Scheduling using the
Loader Module

Contents

Loader Automates Student Scheduling

Loader provides an automated process for placing student course requests into the Master Schedule based on a set of rules for the entire school. Loader also generates the schedule options for individual students in the Walk In Scheduler (WIS). "Loader" is the engine behind all automated scheduling functions in SIS 2000+.

Loader's efficiency is driven in part by the structure of the Master Schedule. Loader is more efficient when the structure of the Master Schedule follows the guidelines suggested in the Master Schedule Module documentation.

The purpose of this document is to provide the greatest advantage in automated student scheduling by leveraging Loader settings and rules in the Mass Scheduling process. All the settings and optimizations you set up in Loader for use in the mass scheduling process are in effect when scheduling individual students in WIS.

There are numerous things that need to be set-up in order to reach the point of being able to run the Loader. In addition, other steps may be performed before running the Loader as well.

Before running the Loader, you may want to pre-schedule some students by hand if there are cases when you have a listing of students that must absolutely be placed in a particular period or section of a course. The best way to ensure that those students end up in the right place may be to pre-schedule them. In Course Requests, you cannot set a period or section preference because that is basically the same thing as pre-scheduling.
You may also want to establish Loader Rules that will be applied to all Loader attempts before running the Loader. Rules include setting scheduling preferences and course balancing preferences.

On the following pages there are also settings and suggestions that may be followed to 'restrain' the Loader during the initial attempts at scheduling students. It is suggested that you run the Loader in a restrained manner early in order to test the Master Schedule that has been created and the Course Requests that have been entered.

The Loader can be run any number of times up to the point that school(s) starts and attendance is taken for that school year track the first time. Each time it is run, any students you have selected to 'Load' will lose their previously 'Loaded' courses and be re-scheduled by this run of the Loader, so it is extremely important to make the proper selection on the opening Loader screen.

After the first few runs of the Loader, you may then want to customize the Loader settings to meet your needs. You may choose to allow more alternates to be used, or to use term or teacher preferences, based on Course Requests.

Loader Overview

Running Loader requires prerequisite rules, settings and system conditions so it can run effectively. Loader is typically only run at the beginning of the new school year as part of the mass scheduling process. Walk In Scheduler runs Loader behind the scenes for individual student schedules throughout the year after the schedule has been created.

*Define and enter a Master Schedule into the SIS 2000+ system via the Master Schedule Module
*Build course request files in the Course Requests Module for every student to be scheduled

Here are the steps to using Loader:

1. Establish the prerequisites – periods per day, terms per year, etc.
2. Pre-schedule Courses
3. Loader rules
4. Loader options
5. Run Loader
6. Adjust Master Schedule to better accommodate student requests
7. Rerun Loader as often as needed until results are achieved
8. Confirm results and finalize schedule
9. Continue steps 5 - 8 until satisfied.

Prerequisites

All courses need to be assigned to Faculty, selected to the target school year track calendar, and set-up properly in the Master Schedule Module. Students need to be enrolled in that school year track calendar for scheduling and have Course Requests entered that will be used by the Loader. The school year track calendar you are creating the new schedule for must have no Attendance or Mark Reporting entries linked to it. You need to have at least one Loader Rule in the system.

Pre-Scheduled
Pre-Scheduled may be performed, based on what you are trying to accomplish when running the Loader. If you have a listing or group of students that you want to schedule into a particular period or section of a course, you need to pre-schedule them into that course rather than have the Loader attempt to schedule their request for that course.

If you already know the course, period, day, term, etc. that you want a student Pre-Scheduled in ensure that the student gets "locked -in" to that section.

Pre-Scheduled refers to using a scheduling application (in Assign Students Module or Student Schedule Module) to schedule a student into the selected course. Choose 'PRE -SCHEDULED' as the Entry Code. 'Pre -Scheduled' MUST BE THE ENTRY CODE SELECTED. If any other code is used, the Loader will not recognize the course as Pre-Scheduled and it will delete the course the next time the Loader is run.

