

# Scheduling vs. Student Time Selection

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## Problem:

Due to the combination of classes selected and the time they are offered, some students have limited possibilities for obtaining a workable schedule.

When students select class times that block one or more workable schedules for other students, they may prevent them from enrolling in courses required to make progress toward a degree.

## Problem:

It is very easy to create this situation.



# Example: **Woebegon College**

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- ❑ Small Midwestern college with only 19 students,.... but all are above average
- ❑ Each student takes 5 classes per semester
- ❑ Students can select divisions (class times)
- ❑ College has 9 classrooms/labs
- ❑ Classes meet from 7:30 to 5:20 (10 periods)







# Schedule of Classes

ARCH - Archeology		COM (cont'd)		MATH (cont'd)	
Div 01 - 12:30	Rm 3	Div 06 - 12:30	Rm 4	Div 02 - 11:30	Rm 1
ARTH - Art History		Div 07 - 1:30	Rm 4	Div 03 - 1:30	Rm 1
Div 01 - 2:30	Rm 2	Div 08 - 2:30	Rm 4	PHIL - Philosophy	
ASL - American Sign Language		Div 09 - 3:30	Rm 4	Div 01 - 9:30	Rm 2
Div 01 - 3:30	Rm 3	ENGL - English		Div 02 - 11:30	Rm 2
BAND - Band		Div 01 - 7:30	Rm 5	PHYS - Physics	
Div 01 - 3:30-5:20	Rm 2	Div 02 - 8:30	Rm 5	Div 01 - 2:30	Rm 1
CHM - Chemistry		Div 03 - 9:30	Rm 5	Div 02 - 4:30	Rm 1
Div 01 - (Lecture) 7:30	Rm 1	Div 04 - 10:30	Rm 5	POL - Political Science	
(Lab) 8:30-11:20	Rms 6-9	Div 05 - 11:30	Rm 5	Div 01 - 8:30	Rm 2
Div 02 - (Lecture) 10:30	Rm 1	Div 06 - 12:30	Rm 5	Div 02 - 10:30	Rm 2
(Lab) 11:30-2:20	Rms 6-9	Div 07 - 1:30	Rm 5	Div 03 - 12:30	Rm 2
Div 03 - (Lecture) 12:30	Rm 1	Div 08 - 2:30	Rm 5	PSYC - Psychology	
(Lab) 2:30-5:20	Rms 6-9	Div 09 - 3:30	Rm 5	Div 01 - 8:30	Rm 1
CLCS - Classics		Div 10 - 4:30	Rm 5	RUS - Russian	
Div 01 - 1:30	Rm 2	GER - German		Div 01 - 7:30	Rm 3
COM - Communications		Div 01 - 8:30	Rm 3	SOC - Sociology	
Div 01 - 7:30	Rm 4	Div 02 - 10:30	Rm 3	Div 01 - 3:30	Rm 1
Div 02 - 8:30	Rm 4	HIST - History		SPAN - Spanish	
Div 03 - 9:30	Rm 4	Div 01 - 11:30	Rm 3	Div 01 - 9:30	Rm 3
Div 04 - 10:30	Rm 4	Div 02 - 2:30	Rm 3	Div 02 - 1:30	Rm 3
Div 05 - 11:30	Rm 4	Div 03 - 4:30	Rm 3		
		MATH - Mathematics			
		Div 01 - 9:30	Rm 1		



- Woebegon's class timetable has enough space for all students in the desired classes.
- It is possible for all students to take the classes they want without conflicts.



# Woebegon College: Class Schedule Grid

Class Spaces	9	CHM 01			CHM 02			CHM 03			
	8	CHM 01			CHM 02			CHM 03			
	7	CHM 01			CHM 02			CHM 03			
	6	CHM 01			CHM 02			CHM 03			
	5	ENGL 01	ENGL 02	ENGL 03	ENGL 04	ENGL 05	ENGL 06	ENGL 07	ENGL 08	ENGL 09	ENGL 10
	4	COM 01	COM 02	COM 03	COM 04	COM 05	COM 06	COM 07	COM 08	COM 09	
	Rm 3	RUS 01	GER 01	SPAN 01	GER 02	HIST 01	ARCH 01	SPAN 02	HIST 02	ASL 01	HIST 03
	Rm 2		POL 01	PHIL 01	POL 02	PHIL 02	POL 03	CLCS 01	ARTH 01	BAND 01	
	Room 1	CHM 01	PSYC 01	MATH 01	CHM 02	MATH 02	CHM 03	MATH 03	PHYS 01	SOC 01	PHYS 02
	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30
	Time Periods										



