



Classroom Study
Fall 2013

DRAFT

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Overview

Comprehensive Facilities Planning, Inc. is conducting an assessment of the University of West Georgia existing classrooms used for scheduled instruction. The following purposes for this assessment have been identified:

1. Examine the utilization of classrooms from the Fall 2013 class file.
2. Compare the Fall 2013 classrooms supply and utilization to typical guidelines and the USG classroom metric to determine classroom need.
3. Evaluate the progression of utilization over the past three years of analysis to identify trends in use to help inform management decisions regarding classroom scheduling practices and needs.

Utilization Overview

Classroom utilization was analyzed using the Fall 2013 course and facilities data. The analysis includes scheduled classrooms by day and time of day, as well as utilization analyzing weekly room hours of use and student station occupancy percentages. This type of information is used to guide the classroom space needs analysis component of the study. The room utilization was determined using the following factors:

Peak Week of the Term: The peak week of the term is identified by adding up the total class hours scheduled for each week of the term. Class hours scheduled during a given week can vary dependent on classes offered that do not meet the entire length of the term.

Average Weekly Room Hours (Avg. WRH): The total class hours scheduled (e.g., a Tuesday, Thursday class that meets from 10am to 12pm is 4 hours) for a given time period (e.g., 8am to 5pm) is summed and then divided by the numbers of rooms for that group. The Average WRH is then compared against an Average WRH goal to determine how well instructional spaces are used.

Station Occupancy (SO): The hours a class meets times the students enrolled is summed and then divided by the sum of the hours a class meets time the seats in the room. The summing of the hours and seats is done for groups of rooms as noted above. The Station Occupancy is then compared against a Station Occupancy goal to determine how well instruction seats are used.

Seats and Weekly Student Contact Hours (WSCH): WSCH is the sum of the hours a class meets times the enrollment in the class. The Weekly Student Contact Hours are used to calculate the number of seats that are needed by dividing the WSCH by the product of the Average Weekly Room Hour goal times the Station Occupancy Goal. WSCH are also used for the USG classroom square footage calculation. This calculation uses all WSCH (i.e., includes weekend hours) scheduled in classrooms.

Assignable Square Feet (ASF): Square footage needed is calculated by multiplying the number of seats required times a square foot per seat goal.

Weekly Room Hours (WRH) = No of Class Hours per Week per Room or the Average of a Group of Rooms

Weekly Student Contact Hours (WSCH) = No of Students Enrolled x Weekly Room Hours

Weekly Student Contact Hour Capacity = Student Seats x Weekly Room Hours

Student Station Occupancy% = Enrollment Divided by Room Capacity

Findings Summary

1. **8am-5pm Utilization:** UWG's classroom demand is driven by the daytime hours. The evening programs peak use is just over half of the daytime peak in demand on classrooms. Therefore, 8am-5 pm utilization was used to start the analysis of utilization.
 - a. The current supply of 98 classrooms are utilized at 23.6 Average Weekly Room Hours (WRH-average of hours classrooms are scheduled from 8am to 5pm, M-F, or 45 available hours) compared to typical guidelines which range from 27 to 31.5 WRH for daytime usage. 28.5 Average WRH out of 45 hours available, or 64% usage, is considered solid utilization.
 - b. The 49 'shared' classrooms (shared usage by CAH, CSM, and CSS) are utilized at 29.8 Average WRH which is considered good utilization with some room left before a maximum capacity of 31.5 hours is met.
 - c. The 49 'non-shared' classrooms are utilized at 17.4 Average WRH which indicates there may be a surplus of classrooms or a potential for enrollment growth in these rooms. However, some of the 'non-shared' rooms have excellent utilization. For example, the 7 classrooms in Richards are used an average of 30 WRH. Rooms such as the 11 in the Education Center, are only used at 16.4 Average WRH, and the 5 new Nursing classrooms only reporting 7.4 Average WRH, reduce the overall utilization.
 - d. If the rooms in Education Center, Nursing, and 2 very small rooms in Education Annex are removed from the calculation, Average WRH increases to 26 WRH overall from the 23.6 reported for all 98 rooms.
 - e. 8am classes are almost nonexistent showing only 2.8% of classes meeting during this hour compared to the peak of 14.7% meeting at 11am. However, a 10.6% rate at 4pm is very good. This finding suggest that a better time frame would be to use 9am to 5pm (40 available hours) which yields a goal of 25.6 Average WRH (64%) to measure classroom needs.
2. **Classroom Needs:** Classroom needs were calculated based on a goal of 28.5 Average WRH for the 8am to 5pm timeframe. The calculation was also performed for the 9am to 5pm timeframe using a 25.6 WRH goal which may better reflect (i.e., lack of 8am classes) the current scheduling practice at UWG. The calculations also use goals of 67% Station Occupancy (Fall 2013-72.5%), and 20 ASF/Seat (Fall 2013-19.2). These goals affect the number of rooms, seats, and square feet (ASF) required in the calculations. For example, if the current Average WRH is below the goal but the current Station Occupancy is above the goal, less rooms may be calculated but the number of seats required could be the same or even higher than the current seats in the supply.
 - a. The 8am-5pm calculation resulted in a need of 82 classrooms, 4,356 seats, and 87,128 square feet compared to the current supply of 98 classrooms, 4,867 seats, and 93,240 square feet.
 - b. The 9am-5pm calculation resulted in a need of 88 classrooms, 4,691 seats, and 93,813 square feet compared to the current supply of 98 classrooms, 4,867 seats, and 93,240 square feet.
 - c. If desirable, some of the least desirable or lowest used rooms could be re-purposed. The corollary to removing some rooms is that these excess rooms provide an opportunity for some enrollment growth.
3. **USG Classroom Metric:** The USG metric does not look at a timeframe. It considers all hours scheduled including weekends. The USG Classroom metric is calculated by dividing the Weekly Student Contact Hours (enrollments * hours in class) by the product of total seats times a Weekly Room Hour goal of 40. USG set the bar at a range of .5 to .7 for the metric.