Pre-Scheduled in Assign Students Module

Assign Students Module does not use Course Requests when it schedules students. If you have used Assign Students Module to perform Pre-Scheduling, and the student's Pre-Scheduled course previously had a request, those requests will still appear in the Course Requests application as unscheduled. Go into Course Requests and remove the requests for that course from the appropriate students.

Pre-Scheduled in the Student Schedule Module

If you are using Student Schedule Module to perform Pre-Scheduling, pick the course to Pre-Schedule from the list of Course Requests on the left. This will mark the request as Pre-Scheduled and it will not have to be removed from the Course Requests application.

Pre-Scheduled Student Scenarios:

- You have a list of Special Education students that you want to be placed into a particular period of a special education course. Since you already know the students to schedule and what period you want to schedule them in, you may use Pre-Scheduled to make sure that they are placed into the proper period of that course.
- You offer three sections of a Band elective course that students in different grade levels can be scheduled in. The same faculty member teaches all three sections. You want the advanced students to be placed into the third section of that course. You already know the students to schedule and where to schedule them, so you can use Pre-Scheduled to ensure that the more advanced students are scheduled into the third section of Band.
- Any time you have a list, or pre -determined roster of students, and you know which section of a course they MUST be placed. Pre-Scheduled can be a useful tool for you to make sure that your selected students end up scheduled correctly.

Details of Running Loader in the Mass Scheduling Process

The mass scheduling process uses Loader Rules and Loader Options to load student course requests into the Master Schedule. The rules and options set in Loader influence exactly what Loader does with each student request it places into the schedule. The Loaders performance can be affected by the complexity of the rules and options you select. The more rules you have, the longer it will take the loader to run.

Loader Rules

Loader requires at least one Loader Rule. Even if you do not use Loader Rules, you will need to have a Loader Rule in the system for Loader to work. There are two types of Loader Rules. There are Class Rules of **before /after** and **same /different**. There are also Course Load Balancing rules.

Note in all Loader Rules it is a good practice to create rules that go both directions. If you have a rule to schedule Course A before Course B then it is best to also put in a rule for Course B to schedule after Course A. This way as Loader is working; the rule is applied regardless of which course it attempts first.
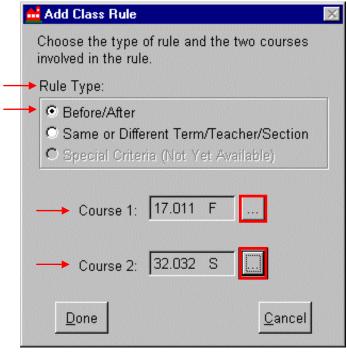
Select 'Class Rules'

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

There are two types of Class Rules. '**Before/After**' **Rules** is where you would setup the Loader to schedule Biology before Biology Lab.
'**Same or Different**' **Rules** is where you would setup the Loader to schedule a student into Biology Lab section 2 if a student is scheduled into Biology Section 2 of; or schedule the student with any Faculty Member other than Mr. Smith for Biology if the student is scheduled with Mr. Smith for Biology Lab.

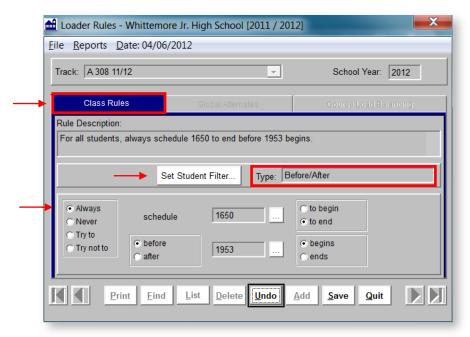Go to: **Scheduling Module/ Mass Scheduling Module / Loader Rules Module**

- Select <u>A</u>dd
- Select the type of Class Rule and then select Course 1 and Course 2.

Class Rule type and course selection screen.