# Student Course Selections

Student 1	CHM	ENGL	POL	PSYC	SPAN
Student 2	ARTH	CHM	COM	MATH	SOC
Student 3	ARCH	ENGL	GER	HIST	SOC
Student 4	CHM	COM	MATH	POL	SPAN
Student 5	CHM	ENGL	MATH	PHIL	PSYC
Student 6	COM	GER	HIST	PHYS	SOC
Student 7	ASL	CHM	ENGL	MATH	PHYS
Student 8	ENGL	GER	MATH	PHYS	POL
Student 9	CHM	COM	PHIL	PSYC	RUS
Student 10	ENGL	HIST	PHIL	PHYS	SPAN
Student 11	COM	HIST	MATH	PHYS	PSYC
Student 12	CHM	ENGL	MATH	PHYS	POL
Student 13	ARCH	CHM	ENGL	MATH	SPAN
Student 14	CHM	COM	MATH	PHYS	POL
Student 15	BAND	CLCS	ENGL	HIST	POL
Student 16	CHM	ENGL	GER	HIST	MATH
Student 17	CHM	COM	MATH	RUS	SOC
Student 18	BAND	CHM	COM	MATH	PHYS
Student 19	ARTH	ASL	CLCS	COM	PHIL



# Woebegon College: Feasible Composite Schedule

Class Spaces	9		14	CHM 01	18	CHM 02	9	CHM 03			
	8		13	CHM 01	17	CHM 02	5	CHM 03			
	7		12	CHM 01	16	CHM 02	4	CHM 03			
	6		2	CHM 01	7	CHM 02	1	CHM 03			
	5	7 ENGL 01	10 ENGL 02	8 ENGL 03	5 ENGL 04	1 ENGL 05	15 ENGL 06	3 ENGL 07	13 ENGL 08	16 ENGL 09	12 ENGL 10
	4	18 COM 01	17 COM 02	9 COM 03	4 COM 04	19 COM 05	11 COM 06	2 COM 07	6 COM 08	14 COM 09	
	Rm 3	17 RUS 01	16 GER 01	4 SPAN 01	8 GER 02	6 HIST 01	13 ARCH 01	13 SPAN 02	15 HIST 02	19 ASL 01	16 HIST 03
	Rm 2		8 POL 01	19 PHIL 01	15 POL 02	10 PHIL 02	14 POL 03	19 CLCS 01	19 ARTH 01	18 BAND 01	
			4	5	1	9	12	15	2	15	
	Room 1	14	11	18	18	13	9	14	18	17	14
	13 CHM 01	9 PSYC 01	17 MATH 01	17 CHM 02	11 MATH 02	5 CHM 03	12 MATH 03	12 PHYS 01	6 SOC 01	11 PHYS 02	
	12	5	16	16	8	4	5	10	3	7	
	2	1	7	7	2	1	4	8	2	6	
	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30

## Time Periods

Identification numbers of students enrolled in each class are indicated in red



# Woebegon College: Student #1 Class/Time Selections

Class Spaces		Room 1		CHM	PSYC	MATH	CHM	MATH	CHM	MATH	PHYS	SOC	PHYS			
				01	01	01	02	02	03	03	01	01	02			
				I				I								
				Rm 2				POL	PHIL	POL	PHIL	POL	CLCS	ARTH	BAND	
						01	01	I 02	02	03	01	01	01			
				Rm 3		RUS	GER	SPAN	GER	HIST	ARCH	SPAN	HIST	ASL	HIST	
						01	01	01	02	01	01	I 02	02	01	03	
				4		COM	COM	COM	COM	COM	COM	COM	COM	COM		
						01	02	03	04	05	06	07	08	09		
				5		ENGL	ENGL	I ENGL	ENGL	ENGL	ENGL	ENGL	ENGL	ENGL	ENGL	ENGL
01	02	03	04			05	06	07	08	09	10					
6				CHM			CHM			I CHM						
				01			02			03						
7				CHM			CHM			CHM						
				01			02			03						
8				CHM			CHM			CHM						
				01			02			03						
9				CHM			CHM			CHM						
				01			02			03						
		7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30				

## Time Periods

Student 1 courses: CHM, ENGL, POL, PSYC, SPAN. **Free choice of schedule within offerings.**



# Woebegon College: Student #2 Class/Time Selections

Class Spaces											9		CHM 01			CHM 02			CHM 03			
											8		CHM 01			CHM 02			CHM 03			
											7		CHM 01			CHM 02			CHM 03			
											6		CHM 01		2 CHM 02			1 CHM 03				
											5		ENGL 01	ENGL 02	1 ENGL 03	ENGL 04	ENGL 05	ENGL 06	ENGL 07	ENGL 08	ENGL 09	ENGL 10
											4		COM 01	2 COM 02	COM 03	COM 04	COM 05	COM 06	COM 07	COM 08	COM 09	
											Rm 3		RUS 01	GER 01	SPAN 01	GER 02	HIST 01	ARCH 01	1 SPAN 02	HIST 02	ASL 01	HIST 03
											Rm 2			POL 01	PHIL 01	1 POL 02	PHIL 02	POL 03	CLCS 01	2 ARTH 01	BAND 01	
											Room 1		CHM 01	PSYC 01	MATH 01	CHM 02	MATH 02	CHM 03	MATH 03	PHYS 01	SOC 01	PHYS 02
														1	2	2		1		2		
		7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30										

