FA 08, 10, & 12 Classroom Capacity Analysis

Pat Burns, VPIT
CRB Presentation
Nov. 25, 2012
CSU 2020: Where will we Put Another 8K Students for Instruction?

- Build enough more classrooms (iffy)
- Make better use of existing classrooms
  - Put more classes in classrooms
- Make better use of existing seats
  - Teach fewer, larger classes (constraints)
- Extend teaching hours and days
  - More 7 & 8 AM, and 4-10 PM classes
  - Saturday classes
- More online classes, displacing face-to-face
Likely…

- Will need to do all of these to meet capacity demands
Definitions: 8 AM to 5 PM M-F

- Utilization - % of classrooms used for a course section, at a particular time
- Occupancy - % classroom seats that are filled with a student, at a particular time

Classroom sizes:
- Older: Small, Medium, Large
- Old: Small, Medium, Large, Very Large
- Now: 8 bins – 1-10, 11-30, 30-50, 51-75, 76-100, 101-150, 151-250, >250
What Follows: All About ‘Sizes’

- Summary information for FA08, FA10, & FA12
- Classrooms and Course Sections
  - Do the sizes match?
- Course Sections
- Occupancy (Classrooms Used)
- Utilization (Seats Filled)
## Totals

<table>
<thead>
<tr>
<th></th>
<th>FA08</th>
<th>FA10</th>
<th>FA12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sections</strong></td>
<td>3,481 (Base)</td>
<td>3,971 (+3.4%)</td>
<td>3,959 (-0.3%)</td>
</tr>
<tr>
<td><strong>Utilization (Seat-Hrs. Used)</strong></td>
<td>130,538 (Base)</td>
<td>138,249 (+5.9%)</td>
<td>139,044 (+0.6%)</td>
</tr>
<tr>
<td><strong>Seat-Hrs. Avail.</strong></td>
<td>222,175 (Base)</td>
<td>230,493 (+3.4%)</td>
<td>237,753 (+3.1%)</td>
</tr>
<tr>
<td><strong>Student FTE</strong></td>
<td>22,152 (Base)</td>
<td>23,298 (+5.2%)</td>
<td>23,721 (+1.8%)</td>
</tr>
<tr>
<td><strong>Classrooms used</strong></td>
<td>417 (Base)</td>
<td>449 (+7.7%)</td>
<td>429* (-4.7%)</td>
</tr>
</tbody>
</table>

*(some offline)*
FA08-FA12 CLASSROOMS
### No. of Classrooms by Type & Size

<table>
<thead>
<tr>
<th>Type*</th>
<th>Term</th>
<th>Small 1-30</th>
<th>Med. 31-100</th>
<th>Large &gt; 100</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gen. Assignment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>FA08</td>
<td>23</td>
<td>101</td>
<td>24</td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>FA10</td>
<td>23</td>
<td>111</td>
<td>25</td>
<td>159</td>
<td></td>
</tr>
<tr>
<td>FA12</td>
<td>24</td>
<td>110</td>
<td>26</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td><strong>Departmental</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FA08</td>
<td>173</td>
<td>80</td>
<td>5</td>
<td>259</td>
<td></td>
</tr>
<tr>
<td>FA10</td>
<td>195</td>
<td>86</td>
<td>6</td>
<td>287</td>
<td></td>
</tr>
<tr>
<td>FA12</td>
<td>184</td>
<td>81</td>
<td>4</td>
<td>269</td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FA08</td>
<td>205</td>
<td>182</td>
<td>30</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>FA10</td>
<td>221</td>
<td>197</td>
<td>30</td>
<td>449</td>
<td></td>
</tr>
<tr>
<td>FA12</td>
<td>208</td>
<td>191</td>
<td>30</td>
<td>429</td>
<td></td>
</tr>
<tr>
<td>Type*</td>
<td>Term</td>
<td>Small 1-30</td>
<td>Med. 31-100</td>
<td>Large &gt; 100</td>
<td>Total</td>
</tr>
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<td>-------------------</td>
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<td>-------------</td>
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</tr>
<tr>
<td>General Assignment</td>
<td>FA08</td>
<td>599</td>
<td>5,405</td>
<td>4,321</td>
<td>10,325</td>
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<tr>
<td></td>
<td>FA10</td>
<td>597</td>
<td>6,087</td>
<td>4,605</td>
<td>11,289</td>
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<tr>
<td></td>
<td>FA12</td>
<td>627</td>
<td>6,052</td>
<td>4,718</td>
<td>11,397</td>
</tr>
<tr>
<td>Departmental</td>
<td>FA08</td>
<td>3,654</td>
<td>3,782</td>
<td>728**</td>
<td>8,164</td>
</tr>
<tr>
<td></td>
<td>FA10</td>
<td>3,922</td>
<td>4,017</td>
<td>737</td>
<td>8,676</td>
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<tr>
<td></td>
<td>FA12</td>
<td>3,669</td>
<td>3,784</td>
<td>617</td>
<td>8,070</td>
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<tr>
<td>Total</td>
<td>FA08</td>
<td>4,475</td>
<td>9,227</td>
<td>5,049</td>
<td>18,751</td>
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<tr>
<td></td>
<td>FA10</td>
<td>4,570</td>
<td>10,104</td>
<td>5,342</td>
<td>20,016</td>
</tr>
<tr>
<td></td>
<td>FA12</td>
<td>4,296</td>
<td>9,836</td>
<td>5,335</td>
<td>19,467</td>
</tr>
</tbody>
</table>
## Summary