- a. UWG's metric was calculated to be .426 for the 98 classrooms reported which is slightly below the bar. This is a slight decline from the .448 calculated for Fall 2012. The shared classrooms calculated to .515 or at the minimum of the threshold set by USG.
 - b. To improve the classroom metric a reduction in seats, increase in Weekly Student Contact Hours (WSCH), or a combination of both is required. To reach a .5 metric (the minimum bar) would require a reduction of 713 seats or an increase of 14,390 WSCH (17.3% enrollment growth).
 - c. Removing the 10 least utilized rooms, which brings the classroom supply to the 88 recommended, would only account for 369 seats which is well below the 713 seat reduction needed to reach the .5 metric. Removing more rooms would leave the campus in a deficit position to handle the current daytime demand.
 - d. The USG metric is a good measure of the capacity of classrooms. However, in UWG's case, most of the excess capacity exists in the evening and weekend hours.
 - e. Overall to reach the USG range for classroom utilization would require more Weekly Student Contact Hours (i.e., more students) during the evening and weekend. Since USG set a WRH goal of 40, a large evening and possibly weekend program is required. This may not be either feasible or in UWG's mission.
4. Classroom Trends: The table below shows classroom trends for the past three years. Please note that the computer classrooms that were included in the Fall 2011 study have been removed from the table since they are now classified under the lab categories for the USG metrics starting Fall 2012. The Nursing building also added 8,215 classroom square feet (ASF) for Fall 2013.

Term	Rooms	Capacity	ASF	8am-5pm		USG Metric
				Avg_WRH	SO	
Fall 2013 Total	98	4,867	93,240	23.6	72.5%	0.426
Fall 2012 Total	95	4,652	83,019	23.9	74.1%	0.448
Fall 2011 Total	99	4,841	89,621	21.2	77.9%	0.420

I – Terms and Classroom Summary

Terms in this study	
WRH	Weekly Room Hours – Total hours a room is scheduled per week.
Avg WRH	Average WRH – Average of hours scheduled per week.
SO	Station Occupancy – How well seats are filled while a room is in use. There are times when SO may exceed 100%. This is caused by enrollments in a class exceeding the capacity of the room.
ASF	Assignable Square Feet
WSCH	Weekly Student Contact Hours (Hours in class times students)
CAH	College of Arts and Humanities
COE	College of Education
CSM	College of Science and Math
CSS	College of Social Sciences
NURS	School of Nursing
RCB	Richards College of Business
VPAA	Provost and Vice President for Academic Affairs (Interdisciplinary subjects)

Table 1: Classroom Summary

College Name	College	Rooms	Capacity	ASF	ASF/Seat
College of Arts and Humanities	CAH	21	798	13,742	17.2
College of Education	COE	19	805	20,843	25.9
College of Science and Math	CSM	22	1,354	23,100	17.1
College of Social Sciences	CSS	20	920	16,459	17.9
School of Nursing	NURS	5	332	8,215	24.7
Richards College of Business	RCB	11	658	10,881	16.5
Fall 2013 Total		98	4,867	93,240	19.2
Fall 2012 Total		95	4,652	83,019	17.8
Fall 2011 Total		107	5,167	95,490	18.5

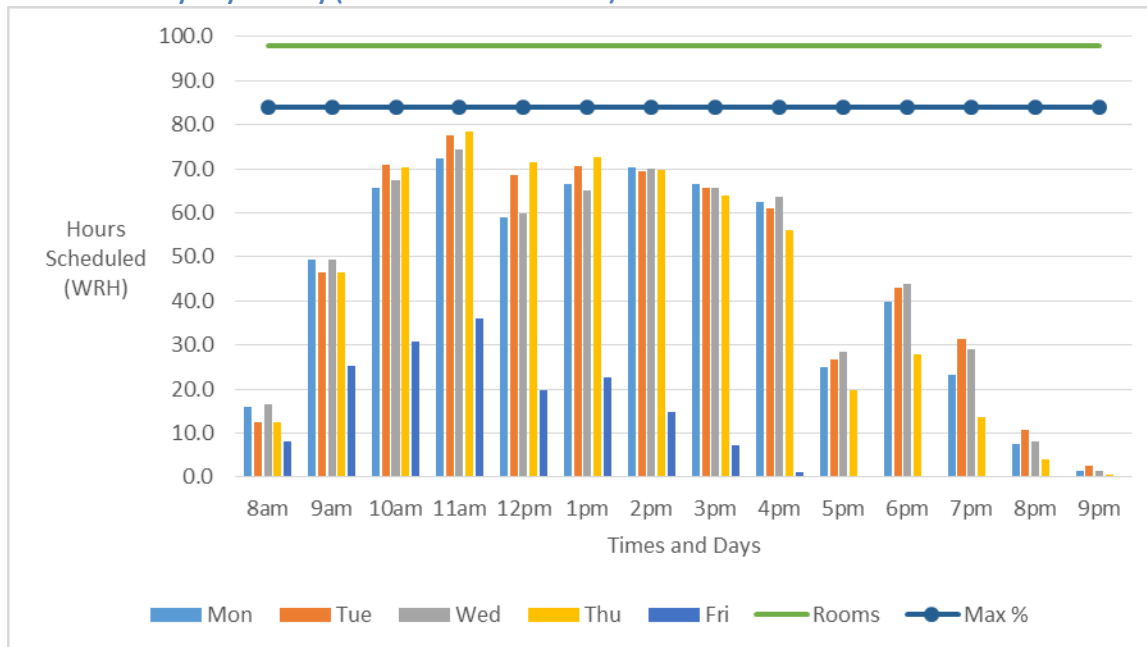
1. The Classroom Summary table shows the supply of classrooms used for Fall 2013 and reported as 110-Classrooms for the USG classroom metric calculation. These rooms will be used in this study as a basis for demand, current utilization rates, and time spreading.
2. The Fall 2011 statistics included 8 computer classrooms (249 seats, 6,224 ASF) which are now grouped in the USG laboratory metric and are therefore not included in the Fall 2012 or Fall 2013 data.
3. The 5 Nursing classrooms are in the new Nursing building.