## Time Periods

Student 2 courses: ARTH, CHM, COM, MATH, SOC. **Single section courses and avoid 7:30.**



# Woebegon College: Student #3 Class/Time Selections

Class Spaces

		CHM 01			CHM 02			CHM 03			
		CHM 01			CHM 02			CHM 03			
		CHM 01			CHM 02			CHM 03			
		CHM 01			2 CHM 02			1 CHM 03			
	ENGL 01	ENGL 02	1 ENGL 03	ENGL 04	ENGL 05	ENGL 06	3 ENGL 07	ENGL 08	ENGL 09	ENGL 10	
	COM 01	2 COM 02	COM 03	COM 04	COM 05	COM 06	COM 07	COM 08	COM 09		
	RUS 01	GER 01	SPAN 01	3 GER 02	HIST 01	3 ARCH 01	1 SPAN 02	3 HIST 02	ASL 01	HIST 03	
		POL 01	PHIL 01	1 POL 02	PHIL 02	POL 03	CLCS 01	2 ARTH 01	BAND 01		
	CHM 01	PSYC 01	MATH 01	CHM 02	MATH 02	CHM 03	MATH 03	PHYS 01	3 SOC 01	PHYS 02	
		1	2	2		1			2		
	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30

Time Periods

Student 3 courses: ARCH, ENGL, GER, HIST, SOC. **Easy pickings.**



# Woebegon College: Student #4 Class/Time Selections

Class Spaces

		CHM 01				CHM 02				CHM 03	
		CHM 01				CHM 02				CHM 03	
		CHM 01				CHM 02			4	CHM 03	
		CHM 01			2	CHM 02			1	CHM 03	
	ENGL 01	ENGL 02	1 ENGL 03	ENGL 04	ENGL 05	ENGL 06	3 ENGL 07	ENGL 08	ENGL 09	ENGL 10	
	COM 01	2 COM 02	COM 03	4 COM 04	COM 05	COM 06	COM 07	COM 08	COM 09		
	RUS 01	GER 01	SPAN 01	GER 02	HIST 01	ARCH 01	SPAN 02	HIST 02	ASL 01	HIST 03	
		4 POL 01	PHIL 01	1 POL 02	PHIL 02	POL 03	CLCS 01	2 ARTH 01	BAND 01		
	CHM 01	PSYC 01	MATH 01	CHM 02	MATH 02	CHM 03	MATH 03	PHYS 01	3 SOC 01	PHYS 02	
		1	2	2		1	4		2		
	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30

## Time Periods

Student 4 courses: CHM, COM, MATH, PHIL, SPAN. **Three periods for lab forces early classes.**



# Woebegon College: Student #5 Class/Time Selections

Class Spaces

		CHM 01				CHM 02				CHM 03	
9		CHM 01				CHM 02			5	CHM 03	
8		CHM 01				CHM 02			4	CHM 03	
7		CHM 01			2	CHM 02			1	CHM 03	
6	ENGL 01	ENGL 02	1 ENGL 03	5 ENGL 04	ENGL 05	ENGL 06	3 ENGL 07	ENGL 08	ENGL 09	ENGL 10	
5	COM 01	2 COM 02	COM 03	4 COM 04	COM 05	COM 06	COM 07	COM 08	COM 09		
4	RUS 01	GER 01	SPAN 01	4 GER 02	3 GER 02	HIST 01	3 ARCH 01	1 SPAN 02	3 HIST 02	ASL 01	HIST 03
Rm3		POL 01	PHIL 01	1 POL 02	5 PHIL 02	POL 03	CLCS 01	2 ARTH 01	BAND 01		
Rm2											
Rm1	CHM 01	PSYC 01	5 MATH 01	CHM 02	MATH 02	5 CHM 03	4 MATH 03	PHYS 01	3 SOC 01	PHYS 02	
		1	2	2		1	4		2		
	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30

Time Periods

Student 5 courses: CHM, ENGL, MATH, PHIL, PSYC.