Rule Type: Before/After Rules

After selecting the two courses, tell the Loader what you want to do with them:

Class Rules Before/After rule definition screen.

Define the Rule:

- Set Restraint (choose one):
  - o '**Always**' do this…or '**Never**' do this…are **Hard Rules**. The Loader must always or must never do what you've defined.
  - o '**Try to**' … and '**Try not to**' are **Soft Rules**. The Loader will attempt to follow your rule, but if it has to, it may break the rule to schedule a student successfully.
- …schedule Class 1 to begin or end (choose one)…
- …before or after (choose one)…
- …Class 2 begins or ends (choose one)

Set Student Filter (Optional)

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

Select 'Set Student Filter' and make desired selections.
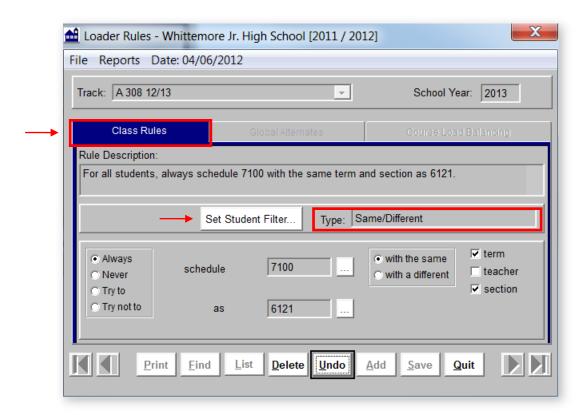
Class RulesType: 'Before / After' Examples:

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

Class Rules Type: Same / Different Rules

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

Class Rules Same/Different rule definition screen.

Define the Rule:

- Set Restraint (choose from Always, Never, Try to, or Try not to)…
- …schedule Class 1 with the same or with a different (choose one)…
- …term, teacher, or section number (choose one)…
- …as Class 2.

Set Student Filter (Optional)

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

- Select 'Set Student Filter' and make desired selections.

Class Rules Type: 'Same / Different' Examples:

- Always schedule Class 1 with the same teacher as Class 2.
- Try to schedule Class 1 with a different teacher than Class 2.
- For students in the 12th grade, never schedule Class 1 in the same term as Class 2.
- For students in the 9th grade, whose gender is male, try to schedule Class 1 with the same section number as Class 2.
- Group all students in section 1 of course 1 with the same section number of other courses. This is useful in teacher teaming scenarios. This is to assure all the teachers in a team have the same section numbers as other team members.

Again, in the creation of rules, you may see that the same rule can be stated in different ways.

Remember, to keep the rules as simple as possible. The more complex your settings, the harder it is for the Loader to schedule your students. The Loader may take several minutes when trying to Load students if there are many rules. Be patient.

Viewing / Editing / Deleting Course Rules

You can use the VCR buttons to scroll through the course rules or use the List button to bring up a listing of the rules that have been defined.

If you need to edit a rule, simply select that rule, Select Edit, make the necessary changes, and Select **Save**.

To delete a class rule, select that rule, Select Delete, and verify that you want to delete that rule.

Course Load Balancing Tab- Don't Use

Course Load Balancing should not be used. This functionality does not currently work since course groups were removed from the software in late 2011.   If you feel you need this functionality, please let your SIS2000+ specialist know.
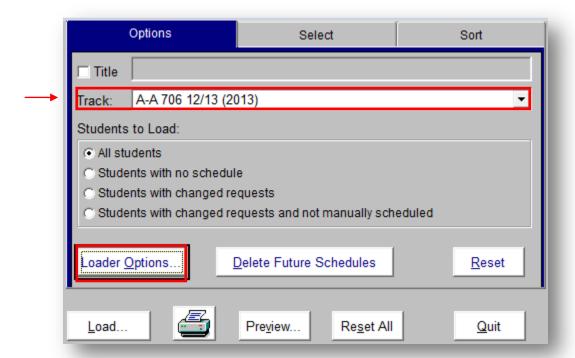
Loader Module / Loader Options

Loader Options affect the way the loader works. Depending on your goals and desired results Loader Options may be edited to influence the end results. Because settings may be different with each run, we have two Loader Option sections.