II – Time by Day Distribution

Assumptions for Time by Day Usage

- Tables in this section show how class hours are currently distributed across days and times.
- The hours shown in the Time by Day tables are calculated by summing all individual class hours including class change times. Based on the beginning and end times, the summarized hours for all classes are then distributed into the appropriate bars for the bar chart and cells for the grids.
- The hours in the bars/cells can be compared to the number of rooms available to examine capacity.
- The Max % line is 86% of the total rooms available. This is typically where the demand for classrooms exceeds the supply. Inefficiencies caused by non-standard class times, single day classes, unpopular classrooms, etc., cause the max% to be less than available rooms.

Table 2: Time By Day: All Day (98 Classrooms-Fall 2013)



4. The Time by Day table shows hours of classes meeting in classrooms from 8am through 10pm. This graph is shown to get an overall picture of how classes are scheduled.
5. The time spread of classes shows that UWG classroom demand is driven by the daytime hours. Distribution of classes is quite good from 9am through to 5pm.
6. 8am usage is almost nonexistent. Friday, at best, is half the use of the other days in the morning and slips to nothing in the afternoon.
7. The Max % line is not achieved at any hour or day indicating a surplus of rooms even during the peak times.

Table 3: Time By Day Percentages: 8am to 5pm Fall 2013

Time	Mon	Tue	Wed	Thu	Fri	Hour Tot	Hour %
8am	16.0	12.5	16.5	12.5	8.0	65.5	2.8%
9am	49.3	46.5	49.3	46.4	25.3	216.7	9.4%
10am	65.7	71.0	67.5	70.3	30.7	305.2	13.2%
11am	72.4	77.5	74.5	78.5	36.0	338.9	14.7%
12pm	58.9	68.6	60.0	71.6	19.8	278.9	12.1%
1pm	66.5	70.6	65.2	72.6	22.5	297.4	12.9%
2pm	70.2	69.4	70.0	69.9	14.9	294.4	12.7%
3pm	66.6	65.8	65.5	64.0	7.1	268.9	11.6%
4pm	62.4	60.9	63.7	56.1	1.1	244.1	10.6%
Day Tot	527.9	542.9	532.1	541.8	165.3	2,310.0	100.0%
Day %	22.9%	23.5%	23.0%	23.5%	7.2%	100.0%	

*WRH – Cells are WRH (Class hours) plus class change time

8. The Time by Day Percentage table shows the distribution of classes for Fall 2013 daytime to provide a comparative measure against some “best practice” policies.
9. In order to maximize classroom usage many universities have established time spreading policies. Some of the best, and simplest are:
 - a. No more than 12.5% of classes at any given hour.
 - b. At least 15% of class meetings on Friday.
10. The policy of 12.5% at any given hour is exceeded at 10am and 11am. The peak of 14.7% at 11am is only possible since there is a current surplus of classrooms available. This peak is mostly caused by the 11am to 12:20pm TR time slot.
11. Friday usage of 7.2% Falls well short of the policy of 15% on Friday.
12. 8am usage is almost non-existent; however, a rate of 10.6% at 4pm is exceptional which partially makes up for the lack of 8am usage.
13. This chart shows how UWG is almost exclusively operating on a 9am to 5pm daytime schedule which will affect the determination of classroom needs.

III – Classroom Utilization

- The following methods will be used to determine classroom utilization and needs:
 - **Daytime 8am-5pm, Daytime 9am-5pm, Monday through Friday:** This method most accurately measures institutions, such as UWG, where the daytime Monday through Friday hours’ drive the classroom need. This method considers two factors, Weekly Room Hours (WRH) and Station Occupancy (SO). For the WRH measurement, typical state guidelines suggest classroom utilization rates should fall between 60% and 70% of the available hours where 70% is considered maximum capacity. In order to look at daytime versus all day, these percentages need to be applied to a time frame. Taking the available 45 hours (8am to 5pm, M-F, daytime) multiplied by guidelines yields an expectation of 27 (60%) to 31.5 (70%) Average WRH (i.e., on average classrooms should be used between 27 to 31.5 hours per week). This calculation also includes class change times so that a 50 minute class will be counted as one hour. Station Occupancy, a measurement of how many seats are filled while a room is in use, is the second measurement for this method.
 - Dependent on the institutions scheduling practices adjustments to the time frame or hours available may be made to reflect the local culture. These adjustments are then made to

expected goals to determine classroom needs. **Since 8am has such low usage this study will also examine using 40 hours (9am to 5pm, M-F, daytime).** Multiplied by guidelines yields an expectation of 24 (60%) to 28 (70%) Average WRH.

- **USG Classroom Metric:** The USG metric uses all hours scheduled regardless of time or day (i.e., evening classes and weekend classes are included). The formula is Weekly Student Contacts Hours divided by the product of the capacity of all rooms times the expected Weekly Room Hour goal: $WSCH / (\text{Seats} * 40)$. This calculation ignores class change times so a 50 minute class is $5/6^{\text{th}}$ of an hour. USG's metric range for 'good' utilization is .5 to .7 for this calculation.

Table 4: Classroom Standards

Daytime: 8am-5pm			Daytime: 9am-5pm			USG Metric				
Hrs. Avail	Avg WRH	% WRH	Hrs. Avail	Avg WRH	% WRH	SO	WSCH	WRH	Seats	Metric
45	27.0-31.5	60%-70%	40	24.0-28.0	60%-70%	67%	All	40	All	.5-.7

*Standards used to compare to current utilization rates

Table 5: Classroom Utilization: Summary (Fall 2013)

College	Rooms	Capacity	Daytime 8am-5pm				SO	All WSCH	USG Metric
			WRH	Avg_WRH	% WRH	SO			
CAH	21	798	522.4	24.9	55.3%	87.3%	16,756	0.525	
COE	19	805	268.4	14.1	31.4%	63.8%	9,076	0.282	
CSM	22	1,354	648.2	29.5	65.5%	70.7%	26,517	0.490	
CSS	20	920	531.1	26.6	59.0%	73.6%	17,793	0.483	
NURS	5	332	38.8	7.8	17.3%	59.3%	1,467	0.111	
RCB	11	658	302.9	27.5	61.2%	60.2%	11,401	0.433	
Fall 2013 Total	98	4,867	2,311.8	23.6	52.4%	72.5%	83,010	0.426	
Shared	49	2,730	1,457.5	29.8	66.1%	72.5%	56,247	0.515	
Fall 2012 Total	95	4,652	2,268.3	23.9	53.1%	74.1%	83,402	0.448	
Fall 2011 Total	99	4,841	2,098.0	21.2	47.1%	77.9%	81,357	0.420	