# Woebegon College: Student #6 Class/Time Selections

Class Spaces											9		CHM			CHM			CHM				
											8		CHM			CHM			5		CHM		
											7		CHM			CHM			4		CHM		
											6		CHM			2		CHM		1		CHM	
											5		ENGL	ENGL	1 ENGL	5 ENGL	ENGL	ENGL	3 ENGL	ENGL	ENGL	ENGL	
											4		COM	2 COM	COM	4 COM	COM	COM	6 COM	COM	COM		
											Rm 3		RUS	GER	SPAN	6 GER	HIST	ARCH	SPAN	HIST	ASL	HIST	
											Rm 2			POL	PHIL	POL	PHIL	POL	CLCS	ARTH	BAND		
											Room 1												
											7:30		CHM	PSYC	MATH	CHM	MATH	5 CHM	MATH	PHYS	6 SOC	PHYS	
8:30		01	5 01	5 01	02	02	4 03	03	01	3 01	02												
9:30			1	2	2		1	4	6	2													
10:30																							
11:30																							
12:30																							
1:30																							
2:30																							
3:30																							
4:30																							
5:30																							
Time Periods																							

Student 6 courses: COM, GER, HIST, PHYS SOC. *Still nice schedule possibilities.*



# Woebegon College: Student #7 Class/Time Selections

Class Spaces												9		CHM			CHM			CHM			
												8		CHM			CHM			5 CHM			
												7		CHM			7 CHM			4 CHM			
												6		CHM			2 CHM			1 CHM			
												5		ENGL	7 ENGL	1 ENGL	5 ENGL	ENGL	ENGL	3 ENGL	ENGL	ENGL	ENGL
												4		COM	2 COM	COM	4 COM	COM	COM	6 COM	COM	COM	
												Rm 3		RUS	GER	SPAN	6 GER	HIST	ARCH	SPAN	HIST	ASL	HIST
												Rm 2			POL	PHIL	POL	PHIL	POL	CLCS	ARTH	BAND	
												Room 1											
												7:30		CHM	PSYC	7 MATH	CHM	MATH	5 CHM	MATH	PHYS	6 SOC	PHYS
8:30		01	5 01	5 01	7 02	02	4 03	03	7 01	3 01	02												
9:30			1	2	2		1	4	6	2													
10:30																							
11:30																							
12:30																							
1:30																							
2:30																							
3:30																							
4:30																							
5:30																							
Time Periods																							

Student 7 courses: ASL, CHM. ENGL, MATH, PHYS. *Avoiding 7:30 Chemistry.*



# Woebegon College: Student #8 Class/Time Selections

Class Spaces													9	CHM 01				CHM 02				CHM 03								
													8	CHM 01				CHM 02				5	CHM 03							
													7	CHM 01				7	CHM 02				4	CHM 03						
													6	CHM 01				2	CHM 02				1	CHM 03						
													5	ENGL 01	7	ENGL 02	1	ENGL 03	5	ENGL 04	ENGL 05	ENGL 06	3	ENGL 07	ENGL 08	8	ENGL 09	ENGL 10		
													4	COM 01	2	COM 02	COM 03	4	COM 04	COM 05	COM 06	6	COM 07	COM 08	COM 09	COM 09				
													Rm 3	RUS 01	GER 01	4	SPAN 01	3	GER 02	6	HIST 01	3	ARCH 01	1	SPAN 02	3	HIST 02	7	ASL 01	HIST 03
													Rm 2		4	POL 01	PHIL 01	1	8	POL 02	5	PHIL 02		POL 03	CLCS 01	2	ARTH 01		BAND 01	
													Room 1			8														
	CHM 01	5	PSYC 01	7	MATH 01	5	CHM 02	7	MATH 02	5	CHM 03	4	MATH 03	8	PHYS 01	7	6	SOC 01	PHYS 02											
		1		2		2				1		4		6		2														
	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30																			

## Time Periods

Student 8 courses: ENGL, GER, MATH, PHYS, POL.



# Woebegon College: Student #9 Class/Time Selections

Class Spaces													Room 1													CHM	PSYC	MATH	CHM	MATH	CHM	MATH	PHYS	SOC	PHYS																																							
																										01	01	01	02	02	03	03	01	01	02	02																																						
																										1		2	2		1	4	6	2																																								
																										Room 2														POL	PHIL	POL	PHIL	POL	CLCS	ARTH	BAND																											
																																								01	01	02	02	03	01	01	01																											
																																								4		1	5			2																												
																																							Room 3													RUS	GER	SPAN	GER	HIST	ARCH	SPAN	HIST	ASL	HIST													
																																																				01	01	01	02	01	01	02	02	01	03													
																																																				9	8	4	3	6	3	1	3	7														
																																																				4													COM	COM	COM	COM	COM	COM	COM	COM	COM	
																																																																	01	02	03	04	05	06	07	08	09	
																																																																	2		9	4			6			
																																																																	5									
01	02	03	04	05	06	07	08	09	10																																																																	
7		1	5			3		8																																																																		
6													CHM				CHM				CHM																																																					
													01				02				03																																																					
																	2				1																																																					
													7													CHM				CHM				CHM																																								
																										01				02				03																																								
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																										8													CHM				CHM				CHM																											
																																							01				02				03																											
																																															5																											
																																							9													CHM				CHM				CHM														
																																																				01				02				03														
																																																												9														

7:30 8:30 9:30 10:30 11:30 12:30 1:30 2:30 3:30 4:30 5:30

## Time Periods

Student 9 courses: CHM, COM, PHIL, PSYC, RUS.



