



Exam Scheduler

www.UniversiTools.com



UniversiTools is a White Mountain Technologies Product

Are you having these pains consistently during the semester...?

- Conflicts in exam schedules
- Student constraints on back-to-back exams
- Teacher constraints on time
- Protracted efforts to finalize exam schedules

Get pain relief by generating conflict-free exam schedules automatically!

UniversiTools Scheduling Software is a joint effort between the American University of Beirut (AUB) and White Mountain Technologies sal. AUB has proven, semester after semester since 2008, that UniversiTools is the optimal solution to scheduling examinations.

Use UniversiTools Scheduling Software Tool to automate university exam scheduling during a pre-defined, limited period:

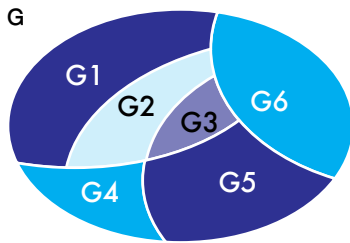
- Group exams into sets, which eliminate conflict completely:
no student is scheduled for more than one exam at the same time
- Meet faculty & student preferences, allowing rescheduling of exams
- Minimize the number of back-to-back occurrences, such as students with more than two consecutive exams in one day
- Respect the capacity constraint of examination rooms

What data do you need to run UniversiTools?

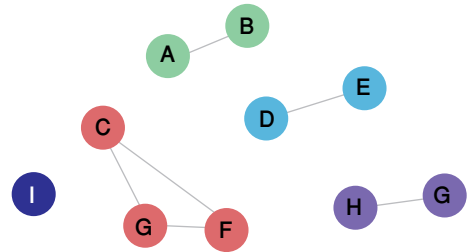
Your Student Registration Records		Your Courses to be Scheduled
Student ID	Course	Course
200001200	PSPA 202	ENGL 208
200001200	PSPA 203	ASST 320
200001200	PSPA 210	NFSC 290
200001200	PSPA 211	ENGL 102A
200001200	PSPA 212	BIOL 280
200001234	EECE 105c	NURS 310
200001234	EECE 106c	ECON 237
200001234	EECE 662c	OVEV 104
200001234	EECE 691c	NURS 400
200001234	FINA 210	FINA 210
200001354	MKTG 215	ARCH 227
200001354	MKTG 215	PASPA 201
...

! About 35,000 Records & About 600 course

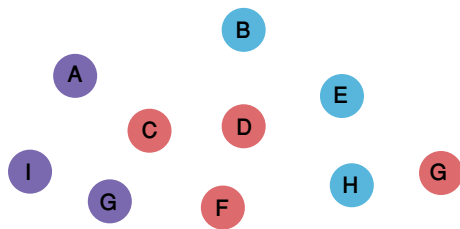
How do you organize exams in order to end up with a conflict-free schedule?



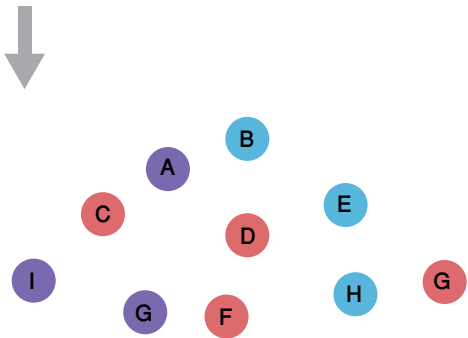
Partition the set "G" of all courses – vertices – into disjoint complete sub-graphs: G1, G2, G3, ... , Gn.



Each color above represents a group of course exams that can be scheduled without conflicts.



Then resize sessions to meet the room capacity constraint, where the number of students in each session cannot exceed a pre-determined maximum.



If the "orange" group does not fit room capacity constraints, split it into two groups.

How do you minimize the number of students with back-to-back exams ?

As a registrar, a main objective is to reduce the number of students with two consecutive exams scheduled on the same day.

Generate a conflict-free exam schedule:

Session #	# of Courses	Session Size
1	45	1011
2	44	1266
3	37	1188
29	3	549
30	3	870

Minimize back-to-back occurrences:

Day	8:00	11:00	3:00	# of Students with More than 2 Exams per Day
	Session Number			
Day 1	1	7	7	0
Day 2	2	5	13	0
Day 3	3	25	27	0
Day 4	4	8	30	0
Day 5	6	10	28	0
Day 6	11	12	29	0
Day 7	14	15	21	0
Day 8	16	17	22	0
Day 9	18	19	23	0
Day 10	20	24	26	0

Publish the exam schedule:

Course	Building & Room	Date	Date
AGSC 301 1	AGRICULTURE 203A	Thursday, January 24, 2008	8:00 AM
ANSC 275 1	AGRICULTURE 205	Thursday, January 24, 2008	8:00 AM
ARCH 151 1	ALH	Thursday, January 24, 2008	8:00 AM
ARCH 261 1	BECHTEL 537	Thursday, January 24, 2008	8:00 AM
BIOL 310 1	BIOLOGY 004	Thursday, January 24, 2008	8:00 AM
BIOL 310 2	BIOLOGY 004	Thursday, January 24, 2008	8:00 AM
CHEM 206 1	CHEMISTRY 101	Thursday, January 24, 2008	8:00 AM
CHEM 206 2	CHEMISTRY 101	Thursday, January 24, 2008	8:00 AM
CHEM 206 4	CHEMISTRY 101	Thursday, January 24, 2008	8:00 AM

Session: exam period on a certain day and hour. If a maximum of 3 exams are allowed per day over a period of 5 days, then you have a total of 15 sessions.

of Courses = the number of courses scheduled for the same session.

Session Size = the total number of students in the same session

How can I safely reschedule an exam?

Use date and time (session) options to re-schedule examinations without causing conflicts. Once you generate a conflict-free schedule, it runs through the back-to-back engine to minimize the number of students with back-to-back exams. You then get a finalized and published exam schedule.

What are typical results?

American University of Beirut Spring 2008 Final Exam Schedule (actual data)

Examination period: 12 days

Number of records (ID-Course): 32,755

Number of courses to be scheduled: 500

Average number of courses per student: 5.54

Portioning program: 24 disjoint conflict-free sessions

of sessions: increased to 36 (three sessions per day) by applying rule that a subset of a complete graph is complete

Back -to-Back Statistics

89.26% of students with one exam per day

10.49% of students with two exams per day

0.25% of students with three exams per day



UniversiTools is produced by **White Mountain Technologies** s.a.l.

Tel: +961 - 1 - 422 765 | E-mail: info@UniversiTools.com | Web: www.UniversiTools.com