*Guidelines for Average WRH: 27 to 31.5, USG Metric: .5 to .7

- Overall daytime utilization of 23.6 Avg WRH for the 98 classrooms is below minimum recommended guideline of 27 WRH and well below maximum capacity of 31.5 WRH indicating a surplus of classrooms.
- The 49 shared classrooms are at 29.8 Avg WRH which is within acceptable guidelines
- Daytime Station Occupancy (SO) of 72.5% for the 98 classrooms is above the guideline of 67%. These rates show that seats are well used and that the sizes of classrooms are well distributed to meet demand.
- The USG metric for the 98 classrooms, at .426 is below the acceptable range of .5 to .7 set by the state. The 49 shared classrooms are at the lower end of the expected range. This shows how even though the 49 shared rooms are used quite well during the 8am to 5pm hours, there is simply not enough evening or weekend hours scheduled at UWG to raise the utilization rates much above the minimum set by USG. The 5pm to 10pm time frame yields only 4.0 Avg WRH which is not enough to increase the total WRH to the USG WRH Goal of 40.

18. The USG metric has fallen slightly from Fall 2012 to Fall 2013 mainly caused by the addition of the 5 Nursing classrooms which have very low utilization reported. Removing these five rooms' results in a USG metric of .450.

Table 6: Classroom Utilization by Building (Fall 2013)

Building	Rooms	Daytime 8am to 5m				USG Metric		
		WRH	WRH	WRH	SO%	Capacity	WSCH	USG Metric
Adamson	4	93.0	23.2	51.6%	63.6%	220	3,728.2	0.42
Anthropology	3	68.8	22.9	51.0%	67.2%	156	2,196.0	0.35
Biology	7	159.1	22.7	50.5%	77.3%	365	6,077.4	0.42
Boyd	8	281.6	35.2	78.2%	80.4%	400	10,450.8	0.65
Callaway Annex	2	61.6	30.8	68.5%	76.2%	120	2,539.9	0.53
Cobb	1	9.0	9.0	20.0%	100.0%	20	160.2	0.20
Coliseum	6	78.2	13.0	29.0%	67.1%	236	2,351.2	0.25
Education Annex	2	9.3	4.7	10.4%	123.9%	24	249.5	0.26
Education Center	11	180.9	16.4	36.5%	56.4%	545	6,475.1	0.30
Humanities	14	321.4	23.0	51.0%	84.2%	454	8,443.4	0.46
Melson	4	80.0	20.0	44.4%	87.3%	90	1,632.4	0.45
Nursing	5	38.8	7.8	17.3%	59.3%	332	1,467.5	0.11
RCOB	7	209.9	30.0	66.6%	58.3%	438	7,673.0	0.44
Social Sciences	16	475.6	29.7	66.1%	72.2%	700	14,651.8	0.52
Tech Learn	8	244.4	30.6	67.9%	63.9%	767	14,913.9	0.49
Total	98	2,311.8	23.6	52.4%	72.5%	4,867	83,010.3	0.43

* Guidelines for Average WRH: 27 to 31.5, USG Metric: .5 to .7

19. The Classroom Utilization by Building table shows the distribution of classrooms around the campus and how well each building is utilized.
20. This table helps to reflect that there may be less desirable buildings or in the case of Nursing, non-reported usage.

Table 7: Classroom Utilization by Size (Fall 2013)

Size	Rooms	Daytime 8am-5pm						USG Metric		
		Avg WRH	% WRH	% SO	Min WRH	Max WRH	Capacity	WSCH	USG Metric	
1-19	10	156.3	15.6	34.7%	86.3%	-	30.0	143	2,617	0.46
20-29	18	413.9	23.0	51.1%	78.4%	4.6	32.0	455	8,037	0.44
30-39	24	558.4	23.3	51.7%	74.9%	6.0	37.6	825	14,264	0.43
40-59	21	567.9	27.0	60.1%	72.1%	3.8	40.7	944	19,319	0.51
60-79	13	270.0	20.8	46.1%	52.1%	5.0	31.8	919	10,813	0.29
80-99	4	122.3	30.6	68.0%	72.2%	25.8	36.4	358	8,854	0.62
100-149	5	132.0	26.4	58.7%	64.6%	15.0	33.2	592	9,365	0.40
150-249	2	63.8	31.9	70.9%	67.8%	25.1	38.7	334	6,437	0.48
>=250	1	27.2	27.2	60.4%	46.5%	27.2	27.2	297	3,305	0.28
Total	98	2,311.8	23.6	52.4%	72.5%			4,867	83,010	0.43

* Guidelines for Average WRH: 27 to 31.5, USG Metric: .5 to .7

- The Classroom Utilization by Size table shows the distribution of classrooms by the sizes of rooms and how well each size range is utilized. The Min and Max WRH columns show in each size range the lowest and highest used room (see the room list in the appendix for individual rooms).
- The smallest rooms, 1-19 seats, have the lowest Average WRH usage which is typical since class max limits are usually not set low enough to fully utilize these rooms.

IV – Room Needs

Classroom Needs Summary - How it works:

- The table below shows the current rooms, seats, and ASF (Assignable Square Feet). Calculations for these three items are performed for two time frames with varying WRH goals and a constant Station Occupancy goal of 67%.
- Rooms:** The total WRH is divided by the expected WRH utilization goals to determine how many classrooms are needed. The calculation is performed for a standard 8am to 5pm time frame. The calculation also is done for a 9am to 5pm schedule since the time by day section of this report shows that 8am classes are almost non-existent and UWG is currently operating on a 9am to 5pm daytime schedule.
- Seats:** The WSCH is divided by the product of SO Goal (67%) times the WRH Goal.
- ASF:** The seat calculation times 20 (an average ASF per seat goal).