# Woebegon College: Student #10 Class/Time Selections

Class Spaces													9		CHM		CHM		9		CHM									
													8		CHM		CHM		5		CHM									
													7		CHM		7		4		CHM									
													6		CHM		2		1		CHM									
													5		ENGL	7	ENGL	1	ENGL	5	ENGL	ENGL	10	ENGL	3	ENGL	ENGL	8	ENGL	ENGL
													4		COM	2	COM	9	COM	4	COM	COM	COM	6	COM	COM	COM	COM	COM	
													Rm 3		RUS		GER		SPAN	6	GER	10	HIST		ARCH	10	SPAN	HIST	ASL	HIST
													Rm 2				POL		PHIL	8	POL	9	PHIL		POL		CLCS	ARTH	BAND	
													Room 1																	
7:30																														
8:30																														
9:30																														
10:30																														
11:30																														
12:30																														
1:30																														
2:30																														
3:30																														
4:30																														
5:30																														

Student 10 courses: ENGL, HIST, PHIL, PHYS, SPAN. **Class filling starting to influence choices.**



# Woebegon College: Student #11 Class/Time Selections

Class Spaces													9		CHM		CHM		9		CHM												
													8		CHM		CHM		5		CHM												
													7		CHM		7		4		CHM												
													6		CHM		2		1		CHM												
													5		ENGL	7	ENGL	1	ENGL	5	ENGL	ENGL	10	ENGL	3	ENGL	ENGL	8	ENGL	ENGL			
													4		COM	2	COM	9	COM	4	COM	COM	11	COM	6	COM	COM	COM	COM				
													Rm 3		RUS		GER		SPAN	6	GER	10	HIST		ARCH	10	SPAN	11	HIST		ASL		HIST
													Rm 2				POL		PHIL	8	POL	9	PHIL		POL		CLCS		ARTH		BAND		
													Room 1			11		8					9				10						
7:30		CHM	9	PSYC	7	MATH		CHM	MATH	5	CHM	MATH	8	PHYS	6	SOC		PHYS															
8:30		OI	5	OI	5	OI	7	O2	O2	4	O3	11	O3	7	O1	3	O1	O2															
9:30			1		2		2			1		4		6		2		11															
10:30																																	
11:30																																	
12:30																																	
1:30																																	
2:30																																	
3:30																																	
4:30																																	
5:30																																	

Student 11 courses: COM, HIST, MATH, PHYS, PSYC. **Have to use 4:30 Physics.**



# Woebegon College: Student #12 Class/Time Selections

Class Spaces	9	CHM 01			CHM 02			9	CHM 03				
	8	CHM 01			CHM 02			5	CHM 03				
	7	CHM 01			7	CHM 02			4	CHM 03			
	6	I2	CHM 01			2	CHM 02			1	CHM 03		
	5	ENGL 01	7 ENGL 02	1 ENGL 03	5 ENGL 04	I2 ENGL 05	10 ENGL 06	3 ENGL 07	ENGL 08	8 ENGL 09	ENGL 10		
	4	COM 01	2 COM 02	9 COM 03	4 COM 04	COM 05	11 COM 06	6 COM 07	COM 08	COM 09			
	Rm 3	RUS 01	GER 01	SPAN 01	6 GER 02	10 HIST 01	ARCH 01	10 SPAN 02	11 HIST 02	ASL 01	HIST 03		
	Rm 2		POL 01	PHIL 01	8 POL 02	9 PHIL 02	POL 01	CLCS 01	ARTH 01	BAND 01			
			4	10	1	5	I2		2				
	Room 1		11	8			9		10				
		CHM 01	9 PSYC 01	7 MATH 01	CHM 02	MATH 02	5 CHM 03	I2 MATH 03	8 PHYS 01	6 SOC 01	PHYS 02		
			5	5	7		4	11	7	3	I2		
	I2	1	2	2		1	4	6	2	11			
	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30		

## Time Periods

Student 12 courses: CHM, ENGL, MATH, PHYS, POL. **No choice in schedule except English.**



# Woebegon College: Student #13 Class/Time Selections

Class Spaces	9		CHM 01				CHM 02				9	CHM 03				
	8		CHM 01				CHM 02				5	CHM 03				
	7		I3	CHM 01				7	CHM 02				4	CHM 03		
	6		I2	CHM 01				2	CHM 02				1	CHM 03		
	5	ENGL 01	7 ENGL 02	I ENGL 03	5 ENGL 04	I2 ENGL 05	I0 ENGL 06	3 ENGL 07	I3 ENGL 08	8 ENGL 09	ENGL 10					
	4	COM 01	2 COM 02	9 COM 03	4 COM 04	COM 05	II COM 06	6 COM 07	COM 08	COM 09						
	Rm3	RUS 01	GER 01	x SPAN 01	6 GER 02	I0 HIST 01	I3 ARCH 01	I0 SPAN 02	II HIST 02	ASL 01	HIST 03					
	Rm2		POL 01	PHIL 01	8 POL 02	9 PHIL 02	POL 03	CLCS 01	ARTH 01	BAND 01						
			II	8			9	I3	I0							
	Room 1	CHM 01	9 PSYC 01	7 MATH 01	CHM 02	MATH 02	5 CHM 03	I2 MATH 03	8 PHYS 01	6 SOC 01	PHYS 02					
		I3	5	5	7		4	II	7	3	I2					
		I2	I	2	2		I	4	6	2	II					
		7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30				

