, then they are not free for that Term and Period bucket. If the user removes Term and Period from the sort order groupings and the student has a schedule record for any Term or any Period for a particular Cycle Day, then they are not free for that cycle Day.

One ramification of this design assumption is that, if a category is removed from the Sort tab, and that category is edited on the Selection tab, then the items selected on the Selection tab are ignored. For example, if the user removes Term from the Sort tab, and selects term S1 on the Selection tab, the S1 selection is ignored. In other words, if the student has a schedule record for AS, which includes Term 1 and Term 2, and S1 is Term 1, then by definition they are not free in S1. This idea can be extrapolated to Periods and Cycle Days.

## Programmer's Notes on Report Layout

### General Layout

Each report will consist of pages that break on the major sort criteria and that contain a matrix of scheduling information. The matrix will consist of the two most minor sort criteria. The report headers will display the following information:

The page break sort criteria and the current values for the sort criteria, in order from most major sort order and down. There will be from one to four page break criteria for a particular report. For example: Term AS, Grade 9, Period HR.

A summary count of the number of students involved in the page break grouping. Count by grade and/or gender only (i.e. regardless of term, period, or cycle day elements of header). For example, if there are 456 grade 9 students and 123 grade 9 males, then the heading "Term AS, Grade, Period HR" would say "Number of Grade 9 Students: 456". The heading "Term S1, Gender M, Grade 9" would say "Number of Grade 9 Male Students: 123".

A column header for the matrixes' row sort type (e.g. Period or Cycle Day).

Column headers for the minor sort values (e.g., for Cycle Day: M T W R F; for Period: HR 01 02 .), for Gender: M F, for Grade: K 01 02....)

The matrix row/column intersections contain numeric count values as described below, using the default sort criteria of Term/Grade Level/Period/Cycle Day. For our examples, assume we're looking at the page for Term AS, Grade 9, with matrix rows containing periods HR through 07, and the columns containing Cycle Days 1 through 5.

#### Free Time Summary

Each value represents the number of students that have free time for the indicated grouping. In our example Row 1 Column 1 would contain the number of students with free time for Term AS, Grade 9, Period HR, Cycle Day 1.

The Number of Students figure in the header represents the total number of students with free time for the page break grouping.

#### Students Not Scheduled

This is the detail report. Each row contains the most minor sort counts for a particular student; each column contains either "X" or " " (blank).

In our example the first row, if it's student Hank Amore, would contain the free time he has for each cycle day in Term AS, Grade 9, Period HR.

## Master Schedule Analysis

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This report compares student requests for courses against the section sizes of the courses.

The Number of Students figure in the header represents the total number of active students from the track being processed. Any grade or gender filter from the Select tab is applied to the Number of Students totals. If gender and/or grade are part of the page break grouping, then the Number of Students indicates the total by grade and/or gender. If neither grade nor gender is included in the page break grouping, then the figure indicates the total number of active students from the track.

Student requests are for a particular course, but not for a particular meeting time. The report processing takes the requests for each course, finds the meeting times for that course, and allocates the number of requests to the meeting times proportionally. The proportional request counts are calculated using the ratio of the section size to the sum of all section sizes for the particular course.

If the number of requests for a particular course exceeds the total section size for all sections for that course, then the number allocated to each section is the actual section size.

If gender or grade is selected on the Sort tab, then the comparisons of the student requests against the section capacities for the course are also prorated. For each grade/gender grouping, the section sizes are prorated as the section size times the ratio of the grade/gender grouping to the total number of student requests for the course. For example, if 5 9th grade students and 10 10th grade students request a class with a section size of 30, then the 5 9th grade students are compared to a section size of 10 ( $30 * 5 / 15$  students), and 10 10th grade students are compared to a section size of 20.

After all requests have been allocated to meeting times the counts are summarized into the groupings indicated by the sort tab criteria.

The report processing handles track terms as follows. The track is divided up into term buckets, each representing the shortest non-progress report term. For example, in a track with Semester 1, Semester 2, and All Semester terms, the term buckets represent the Semester 1 and 2 terms. When a section has a meeting time in a term that overlaps other terms, the allocations calculated as described above are applied to all included terms. So if a section meets in the All Semester term, the figures are applied to both Semester 1 and Semester 2 meeting times.

As we process each course the proportional counts for each Term/Grade/Period/Cycle/Gender "bucket" are accumulated. When all courses have been processed we summarize the counts according to the sort order grouping; at this point some of the detail, for example gender and grade, may go away. Gender and grade figures are summed up. Term, period, and cycle day figures are combined by taking the minimum of the allocations across the dimension that is being combined. So if, for a particular term and period, we have the following cycle days:

Day	1	2	3	4	5
Counts	8	5	9	5	3

The cycle day count for the term and period will be 3, the minimum of all the cycle day counts across the meeting time being summarized.

The summarized scheduling information is then presented in the same format as used by the Free Time Summary report. In this case, the individual counts in the matrix will represent the estimated number of scheduling requests for the particular grouping. In our example, Row 1 Column 1 would be the number of requests for Term AS, Grade 9, Period HR, Cycle Day 1.