Table 8: Classroom Needs Summary

	WRH	WSCH	Rooms	Seats	ASF	Potential Growth	Current vs. Recommended Factor Comparison		
							Avg WRH	SO%	ASF/Seat
Current 8am-5pm	2,312	83,185	98	4,867	93,240		23.6	72.5%	19.2
Calculated Need			81.1	4,356	87,128	12%	28.5	67.0%	20
Current 9am-5pm	2,245	80,454	98	4,867	93,240		22.9	72.2%	19.2
Calculated Need			87.7	4,691	93,813	4%	25.6	67.0%	20

23. At the 64% WRH goal (28.5) for the 8am to 5pm time frame, UWG could reduce the total classrooms to 82 (81.1 calculated), the total seats to 4,356, and the ASF to 87,128. The classrooms in Boyd, Richards, Social Science, and TLC are all currently scheduled near 30 Average WRH indicating the ability to achieve these goals.
24. At the 64% WRH goal (25.6) for the 9am to 5pm time frame, which more accurately depicts current practices, UWG could reduce the total classrooms to 88. Seat calculation of 4,691 and ASF of 93,813 are very close to the current numbers. Taking into account that the current SO rates are above the SO Goal combined with the fact that some rooms/buildings have very low utilization aligns well with the calculation of 10 less rooms but overall seat and ASF calculations are very close to current.
25. Another alternative perspective is reflected in the column entitled "Potential Growth". Enrollment growth potential within the existing classroom supply ranges from 4% to 12% depending on the instructional timeframe being considered.

Table 9: USG Metric Needs

Reduce Seats				Increase WSCH			
Capacity	WSCH	WRH Goal	USG Metric	Capacity	WSCH	WRH Goal	USG Metric
4,867	83,010	40	0.426	4,867	83,010	40	0.426
4,154	83,010	40	0.500	4,867	97,400	40	0.500
3,460	83,010	40	0.600	4,867	116,900	40	0.600

*USG Classroom Metric guidelines suggested rates range between .5 and .7

26. The USG classroom metric does not calculate how many rooms are needed; it calculates an efficiency ratio using seats, WSCH, and a WRH goal. A range of .5 to .7 is defined as 'good' utilization. To change the metric, seats must be reduced, WSCH must be increased, or a combination of both.
27. Reduce Seats: Reducing seats by 713 to reach 4,154 seats would raise the metric to .5, or the minimum of the USG range. However, removing the 10 least utilized rooms as the Room Need model suggests, would only account for 369 seats. Removing more rooms would leave the campus in a deficit position to handle the current daytime demand.
28. Increase WSCH: An increase in WSCH to 97,400 (17.3% increase in students) would be required to meet the .5 metric.
29. Overall this table helps illustrate how the USG WRH goal of 40, and without class change minutes included, makes it difficult to achieve the .5 to .7 range without a larger evening and weekend programs than UWG currently has.

Classroom Needs Detail - How it works:

- The room's columns show how many classrooms exist for each size range for Fall 2013.
- Weekly Room Hours (WRH) are summarized by the size ranges. The WRH of all the classes in each size range are then used for a base.
- The Required Rooms columns show how many rooms are needed based on demand (WRH) and expected utilization goals. The total WRH for classes in each size range (based on actual class enrollment) are divided by the expected WRH goal to yield how many rooms are needed. The 9am to 5pm timeframe with a goal of 26.5 WRH is used for the detail section since it most accurately reflects the current scheduling practices.
- **Best Fit:** In the detailed computation (not shown) a cascading factor is applied to each size range to allow some demand for a range to flow into a larger classroom (i.e., a 60% cascade factor is applied to the 1-19 size

range, therefore 60% of the demand for 1-19 seat rooms would be allowed to “cascade” into the demand for the next range, or in this example, the 20-29 seat classroom range). Cascading factors decrease through the size ranges so that all demand is met.

Table 10: Classroom Needs Detail: (9am to 5pm, 25.6 WRH Expected)

Size	Rooms	Required Rooms		Cum Rooms	Cum Required		Best Fit	
		Enroll	Limit		Enroll	Limit	Enroll	Limit
1-19	10	17.5	8.6	10	17.5	8.6	7	3
20-29	18	27.2	27.1	28	44.7	35.7	29	24
30-39	24	19.2	19.7	52	63.9	55.4	22	22
40-59	21	14.7	22.1	73	78.6	77.6	17	24
60-79	13	1.7	2.4	86	80.3	80.0	4	6
80-99	4	3.5	3.3	90	83.8	83.4	4	3
100-149	5	3.2	3.3	95	87.0	86.7	3	4
150-249	2	0.7	0.9	97	87.7	87.6	1	1
>=250	1	0.0	0.1	98	87.7	87.7	1	1
Total	98	87.7	87.7				88	88

30. The Required Rooms columns show how many rooms are needed to satisfy demand by size range with an expectation of 25.6 WRH (64% utilization of the 9am to 5pm time frame).
- The 1-19 size range shows a demand of 17.5 rooms with only 10 actual rooms available. However, limits for this range showed only a demand for 8.6 rooms which reflects that limits for these classes are typically set at or above 20.
 - The 60-79 seat range has 13 rooms with a demand of only 1.7 rooms based on enrollments and 2.4 rooms based on max scheduling limits. However, this range helps catch up with the demand from the smaller ranges as can be seen under the cumulative columns showing that the supply of rooms has now caught up with the required rooms. The excess in this range also provides flexibility to handle changes made by departments to the configuration of section offerings and class sizes.
31. Comparing the Best Fit column to the Required Rooms column helps to make future adjustments to sizes of classrooms that will be built, remodeled, or repurposed.
32. Overall there is a very good mixture of classroom size ranges to meet the demand of classes.

Table 11: Classroom Needs Detail: By College (25.6 WRH Expected, 9am-5pm, 40 hours available)

College	Size of Room Need										Total Needs	Current Rooms
	1-19	20-29	30-39	40-59	60-79	80-99	100-149	150-249	>=250			
CAH	4.2	15.3	3.1	2.0	0.1	2.2	0.1	0.4	-	-	27.5	21
CSM	6.5	3.3	4.4	3.5	1.2	0.2	1.9	0.1	-	-	21.2	22
CSS	3.6	1.7	3.7	3.4	0.3	0.9	1.1	0.2	-	-	14.9	20
Sub Total	14.3	20.3	11.1	9.0	1.6	3.4	3.1	0.7	-	-	63.5	63
COE	1.3	3.5	2.9	1.0	0.1	-	-	-	-	-	8.8	19
NURS	0.0	0.1	0.6	0.6	-	-	-	-	-	-	1.3	5
RCB	1.2	0.8	4.6	4.1	-	-	-	-	-	-	10.7	11
VPAA	0.7	2.5	0.1	0.1	-	0.1	0.1	-	-	-	3.5	
Total Needs	17.5	27.2	19.2	14.7	1.8	3.5	3.2	0.7	-	-	87.7	
Current Rooms	10	18	24	21	13	4	5	2	1	1	98	98

33. The Needs by College table shows how many rooms are need for each college and compares this against the current rooms. This helps to make decisions about the future classroom supply denoting where shortfalls and surpluses exist.