## Time Periods

Student 13 courses: ARCH, CHM, ENGL, MATH, SPAN. **Choice of Chemistry on Spanish.**



# Woebegon College: Student #14 Class/Time Selections

													CHM												
													OI												
9													CHM												
8													CHM												
7													CHM												
6													CHM												
5													ENGL												
4													COM												
Rm 3													RUS												
Rm 2													POL												
Room 1													CHM												
7:30													8:30												
9:30													10:30												
11:30													12:30												
1:30													2:30												
3:30													4:30												
5:30																									

Student 14 courses: CHM, COM, MATH, PHYS, POL. **No choice of schedule.**



# Woebegon College: Student #15 Class/Time Selections

Class Spaces																						CHM		CHM		9		CHM																				
																						OI		O2		O3																						
											8											I4		CHM				5		CHM																		
																						OI		O2		O3																						
											7											I3		CHM		7		CHM		4		CHM																
																						OI		O2		O3																						
											6											I2		CHM		2		CHM		1		CHM																
																						OI		O2		O3																						
											5											I5		ENGL		7		ENGL		1		ENGL		5		ENGL		I2		ENGL		I0		ENGL		ENGL		
																						OI		O2		O3		O4		O5		O6		O7		O8		O9		I0								
4											COM		2		COM		9		COM		4		COM		COM		I1		COM		6		COM		I4		COM											
											OI		O2		O3		O4		O5		O6		O7		O8		O9																					
Rm 3											RUS		GER		SPAN		6		GER		I0		HIST		I3		ARCH		I0		SPAN		I1		HIST		ASL		HIST									
											OI		OI		OI		O2		O1		O1		O1		O2		O2		O2		O1		O1		O3													
Rm 2													I5		POL		PHIL		8		POL		9		PHIL		I4		POL		CLCS		ARTH		BAND													
											O1		O1		O1		O2		O2		O3		O1		O1		O1																					
Rm 1													I1		8						9		I3		I0																							
											I4		CHM		9		PSYC		7		MATH		CHM		MATH		5		CHM		I2		MATH		8		PHYS		6		SOC		I4		PHYS			
7:30											I3		OI		5		OI		5		OI		7		O2		O2		4		O3		I1		O3		7		OI		3		OI		I2		O2	
											I2		I		2		2		I4		I		4		6		2		I1																			
8:30																																																
9:30																																																
10:30																																																
11:30																																																
12:30																																																
1:30																																																
2:30																																																
3:30																																																
4:30																																																
5:30																																																

Student 15 courses: BAND, CLCS, ENGL, HIST, MATH. **History or Band?**



# Woebegon College: Student #16 Class/Time Selections

Class Spaces																					
																					9
																					8
																					7
																					6
																					5
																					4
																					Rm 3
																					Rm 2
																					Room 1
7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30											