<table>
<thead>
<tr>
<th></th>
<th>FA08</th>
<th>FA10</th>
<th>FA12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total FTE</td>
<td>22,152</td>
<td>23,298</td>
<td>23,721</td>
</tr>
<tr>
<td>Total Seats</td>
<td>18,751</td>
<td>20,016</td>
<td>19,423</td>
</tr>
<tr>
<td>Total Classrooms</td>
<td>417</td>
<td>449</td>
<td>429</td>
</tr>
<tr>
<td>Average Size (Seats)</td>
<td>45.0</td>
<td>44.6</td>
<td>45.3</td>
</tr>
</tbody>
</table>
FA12 Classrooms (in Bins)

Classroom Size (Seats)

- 1-10
- 11-30
- 31-50
- 51-75
- 76-100
- 101-150
- 151-200
- 201+

GA Rooms
Dept. Rooms
FA08-FA12 ARIES SECTION
ENROLMENTS & CAPACITIES
FA08 Section Enrollments and Excess Capacities (Seats)

All Sections:
Enrollments – 130,448
Capacity – 216,181
Average 60.3% Full

56% Full
Capacity
Enrollments
62% Full

72% Full
Small
9,058
23,649

58,577
46,873

Medium
Large
48,222
29,802

Classroom Size

FA12 Classroom Study - DRAFT
FA10 Section Enrollments and Excess Capacities (Seats)

All Sections: Enrollments - 138,249
Capacity - 230,493
Average 60.0% Full

- Small
  - 75% Full: 7,980
  - 23,728

- Medium
  - 57% Full: 48,648
  - 65,029

- Large
  - 58% Full: 35,616
  - 49,492

Excess Capacity
Enrollments
FA12 Section Enrollments and Excess Capacities (Seats)

All Sections:
Enrollments – 139,572
Capacity – 233,748
Average 59.7% Full

57% Full

48,230

58% Full

35,577

75% Full

8,448

49,130

23,701

Small

Medium

Large

Classroom Size

Excess Capacity

Enrollments
CLASSROOM UTILIZATION
(CLASSROOMS USED)
Framework

- Recall utilization = % of rooms used
- Presented in ‘bins’ of
  - Size of classroom
    - Small: 1-30 seats
    - Medium: 31-100 seats
    - Large: > 100 seats
  - By type of Classroom
    - Departmental
    - General Assignment
Weekly Utilization

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday

Percent Utilization

Hours

8 9 10 11 12 1 2 3 4 5

Rates for all 152 rooms
FA07 GA Utilization – All 147 Rooms
FA10 GA Utilization – All 159 Rooms

The graph shows the utilization of GA rooms for all 159 rooms over the course of a weekday. The x-axis represents the time from 8 AM to 5 PM, with increments at 8, 9, 10, 11, 12, 1, 2, 3, 4, 5 PM. The y-axis represents the percentage utilization ranging from 0% to 100%, with increments at 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100%.

Each day of the week (Mon, Tue, Wed, Thu, Fri) is represented by a different line color:
- Mon: Dark blue
- Tue: Red
- Wed: Yellow
- Thu: Cyan
- Fri: Purple

The utilization peaks around midday for most days, with a slight variation between the days. The utilization decreases as the day progresses, with lower usage in the late afternoon.
FA12 GA Room Utilization
All 160 Rooms

Mon.
Tue.
Wed.
Thu.
Fri.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

8:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM
FA12 GA Room Utilization
Bin 1: 1-10, 1 Room

- Mon.
- Tue.
- Wed.
- Thu.
- Fri.

8:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM
FA12 GA Room Utilization
Bin 2: 11-30, 23 Rooms
FA12 GA Room Utilization
Bin 3: 31-50, 63 Rooms

Mon.
Tue.
Wed.
Thu.
Fri.

8:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM
FA12 GA Room Utilization
Bin 4: 51-75, 27 Rooms
FA12 GA Room Utilization
Bin 5: 76-100, 20 Rooms

Mon.
Tue.
Wed.
Thu.
Fri.
FA12 GA Room Utilization
Bin 6: 101-150, 11 Rooms

8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Mon.
Tue.
Wed.
Thu.
Fri.
FA12 GA Room Utilization
Bin 8: >250, 7 Rooms

8:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM

Mon.  
Tue.  
Wed.  
Thu.  
Fri.
FA12 Dept. Room Utilization
All 269 Rooms

Mon.
Tue.
Wed.
Thu.
Fri.
FA12 Dept. Room Utilization
Bin 2: 11-30, 158 Rooms
FA12 Dept. Room Utilization
Bin 3: 31-50, 63 Rooms

Mon.
Tue.
Wed.
Thu.
Fri.
FA12 Dept. Room Utilization
Bin 4: 51-75, 14 Rooms

Mon.
Tue.
Wed.
Thu.
Fri.
FA12 Dept. Room Utilization
Bin 5: 76-100, 4 Rooms

Mon.
Tue.
Wed.
Thu.
Fri.
FA12 Dept. Room Utilization
Bin 6: 101-150, 2 Rooms

Mon.
Tue.
Wed.
Thu.
Fri.
FA12 Dept. Room Utilization
Bin 7: 151-250, 2 Rooms

Mon.
Tue.
Wed.
Thu.
Fri.
CLASSROOM SEAT OCCUPANCY
Framework

- Recall occupancy = % of seats occupied
- ‘Sliced’ by
  - Size of classroom
    - Small: 1-30 seats
    - Medium: 31-100 seats
    - Large: > 100 seats
  - Type of Classroom
    - Departmental
    - General Assignment
FA12 GA Occupancy, All Rooms (160 Rooms, 19,467 Seats)
FA12 GA Occupancy, Bin 1: 1-10
(1 Room, 10 Seats)
FA12 GA Occupancy, Bin 2: 11-30
(23 Rooms, 617 Seats)
FA12 GA Occupancy, Bin 3: 31-50
(63 Rooms, 2,591 Seats)
FA12 GA Occupancy, Bin 4: 51-75
(27 Rooms, 1,642 Seats)
FA12 GA Occupancy, Bin 5: 76-100 (20 Rooms, 1,819 Seats)
FA12 GA Occupancy, Bin 6: 101-150, (8 Rooms, 1,316 Seats)

- Mon.
- Tue.
- Wed.
- Thu.
- Fri.
FA12 GA Occupancy, Bin 7: 150-250 (7 Rooms, 1,388 Seats)
FA12 GA Room, Bin 8: >250
(7 Rooms, 2,054 Seats)
Dept. Occupancy, All Rooms
(269 rooms, 8,070 seats)
Dept. Occupancy, Bin 1: 1-10
(26 rooms, 150 seats)

Mon.  | Tue.  | Wed.  | Thu.  | Fri.  |
---    | ---   | ---   | ---   | ---   |
0.0%   | 10.0% | 70.0% | 50.0% | 0.0%  |
100.0% | 90.0% | 80.0% | 60.0% | 40.0% |

8:00 AM  | 9:00 AM  | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM
Dept. Occupancy, Bin 2: 11-30
(160 rooms, 3,558 seats)
Dept. Occupancy, Bin 3: 31-50
(61 rooms, 2,517 seats)
Dept. Occupancy, Bin 4: 51-75
(14 rooms, 854 seats)
Dept. Occupancy, Bin 5: 76-100
(4 rooms, 330 seats)
Dept. Occupancy, Bin 6: 101-150
(2 rooms, 235 seats)
Dept. Occupancy, Bin 7: 151-200 (2 rooms, 382 seats)
Discussion

- ARIES now has section ‘wait list’ capability
  - Virtues extolled by students

- There seems to be available capacity
  - To fill seats more fully
  - To use more classrooms

- Housing has vacant dining halls available that could be retrofit into large classrooms
Questions

- Are more than welcome