Table 12: Room Size Versus Class Size

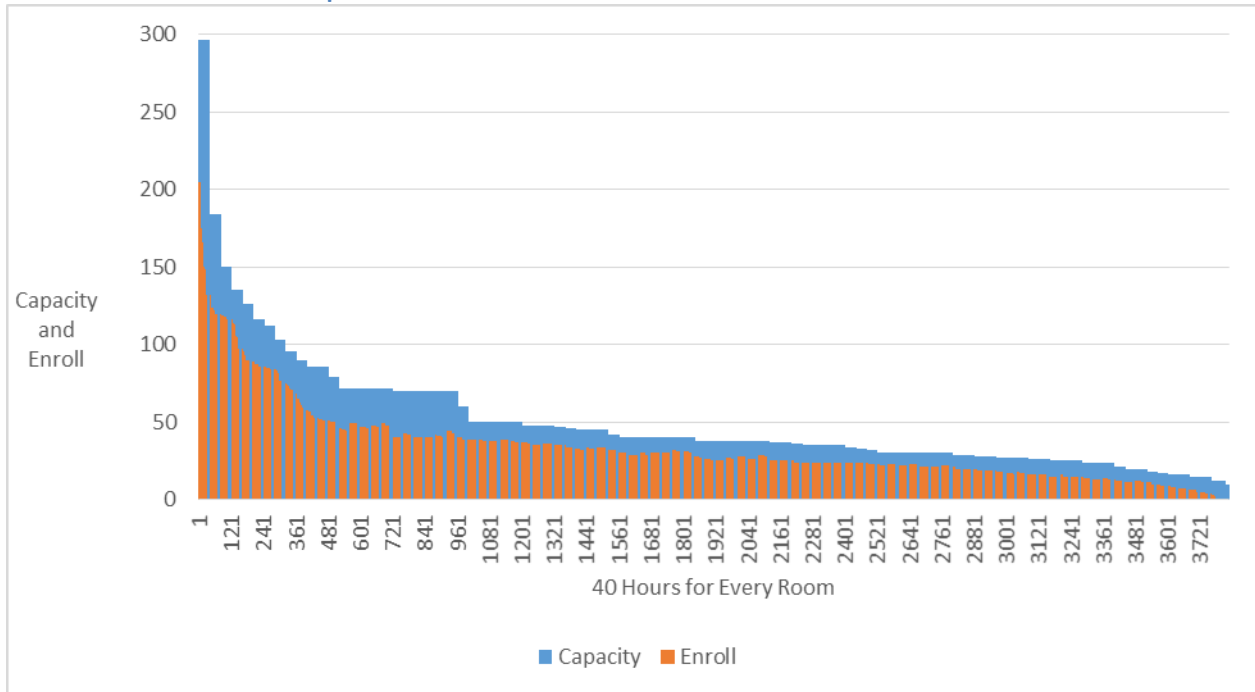
Room Size	Class Size									Current Rooms
	19-Jan	20-29	30-39	40-59	60-79	80-99	100-149	150-249	>=250	
1-19	89.90%	10.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10
20-29	30.40%	68.20%	1.40%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	18
30-39	22.30%	44.10%	30.70%	3.00%	0.00%	0.00%	0.00%	0.00%	0.00%	24
40-59	12.30%	18.10%	41.70%	27.90%	0.00%	0.00%	0.00%	0.00%	0.00%	21
60-79	3.10%	25.80%	27.80%	35.10%	8.20%	0.00%	0.00%	0.00%	0.00%	13
80-99	0.00%	2.40%	7.30%	39.00%	0.00%	51.20%	0.00%	0.00%	0.00%	4
100-149	2.20%	0.00%	4.40%	37.80%	11.10%	15.60%	28.90%	0.00%	0.00%	5
150-249	0.00%	4.50%	0.00%	4.50%	9.10%	9.10%	63.60%	9.10%	0.00%	2
>=250	0.00%	0.00%	0.00%	11.10%	0.00%	11.10%	33.30%	44.40%	0.00%	1

*Note: Percentages to the right of the shaded areas are where class enrollments exceeded room capacity

34. The Room versus class size table is a supplement to the detailed needs table. This table shows the percentage of classes scheduled into rooms based on sizes of classes and sizes of rooms. For example, 25.8% of the classes held in 60-79 seat rooms had enrollments between 20-29 students.