Student 16 courses: CHM, ENGL, GER, HIST, MATH. **More choices to make. Yuck.**



# Woebegon College: Student #17 Class/Time Selections

Class Spaces											Room 1	12	1	2	2	14	1	4	6	2	11
												13	5	5	7	16	4	11	7	3	12
												14	9	7	x	17	5	12	8	6	14
												14	9	7	x	17	5	12	8	6	14
												14	9	7	x	17	5	12	8	6	14
												14	9	7	x	17	5	12	8	6	14
												14	9	7	x	17	5	12	8	6	14
												14	9	7	x	17	5	12	8	6	14
												14	9	7	x	17	5	12	8	6	14
												14	9	7	x	17	5	12	8	6	14
Room 2	15	4	10	1	5	12	15	2	15												
	15	4	10	1	5	12	15	2	15												
	15	4	10	1	5	12	15	2	15												
	15	4	10	1	5	12	15	2	15												
	15	4	10	1	5	12	15	2	15												
	15	4	10	1	5	12	15	2	15												
	15	4	10	1	5	12	15	2	15												
	15	4	10	1	5	12	15	2	15												
	15	4	10	1	5	12	15	2	15												
	15	4	10	1	5	12	15	2	15												
Room 3	x			6	10	13	10	11													
	x			6	10	13	10	11													
	x			6	10	13	10	11													
	x			6	10	13	10	11													
	x			6	10	13	10	11													
	x			6	10	13	10	11													
	x			6	10	13	10	11													
	x			6	10	13	10	11													
	x			6	10	13	10	11													
	x			6	10	13	10	11													
Room 4	17	2	9	4		11	6	14													
	17	2	9	4		11	6	14													
	17	2	9	4		11	6	14													
	17	2	9	4		11	6	14													
	17	2	9	4		11	6	14													
	17	2	9	4		11	6	14													
	17	2	9	4		11	6	14													
	17	2	9	4		11	6	14													
	17	2	9	4		11	6	14													
	17	2	9	4		11	6	14													
Room 5	15	7	1	5	12	10	3	13	8	16											
	15	7	1	5	12	10	3	13	8	16											
	15	7	1	5	12	10	3	13	8	16											
	15	7	1	5	12	10	3	13	8	16											
	15	7	1	5	12	10	3	13	8	16											
	15	7	1	5	12	10	3	13	8	16											
	15	7	1	5	12	10	3	13	8	16											
	15	7	1	5	12	10	3	13	8	16											
	15	7	1	5	12	10	3	13	8	16											
	15	7	1	5	12	10	3	13	8	16											
Room 6	12				2			1													
	12				2			1													
	12				2			1													
	12				2			1													
	12				2			1													
	12				2			1													
	12				2			1													
	12				2			1													
	12				2			1													
	12				2			1													
Room 7	13				7			4													
	13				7			4													
	13				7			4													
	13				7			4													
	13				7			4													
	13				7			4													
	13				7			4													
	13				7			4													
	13				7			4													
	13				7			4													
Room 8	14				x			5													
	14				x			5													
	14				x			5													
	14				x			5													
	14				x			5													
	14				x			5													
	14				x			5													
	14				x			5													
	14				x			5													
	14				x			5													
Room 9	16							9													
	16							9													
	16							9													
	16							9													
	16							9													
	16							9													
	16							9													
	16							9													
	16							9													
	16							9													

Student 17 courses: CHM, COM, MATH, RUS, SOC. **Math required for Chemistry?**



# Woebegon College: Student #18 Class/Time Selections

Class Spaces	9		16	CHM 01		CHM 02		9	CHM 03												
	8		14	CHM 01	x	CHM 02		5	CHM 03												
	7		13	CHM 01	7	CHM 02		4	CHM 03												
	6		12	CHM 01	2	CHM 02		1	CHM 03												
	5	15	ENGL 01	7	ENGL 02	1	ENGL 03	5	ENGL 04	12	ENGL 05	10	ENGL 06	3	ENGL 07	13	ENGL 08	8	ENGL 09	16	ENGL 10
	4	17	COM 01	2	COM 02	9	COM 03	4	COM 04		COM 05	11	COM 06	6	COM 07	14	COM 08	x	COM 09		
	Rm 3		RUS		GER		SPAN	6	GER 02	10	HIST 01	13	ARCH 01	10	SPAN 02	11	HIST 02		ASL		HIST 03
	Rm 2			15	POL		PHIL	8	POL	9	PHIL	14	POL		CLCS		ARTH	18 BAND			
				4	01	10	01	1	02	5	02	12	03	15	01	2	01	15	01		
	Room 1	16		11		8				18		9		13		10		17		x	
	14	CHM	9	PSYC	7	MATH	x	CHM	17	MATH	5	CHM	12	MATH	8	PHYS	6	SOC	14	PHYS	
	13	01	5	01	5	01	7	02	16	02	4	03	11	03	7	01	3	01	12	02	
	12		1		2		2		14		1		4		6		2		11		
	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30										

## Time Periods

Student 18 courses: BAND, CHM, COM, MATH, PHYS. **Meltdown!**



# Woebegon College: Student #19 Class/Time Selections

Class Spaces											9									
											8									
											7									
											6									
											5									
											4									
											Rm 3									
											Rm 2									
											Rm 1									
											7:30									
8:30																				
9:30																				
10:30																				
11:30																				
12:30																				
1:30																				
2:30																				
3:30																				
4:30																				
5:30																				