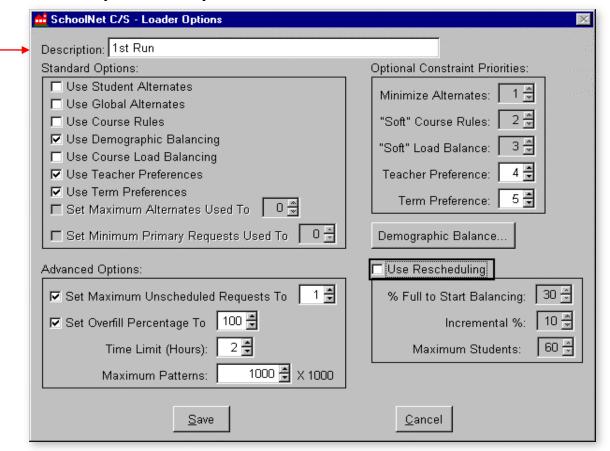Be sure to select the correct track (school calendar year) you are running the Loader for.

Different settings are recommended for the "…First Time" and "…the Second and Additional Times".

Suggested Settings for Running the Loader for the First Time

Select 'Loader Options' button

Loader Options setup
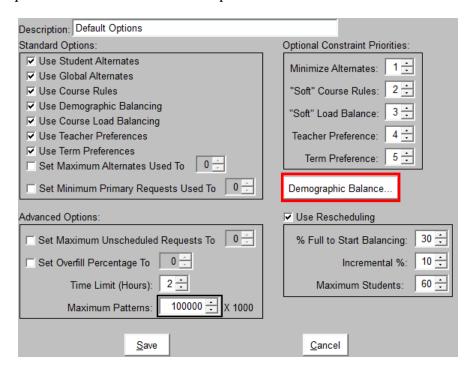

Loader Options screen, 1st run.
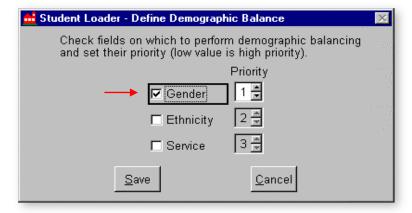
- Rename Description: "Default Options" to 1st Run [optional] or to a unique description you recognize

- Don't select: "Use Student Alternates"

- Don't select: "Use Global Alternates"

- Select: Use Teacher Preferences - If using Teacher Preferences

- Select: Use Term Preferences – using Term Preferences

- Select "Set Maximum Unscheduled Requests To" 1

- Select "Set Overfill Percentage To" "100"

- Don't select: "Use Rescheduling"

- Set "Maximum Patterns: to "100000"

- **Save** the loader options

Setting for Demographic Balancing (Optional)

Select "Demographic Balance" from the main options screen:
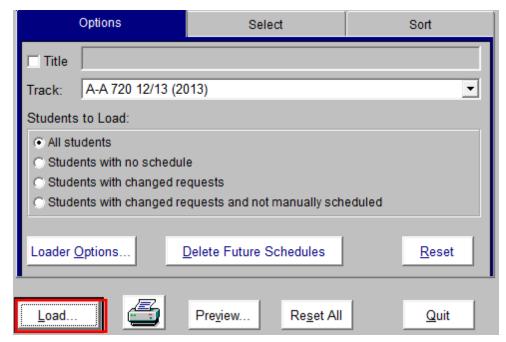

Demographic Balancing selection screen.