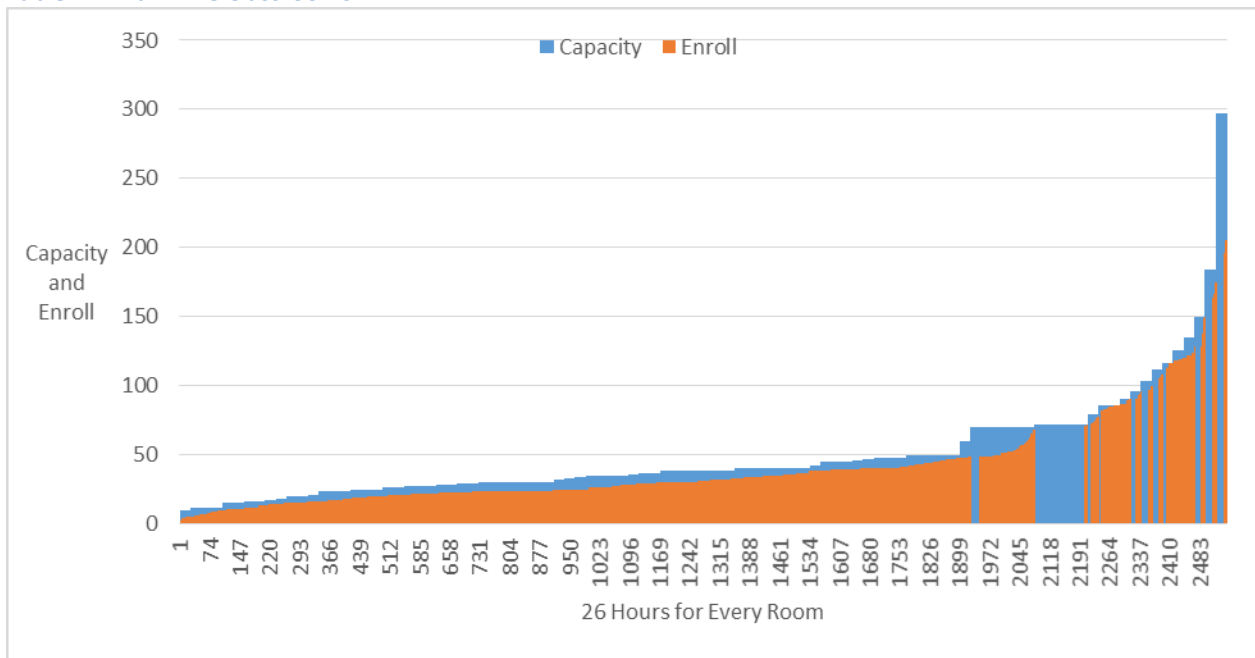
Classroom Capacity: USG Graph

Table 13: USG Classroom Graph-Fall 2013



35. The USG Classroom Graph takes the average WRH for all classrooms and fills classes into rooms up to the average WRH (24.6 Avg WRH for UWG, 7am-11pm including weekends) based on enrollment. It plots against the 40 WRH goal and capacities. The space between the bars is excess capacity in each room.

Table 14: Maximize Classrooms



36. The Maximize graph takes an alternative view and looks at the 9am to 5pm time frame filling every room to a goal of 26 WRH where the enrollment is less than or equal to the capacity. The space where no enrollments exist is the excess available space. The graph is hypothetical in that it plots where classes could have been scheduled not where they actually were scheduled.

V - Appendix-Room Listing

Building	Room	Coll	Assign	ASF	Capacity	ASF/Seat	WRH_Day	SO%	WSCH	Metric
Adamson	115	RCB	DRCB	626	30	20.9	17.1	63.0%	418	0.35
Adamson	117	RCB	DRCB	1621	90	18	25.8	48.0%	1,303	0.36
Adamson	217	RCB	DRCB	916	50	18.3	27.0	78.0%	1,124	0.56
Adamson	227	RCB	DRCB	916	50	18.3	23.0	65.0%	884	0.44
Anthropology	12	CSS	DCSS	981	38	25.8	8.9	62.0%	184	0.12
Anthropology	2	CSS	DCSS	1114	70	15.9	31.8	49.0%	1,042	0.37
Anthropology	7	CSS	DCSS	1067	48	22.2	28.1	82.0%	970	0.51
Biology	114	CSM	DCSM	836	60	13.9	30.1	68.0%	1,183	0.49
Biology	144	CSM	DCSM	525	35	15	24.2	56.0%	489	0.35
Biology	148	CSM	DCSM	871	72	12.1	24.2	53.0%	810	0.28
Biology	150	CSM	DCSM	618	45	13.7	26.1	44.0%	595	0.33
Biology	151	CSM	DCSM	1837	103	17.8	24.6	113.0%	2,564	0.62
Biology	240	CSM	BIO	481	12	40.1	22.0	96.0%	285	0.59
Biology	241	CSM	DCSM	473	38	12.4	8.0	57.0%	151	0.10
Boyd	206	CSM	DCSM	433	29	14.9	24.5	55.0%	337	0.29
Boyd	230	CSM	DCSM	1731	150	11.5	38.7	64.0%	3,531	0.59
Boyd	301	CSM	DCSM	585	40	14.6	40.7	84.0%	1,273	0.80
Boyd	302	CSM	DCSM	434	30	14.5	32.6	90.0%	796	0.66
Boyd	303	CSM	DCSM	575	40	14.4	40.6	94.0%	1,353	0.85
Boyd	304	CSM	DCSM	430	30	14.3	31.4	87.0%	793	0.66
Boyd	305	CSM	DCSM	711	48	14.8	38.6	91.0%	1,581	0.82
Boyd	307	CSM	DCSM	708	33	21.5	34.5	80.0%	786	0.60
Callaway Anx	145	CSM	DCSM	1632	72	22.7	27.3	82.0%	1,443	0.50
Callaway Anx	146	CSM	DCSM	963	48	20.1	34.3	74.0%	1,097	0.57
Cobb	130	CAH	FLL	373	20	18.6	9.0	100.0%	160	0.20
Coliseum	2100	COE	DEDUC	2370	72	32.9	17.1	62.0%	823	0.29
Coliseum	2120	COE	DEDUC	617	24	25.7	8.0	73.0%	227	0.24
Coliseum	2122	COE	DEDUC	756	25	30.2	11.7	54.0%	213	0.21
Coliseum	3006	COE	DEDUC	1059	37	28.6	10.8	61.0%	276	0.19
Coliseum	3008	COE	DEDUC	1007	38	26.5	13.5	51.0%	244	0.16
Coliseum	3009	COE	DEDUC	1026	40	25.6	17.1	73.0%	569	0.36
Education Anx	113	COE	DEDUC	381	12	31.8	9.3	124.0%	207	0.43
Education Anx	120	COE	DEDUC	328	12	27.3	0.0	0.0%	43	0.09
Education Cntr	0200	COE	DEDUC	933	50	18.7	18.4	55.0%	655	0.33
Education Cntr	0225	COE	DEDUC	466	30	15.5	23.5	91.0%	772	0.64
Education Cntr	0226	COE	DEDUC	467	30	15.6	21.4	85.0%	746	0.62
Education Cntr	0227	COE	DEDUC	902	40	22.6	17.3	87.0%	746	0.47
Education Cntr	0229	COE	DEDUC	596	30	19.9	9.6	66.0%	227	0.19
Education Cntr	0249	COE	DEDUC	647	15	43.1	15.0	136.0%	400	0.67
Education Cntr	1	COE	DEDUC	1862	70	26.6	26.2	39.0%	950	0.34
Education Cntr	2	COE	DEDUC	1862	70	26.6	17.5	47.0%	647	0.23
Education Cntr	3	COE	DEDUC	1847	70	26.4	19.2	46.0%	632	0.23
Education Cntr	4	COE	DEDUC	1862	70	26.6	7.4	43.0%	363	0.13
Education Cntr	5	COE	DEDUC	1855	70	26.5	5.3	31.0%	338	0.12
Humanities	0138	CAH	MUS	388	10	38.8	5.0	120.0%	54	0.14
Humanities	130	CSS	DCSS	405	21	19.3	26.1	92.0%	437	0.52
Humanities	131	CAH	DCAS	405	25	16.2	23.5	91.0%	456	0.46
Humanities	203	CSS	DCSS	1218	47	25.9	24.0	59.0%	742	0.39
Humanities	205	CAH	DCAS	420	27	15.6	26.1	83.0%	517	0.48