Student 19 courses: ARTH, ASL, CLCS, COM, PHIL. **There is still hope.**



# Woebegon College: Composite Class/Time Selections

Class Spaces	9		16	CHM OI		CHM O2		9	CHM O3												
	8		14	CHM OI		CHM O2		5	CHM O3												
	7		13	CHM OI	7	CHM O2		4	CHM O3												
	6		12	CHM OI	2	CHM O2		1	CHM O3												
	5	15	ENGL OI	7	ENGL O2	1	ENGL O3	5	ENGL O4	12	ENGL O5	10	ENGL O6	3	ENGL O7	13	ENGL O8	8	ENGL O9	16	ENGL O10
	4	17	COM OI	2	COM O2	9	COM O3	4	COM O4	19	COM O5	11	COM O6	6	COM O7	14	COM O8		COM O9		
	Rm3		RUS		GER		SPAN	6	GER O2	10	HIST O1	13	ARCH O1	10	SPAN O2	11	HIST O2	19	ASL O1		HIST O3
	Rm2			15	POL	19	PHIL	8	POL	9	PHIL	14	POL	19	CLCS	19	ARTH	18 BAND			
				4	O1	10	O1	1	O2	5	O2	12	O3	15	O1	2	O1	15 O1			
	Room 1	16		11		8			18		9		13		10		17				
	14	CHM	9	PSYC	7	MATH		CHM	17	MATH	5	CHM	12	MATH	8	PHYS	6	SOC	14	PHYS	
	13	O1	5	O1	5	O1	7	O2	16	O2	4	O3	11	O3	7	O1	3	O1	12	O2	
	12		1		2		2		14		1		4		6		2		11		
	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30										

## Time Periods

Identification numbers of students enrolled in each class are indicated in red



# Student Course Selections

9 of 95 (9.5%) not met with class/time selection

Student 1	CHM	ENGL	POL	PSYC	SPAN
Student 2	ARTH	CHM	COM	MATH	SOC
Student 3	ARCH	ENGL	GER	HIST	SOC
Student 4	CHM	COM	MATH	POL	SPAN
Student 5	CHM	ENGL	MATH	PHIL	PSYC
Student 6	COM	GER	HIST	PHYS	SOC
Student 7	ASL	CHM	ENGL	MATH	PHYS
Student 8	ENGL	GER	MATH	PHYS	POL
Student 9	CHM	COM	PHIL	PSYC	RUS
Student 10	ENGL	HIST	PHIL	PHYS	SPAN
Student 11	COM	HIST	MATH	PHYS	PSYC
Student 12	CHM	ENGL	MATH	PHYS	POL
Student 13	ARCH	CHM	ENGL	MATH	SPAN
Student 14	CHM	COM	MATH	PHYS	POL
Student 15	BAND	CLCS	ENGL	HIST	POL
Student 16	CHM	ENGL	GER	HIST	MATH
Student 17	CHM	COM	MATH	RUS	SOC
Student 18	BAND	CHM	COM	MATH	PHYS
Student 19	ARTH	ASL	CLCS	COM	PHIL



# Scheduling vs. Student Time Selection

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- Student selection of times is appealing because it appears to offer more control over your class schedule, and it does..., but only for the first students to choose.
- Later students face fewer choices, and often may be shut out of courses they need because of time conflicts.
- Any scheduling approach will offer more restricted choice because it tries to optimize over the entire population of students.
- Students do have a better chance of receiving the courses they need or want to meet their goals.



# Observations:

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- ❑ Student time selection works best when there are few requirements on specific courses to be taken for a degree.
- ❑ More available time patterns create less chance of the type of conflict congestion that blocks students from receiving choice of courses.
- ❑ Multiple time offerings make a class easier to schedule and avoid conflicts.
- ❑ If all courses have only a single section, it does not matter which approach is used. The result will always be the same, but ... there is no choice.



# More Observations

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- If all courses have only a single section, then real problem is in constructing the class timetable to accommodate student course needs.
- There actually is a perfect solution - the classes you want at the times you want. **Hire private tutors.**



# Woebegon College: Feasible Composite Schedule

Class Spaces	9		14	CHM 01	18	CHM 02	9	CHM 03			
	8		13	CHM 01	17	CHM 02	5	CHM 03			
	7		12	CHM 01	16	CHM 02	4	CHM 03			
	6		2	CHM 01	7	CHM 02	1	CHM 03			
	5	7 ENGL 01	10 ENGL 02	8 ENGL 03	5 ENGL 04	1 ENGL 05	15 ENGL 06	3 ENGL 07	13 ENGL 08	16 ENGL 09	12 ENGL 10
	4	18 COM 01	17 COM 02	9 COM 03	4 COM 04	19 COM 05	11 COM 06	2 COM 07	6 COM 08	14 COM 09	
	Rm 3	17 RUS 01	16 GER 01	4 SPAN 01	8 GER 02	6 HIST 01	13 ARCH 01	13 SPAN 02	15 HIST 02	19 ASL 01	16 HIST 03
	Rm 2		8 POL 01	19 PHIL 01	15 POL 02	10 PHIL 02	14 POL 03	19 CLCS 01	19 ARTH 01	18 BAND 01	
			4	5	1	9	12	15	2	15	
	Room 1	14	11	18	18	13	9	14	18	17	14
	13 CHM 01	9 PSYC 01	17 MATH 01	17 CHM 02	11 MATH 02	5 CHM 03	12 MATH 03	12 PHYS 01	6 SOC 01	11 PHYS 02	
	12	5	16	16	8	4	5	10	3	7	
	2	1	7	7	2	1	4	8	2	6	
	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30

## Time Periods

Identification numbers of students enrolled in each class are indicated in red