- Make selections as desired
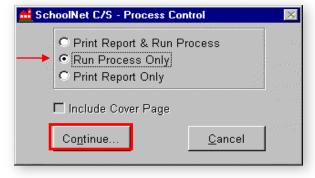- Set Priority value to indicate priority

Running the Loader Process

Scheduling Module/ Mass Scheduling Module / Loader Module

Select "Load" – Select "Run Process Only"

Loader Process selection screen.

- To run the loader simply select "**Run Process Only**"
- Select "Continue"

The Loader will 'Initialize'. It will then run in three 'passes' and the progress of each pass will be displayed with a completion status bar.
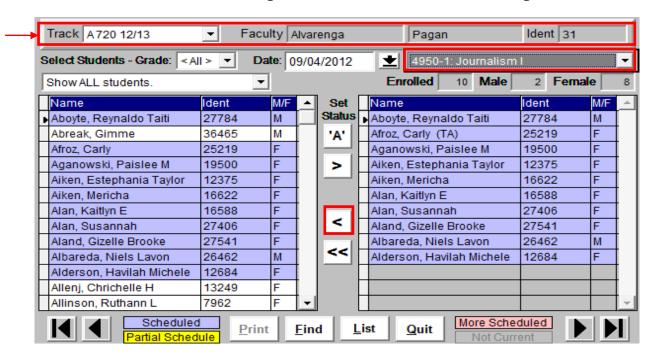
The first pass gathers Course Requests. The second 'loads' (schedules) the students. The third pass actually saves the loaded schedules to the database. After the third pass, the first run is complete and student's schedules may be viewed through the Scheduling applications and reports.
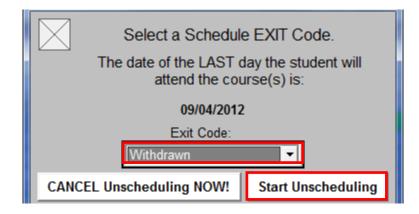
Adjusting the Master Schedule

After the first run 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 Module.

In the **Assign Students Module / Select the Future Track (first)** /Select the Faculty Member, Select the course and section -'move' the students out of the section with the left -arrow button. Select Exit Code: Withdrawn / Select: Start Unscheduling. Select: Delete the Schedule. Once students are removed from a section of a course, the course can be deleted and/or rearranged in the Master Schedule Editor. Once changes have been made, run the Loader again.
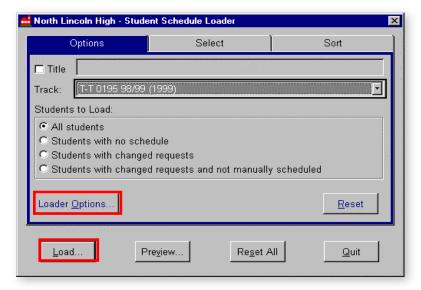
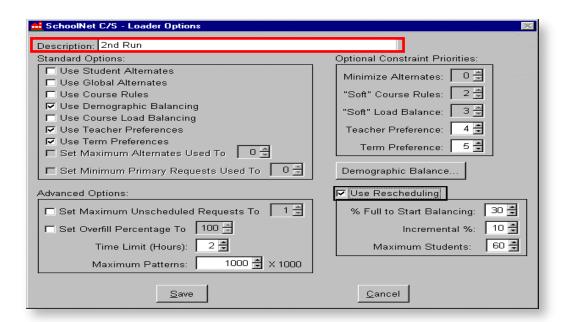## Running the Loader for the Second and Additional Times

Edit the courses, settings, etc. you need to make changes to.

Select: **Loader Module** - select Loader Options button –

Initial Loader Options screen.

Rename the Description as ' Load 2, 2nd Run, or what you will recognize'. After making the needed changes – Select the Load button and run the loader again. Repeat this process as many times as you need until you are satisfied with your schedule.

Remember:

- Select the future school year track if you are running the schedules in current school year for next school year –

- 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. **If you PRE-SCHEDULED students into courses and their Entry Code as '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.**

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

Adjust Master Schedule to better accommodate student requests.