Building	Room	Coll	Assign	ASF	Capacity	ASF/Seat	WRH_Day	SO%	WSCH	Metric
Humanities	206	CAH	DCAS	413	27	15.3	29.1	86.0%	599	0.55
Humanities	208	CAH	DCAS	416	26	16	30.0	90.0%	627	0.60
Humanities	209	CAH	DCAS	421	32	13.2	30.0	72.0%	617	0.48
Humanities	228	CSS	DCSS	416	29	14.3	28.3	76.0%	611	0.53
Humanities	229	CAH	DCAS	414	27	15.3	30.6	90.0%	636	0.59
Humanities	231	CAH	DCAS	414	24	17.2	25.0	99.0%	531	0.55
Humanities	234	CAH	DCAS	416	37	11.2	12.2	77.0%	323	0.22
Humanities	235	CAH	DCAS	589	26	22.7	4.6	59.0%	85	0.08
Humanities	312	CSS	DCSS	2040	96	21.2	27.0	76.0%	2,208	0.58
Melson	104	CSS	DCSS	323	15	21.5	18.2	79.0%	273	0.46
Melson	207	CSS	DCSS	413	20	20.6	18.7	48.0%	161	0.20
Melson	213	CSS	DCSS	374	17	22	15.3	48.0%	116	0.17
Melson	218	CSS	DCSS	881	38	23.2	27.8	99.0%	1,083	0.71
Nursing	106	NURS	NURS	3061	135	22.7	15.0	37.0%	703	0.13
Nursing	110	NURS	NURS	942	40	23.6	3.8	59.0%	78	0.05
Nursing	115	NURS	NURS	2060	79	26.1	5.0	49.0%	215	0.07
Nursing	121	NURS	NURS	1115	40	27.9	9.0	75.0%	264	0.17
Nursing	122	NURS	NURS	1037	38	27.3	6.0	96.0%	207	0.14
RCOB	1201	RCB	DRCB	1871	112	16.7	30.1	40.0%	1,204	0.27
RCOB	1308	RCB	DRCB	654	42	15.6	28.1	66.0%	788	0.47
RCOB	1309	RCB	DRCB	739	50	14.8	30.0	73.0%	1,023	0.51
RCOB	2201	RCB	DRCB	729	45	16.2	33.0	79.0%	1,266	0.70
RCOB	2202	RCB	DRCB	723	45	16.1	30.0	69.0%	1,025	0.57
RCOB	2213	RCB	DRCB	1043	72	14.5	30.1	53.0%	1,053	0.37
RCOB	2214	RCB	DRCB	1043	72	14.5	28.7	56.0%	1,314	0.46
Social Sci	102	CSS	DCSS	1016	50	20.3	30.8	77.0%	1,359	0.68
Social Sci	106	CSS	DCSS	614	36	17.1	30.4	75.0%	806	0.56
Social Sci	107	CSS	DCSS	557	25	22.3	31.4	89.0%	675	0.68
Social Sci	109	CAH	DCAS	557	30	18.6	29.0	83.0%	683	0.57
Social Sci	110	CSS	DCSS	620	38	16.3	37.6	64.0%	879	0.58
Social Sci	112	CSS	DCSS	652	28	23.3	26.4	81.0%	702	0.63
Social Sci	204	CAH	DCAS	529	35	15.1	33.3	71.0%	787	0.56
Social Sci	206	CAH	DCAS	543	35	15.5	30.2	80.0%	844	0.60
Social Sci	208	CAH	DCAS	553	35	15.8	29.2	82.0%	796	0.57
Social Sci	302	CSS	DCSS	823	46	17.9	32.3	65.0%	1,071	0.58
Social Sci	305	CSS	DCSS	692	34	20.4	27.2	88.0%	714	0.53
Social Sci	306	CSS	DCSS	537	40	13.4	35.6	64.0%	854	0.53
Social Sci	307	CAH	DCAS	441	28	15.8	32.0	80.0%	666	0.59
Social Sci	308	CAH	DCAS	553	38	14.6	30.1	60.0%	645	0.42
Social Sci	309	CAH	ENG	445	18	24.7	15.0	71.0%	266	0.37
Social Sci	BONN	CSS	DCSS	1716	184	9.3	25.1	71.0%	2,906	0.39
Tech Learn	1103	CSM	CHEM	636	16	39.8	30.0	96.0%	533	0.83
Tech Learn	1104	CSM	CHEM	628	16	39.2	26.5	93.0%	441	0.69
Tech Learn	1200	CAH	DCAS	1362	86	15.8	33.1	74.0%	2,459	0.71
Tech Learn	1203	CAH	DCAS	1371	86	15.9	36.4	91.0%	2,884	0.84
Tech Learn	1301	CSM	DCSM	2306	116	19.9	33.2	67.0%	2,773	0.60
Tech Learn	1303	CAH	DCAS	2719	126	21.6	29.1	65.0%	2,121	0.42
Tech Learn	1305	CSM	DCSM	5036	297	17	27.2	46.0%	3,305	0.28
Tech Learn	2105	CSM	CHEM	651	24	27.1	29.0	66.0%	397	0.41