## Unscheduled Course Requests Report

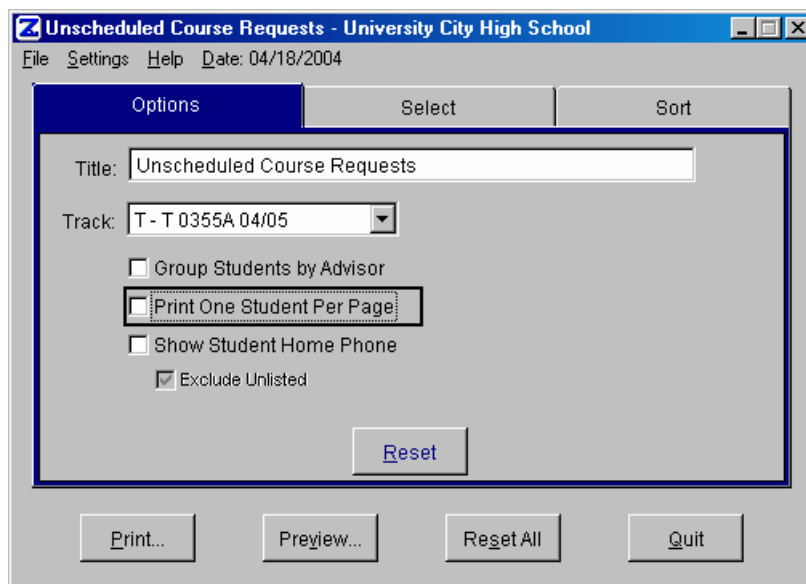
This scheduling report provides a list of students with pending (unscheduled) course requests. All pending course requests and scheduled course requests are listed under each student's name along with extensive course attributes that are useful for scheduling analysis. The student names may be grouped by advisor or sorted in various other ways.

Students with no unscheduled requests are not shown. This also means that students with no Requests whatsoever are not shown. Only unscheduled *primary* course requests are reported. Unscheduled alternate course requests are *not* reported.

Students with no unscheduled requests are not shown. This also means that students with no Requests whatsoever are not shown.

From the **Scheduling** menu, go to the **Reports** menu and launch the **Unscheduled Course Requests Report**.

### Report Selections



<b>Title</b>	The default title of this report is "Unscheduled Course Requests Report". This title may be edited by the user.
<b>Track</b>	Select a track to report from within the logged on school.
<b>Group Students by Advisor</b>	This option will group students according to their assigned Advisor.
<b>Print one Student per Page</b>	Inserts a page break between each student reported.
<b>Show Student Home Phone</b>	When checked, students' home phone number will be included in each entry listed. Check <b>Exclude Unlisted</b> if you want to hide student phone numbers that are flagged as 'Unlisted' (for confidentiality reasons) in the Student Editor.

Use the **Select** and **Sort** options as desired.

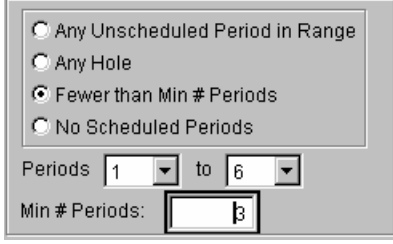
## Unscheduled Period Report

This scheduling report provides a list of students with unscheduled periods along with varying amounts of detail, according to Options set by the user. The student names may be grouped by advisor or sorted in various other ways.

From the Scheduling menu, go to the Reports menu and launch the Unscheduled Period Report.

### Unscheduled Period Report, Make Report Selections

<b>Title</b>	The default title of this report is "Unscheduled Period Report". This title may be edited by the user.
<b>Track</b>	Select a track to report from within the logged on school.
<b>Show Students with:</b>	
<b>Any Unscheduled period range</b>	This option will retrieve students with any unscheduled periods in any range.
<b>Any hole</b>	This option will retrieve only students with an unscheduled period or range of unscheduled periods for which there is a prior scheduled period and a subsequent scheduled period.
<b>Fewer than Min # Periods</b>	This option will retrieve students with fewer unscheduled periods than the value entered in the Min # Periods field (activated only when this option is selected. See below.).

	
<b>No scheduled Periods</b>	This option will retrieve only students who have no periods scheduled at all.
<b>Periods</b>	Set the <u>range</u> of periods to report. Available selections will depend on the track selected.
<b>Show: there are two ways to view the data</b>	
<b>Scheduled periods</b>	Scheduled period column headers will be labeled "S". Unscheduled period column headers will be blank.
<b>Unscheduled periods</b>	Unscheduled period column headers will be labeled "U". Scheduled period column headers will be blank.
<b>Terms: you may report all terms or select a target term to report</b>	
<b>All terms</b>	Check this option to report all terms. If deselected, select which term(s) to report in the list below.
<b>Report types: options here will determine how much data is displayed</b>	
<b>Summary Report</b>	Report summary data.
<b>Detail Report</b>	Report detailed data
<b>Show Schedule</b>	If Detail Report is selected above, this option will display each student's schedule along with the other data.
<b>Show Unscheduled Requests</b>	If Detail Report is selected above, this option will display each student's unscheduled requests along with the other data.

Use the Select and Sort options as desired.

## What's Next?

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After the Loader has been run and schedules have been generated, fine-tuning of student schedules may need to be done. A majority of those changes are performed through the Student Schedule Editor. Also, **once school begins and attendance and/or Marks have been entered into the system, the Loader can no longer be run.** New students need to be scheduled through the Student Schedule Editor or Assign Students because they cannot be scheduled through the Loader.

Schedule Reports for students as well as Class Rosters can also be printed after the Loader has been run and any necessary changes have been made to schedule records.

Throughout the school year, schedule records are maintained through the Student Schedule Editor, Mass Schedule Changes, Assign Students, and Schedule Change History.