If you are not satisfied with the results, make the changes in the Master Schedule to change the outcome of a load. You can run reports to help analyze the data.

These reports are found in **Scheduling Module/Mass Scheduling Module/ Reports Module**

Reports: **UT Faculty Schedule Matrix**
Course Request List & Tally
Student Course Request List
Conflict Matrix
Unscheduled Student Report
Class Size Report
Student Schedule Analysis
Summary of Loader Results
Loader Checklist Report

Rerun Loader as needed

Loader can be run as many times as needed. Each time the "Delete Future Schedules" button is selected all the students in classes at that moment are removed and their requests are reset to unscheduled. Rerunning Loader places students back into classes based on the updated Master Schedule and any Loader Rule changes.
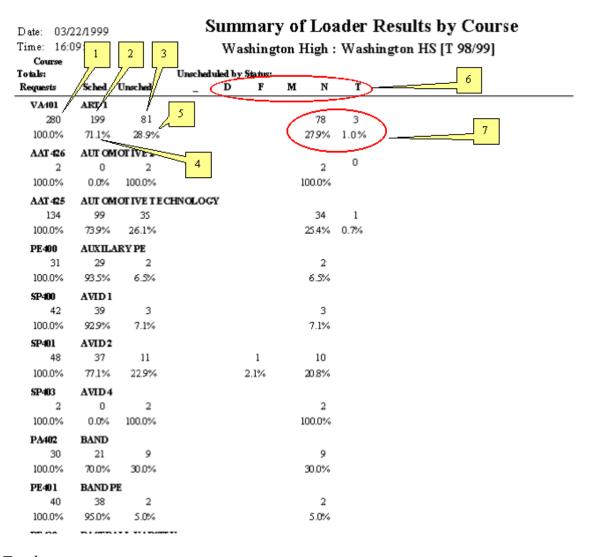
Continue until satisfied

Most schools have a target percentage of students they strive to successfully schedule with full schedules. Usually this goal is over 90%. This means the scheduler keeps manipulating the data and rerunning the Loader until the "Summary of Loader Results" reports a full schedule percentage greater than the desired percentage of 90% or what you determine is a good run.

Loader Results

Seeing into the results of each Loader run is critical to determining if you want to keep the run or not.

Typically 3 reports: "Summary of Loader Results", "Unscheduled Student Report" and "UT Faculty Schedule Matrix") provide enough visibility into the results to let you decide if you want to keep the scheduled load or make more changes.

Report: Summary of Loader Results by Course:

1. Total requests count
2. Total scheduled requests count
3. Total unscheduled requests count
4. Percentage requests scheduled
5. Percentage of requests unscheduled

6. Unscheduled request status codes:

    B = Attempted/balance conflict
    C = Attempted/teacher pref. conflict
    D = Attempted/no meeting time
    E = Attempted/team conflict
    F = Attempted/full class
    M = Modified request/reschedule
    N = New request/not attempted
    Q = Attempted/multiple conflicts
    R = Attempted/rule conflict
    S = Attempted/term pref. conflict
    T = Attempted/time conflict
    U = Attempted/max. unscheduled exceeded
    V = Team request/acknowledged
    X = Alternate/not used
    Y = Attempted/max. alternates used
    Z = Attempted/max. patterns exceeded

7. Count and percentage of unscheduled requests per unscheduled status code

Conclusion

"Loader" uses a sophisticated algorithm to run its scheduling sessions in SIS 2000+.
Loader is an extremely effective tool for bulk loading students into the Master Schedule based on
Loader Rules and Student Course Requests.

Errors to watch for:

** Loader Future Track not in drop-down selection - to "Fix":

Fix: Check the following:

- make sure all Track Editor settings including calendar are set up properly
- save at least 1 loader rule
- choose loader options and make any changes and save

- make sure there is at least one course request that is coded 'N' (not attempted)

- make sure the periods and terms in the master schedule are all selected for the track

- there can be no attendance records on classes in the master schedule